CITY OF WARRENTON
COMPREHENSIVE PLAN

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

WARRENTON COMPREHENSIVE PLAN

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INTRODUCTION

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ARTICLE 1 INTRODUCTION

The intent of this Comprehensive Plan is to act as a guide for the future community development of the City. It provides a basis for public and private actions in the community by establishing sound goals, policies and plan strategies. The Plan functions as a legal framework that City officials will use to make decisions. It is a statement of how the City Commission and Planning Commission, though the zoning ordinances, subdivision regulations, public facility policies and other means, will direct and control growth and change for the benefit of the people of this community.

This Plan is designed to comply with Oregon's Statewide Planning Goals. The Plan was developed after careful review of these Goals, collecting and analyzing a substantial amount of background data and providing opportunities for individuals, private organizations and public agencies to express their opinions. Periodically, as those goals and opinions change and new information is obtained, the Plan should be updated. Background data is included in the *Warrenton Comprehensive Plan Background Report*, which is adopted as a part of this Plan.

The major elements of this Plan are Community Development, Land and Water Use, Natural Features, Columbia River Estuary Waters and Shorelands, Beach and Dune Shorelands, Community Facilities and Services, Transportation, Economy, and Procedures. Each Element consists of one or more Findings, Goals, and Policies sections.

Words and phrases used in this Plan have the meaning given in the Definitions section of the City's Development Code.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 2
COMMUNITY DEVELOPMENT

ORDINANCE NO. 1058-A
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ARTICLE 2 COMMUNITY DEVELOPMENT

SECTION 2.100 FINDINGS

Warrenton differs from many communities in that the City includes an extensive amount of undeveloped land and water area. These undeveloped areas, together with the City's location, the availability of public facilities and services, and the population and economic gains experienced during the late 1980s, are indicative of potential for a considerable amount of development. For example, there is the possibility that one or more large-scale industrial facilities or a variety of tourist-oriented commercial establishments may locate in the City.

Because of this potential, the City needs to have a substantial amount of land available to accommodate growth. However, to make all of the existing undeveloped land available at one time for intensive use would not encourage efficient land use patterns. In 1991 the cities of Hammond and Warrenton merged, and in 2008 the City of Warrenton annexed the last piece of its properties in the urban growth boundary. The current (August, 2009) acreage within Warrenton city limits is 10,620 acres, or approximately 16.6 square miles. Future development in this area will require the City and the property owner/ developer to expand, improve and/or replace public facilities and services for this area. Any transportation needs, and obstacles and opportunities presented by the area's natural features and configurations will be satisfied by various community objectives.

SECTION 2.200 GOAL

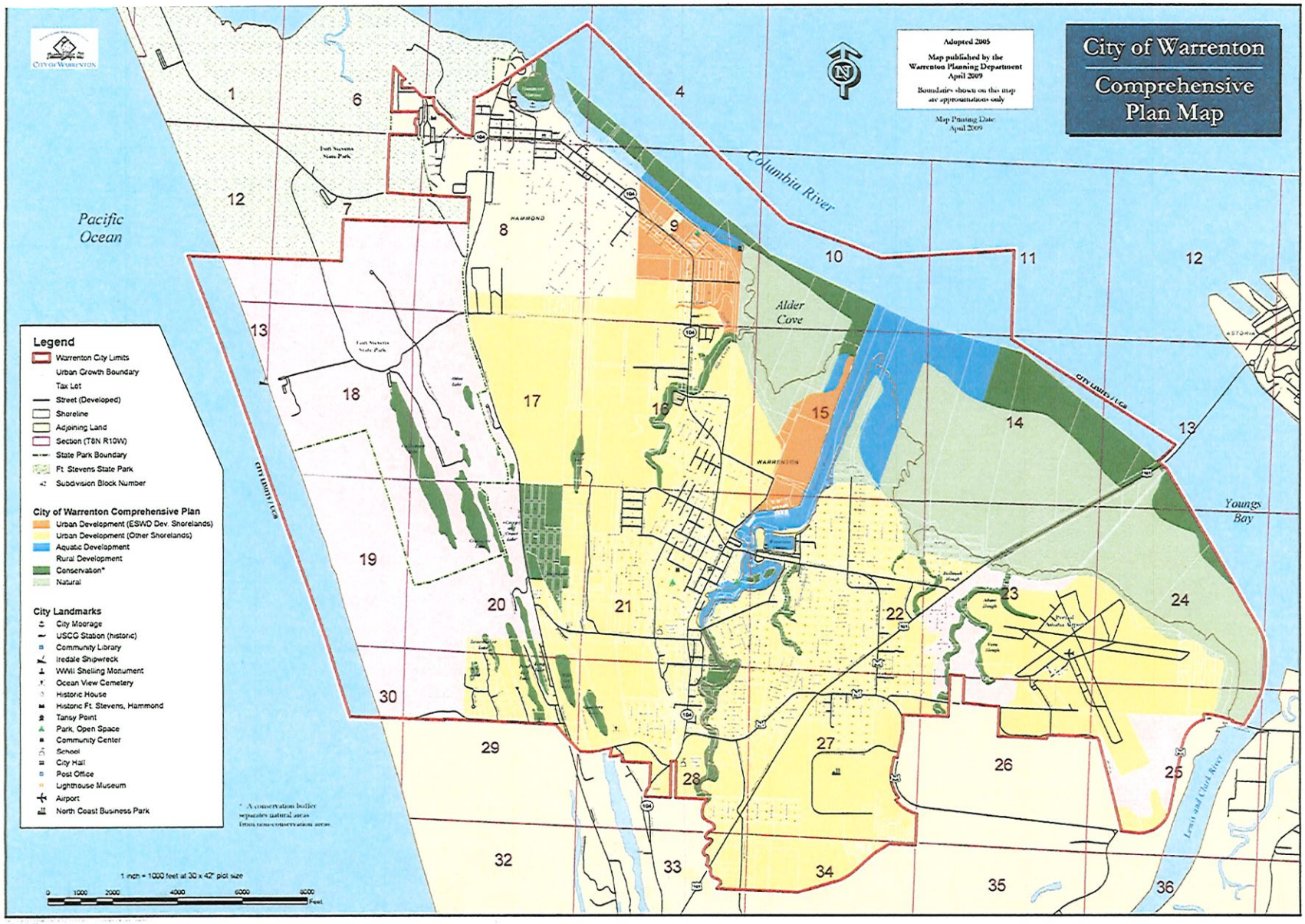
Establish sound basic concepts for community development which will encourage appropriate and balanced urban growth.

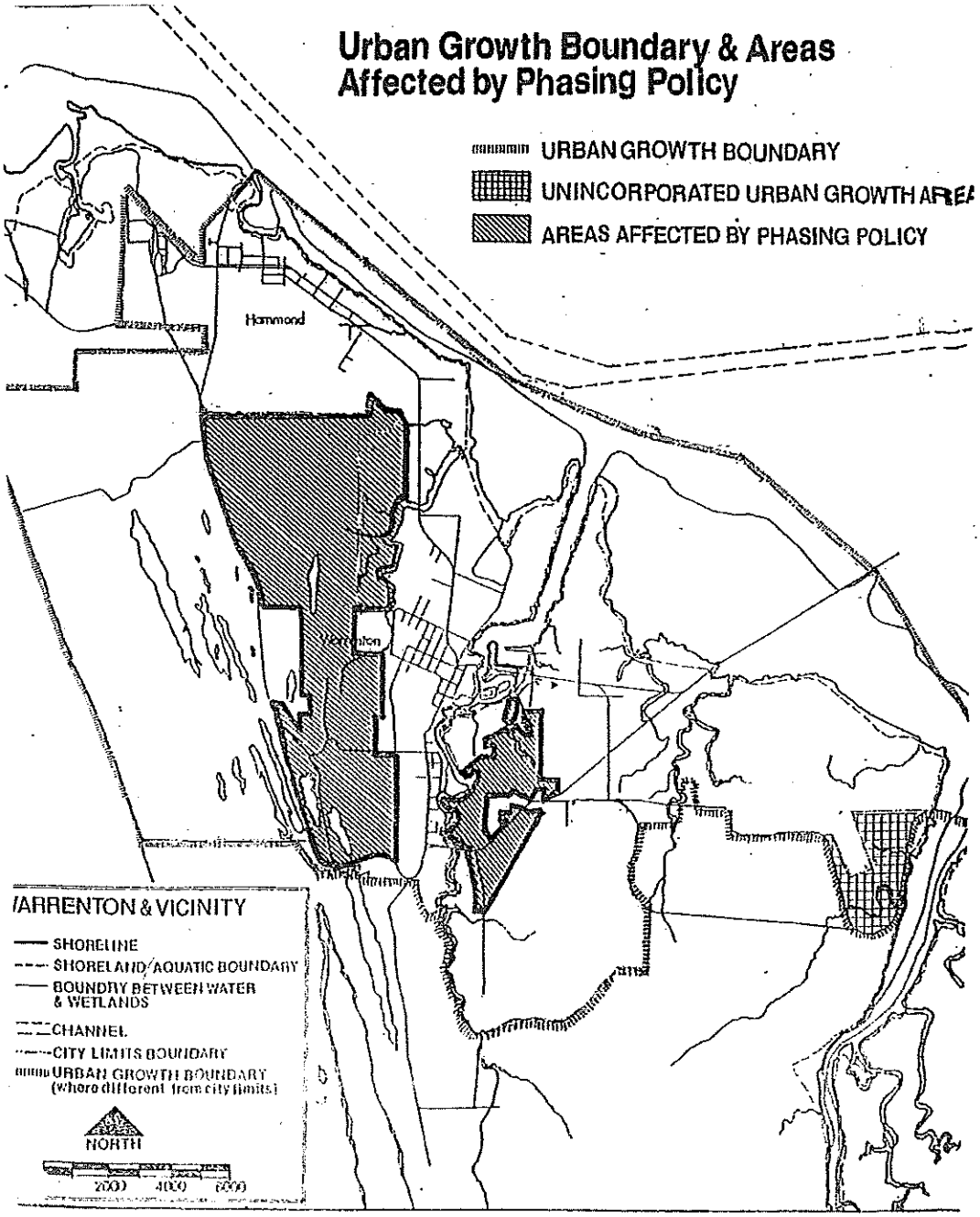
SECTION 2.300 POLICIES

Section 2.310 Land and Water Use Classification

(1) All land and water areas will be classified as appropriate for urban development, rural uses, recreation, aquatic development, conservation or preservation. These classifications are described in policies 2 through 5, below.

(2) Urban Development Areas: Areas with a combination of physical, biological and social/economic characteristics which make them necessary and suited for residential, commercial, industrial, public or semi-public uses are appropriately classified for urban development. Such areas are either adequately served by public facilities and services for urban development or have the potential for being adequately served during the next twenty years.There are two types of urban development areas, as follows:


City of Warrenton
Comprehensive Plan Map
Adopted 2005
Map published by the Warrenton Planning Department April 2009
Boundaries shown on the map are approximations only
Map Printing Date: April 2009
Pacific Ocean
Columbia River
Alder Cove
Youngs Bay
Lewis and Clark River
Fort Stevens State Park
HAMMOND
WARRENTON
ASTORIA
CITY LIMITS / UGB
Legend
Warrenton City Limits
Urban Growth Boundary
Tax Lot
Street (Developed)
Shoreline
Adjoining Land
Section (T8N R10W)
State Park Boundary
Ft. Stevens State Park
Subdivision Block Number
City of Warrenton Comprehensive Plan
Urban Development (ESWD Dev. Shorelands)
Urban Development (Other Shorelands)
Aquatic Development
Rural Development
Conservation*
Natural
City Landmarks
City Moorage
USCG Station (historic)
Community Library
Iredale Shipwreck
WWII Shelling Monument
Ocean View Cemetery
Historic House
Historic Ft. Stevens, Hammond
Tansy Point
Park, Open Space
Community Center
School
City Hall
Post Office
Lighthouse Museum
Airport
North Coast Business Park
* A conservation buffer separates natural areas from resource conservation areas.
1 inch = 1000 feet at 30 x 42" plot size
0 1000 2000 4000 6000 8000 Feet


Urban Growth Boundary & Areas Affected by Phasing Policy
URBAN GROWTH BOUNDARY
UNINCORPORATED URBAN GROWTH AREA
AREAS AFFECTED BY PHASING POLICY
Hammond
Marysville
/ARRENTON & VICINITY
SHORELINE
SHORELAND/AQUATIC BOUNDARY
BOUNDRY BETWEEN WATER & WETLANDS
CHANNEL
CITY LIMITS BOUNDARY
URBAN GROWTH BOUNDARY (where different from city limits)
NORTH
2000 4000 6000

(a) ESWD Shorelands are managed for water-dependent industrial, commercial and recreational uses. ESWD Shorelands include areas with special suitability for water-dependent development, including access to well scoured deepwater and maintained navigation channels, presence of land transportation and public facilities, existing developed land uses, potential for aquaculture, feasibility for marina development and potential for recreational utilization. Water-dependent use receives highest priority, followed by water-related uses. Uses which are not water-dependent or water-related which do not foreclose options for future higher priority uses and which do not limit the potential for more intensive uses of the area are provided for. The ESWD plan designation is implemented through the Marine Commercial Zone and the Water-dependent Industrial Shorelands Zone.

(b) Other Urban Shorelands: Other urban shorelands are more desirable for other uses or are suitable for a wider range of uses. They are located in one of the following zoning districts: High Density Residential, Medium Density Residential, Intermediate Density Residential, General Commercial, Recreation Commercial, Urban Recreation/Resort, or General Industrial.

(3) Rural Development Areas: Lands which, due to their development limitations or other characteristics, are best suited for rural uses such as very low density residential uses, recreation, extraction of subsurface materials, agriculture, timber harvesting and aquaculture, are in the Rural Development plan designation. This is implemented through the City's Rural Development Zone.

(4) Aquatic Development Areas: Aquatic development areas include areas suitable for deep-draft or shallow-draft navigation, including shipping, channels, access channels and turning basins; dredged material disposal sites and mining/mineral extraction areas; and areas adjacent to developed or developable shorelines which may need to be altered to provide navigational access or to create new land areas for water-dependent uses. These areas are managed for navigation and other water-dependent uses in a manner consistent with the need to minimize damage to the estuarine ecosystem. Some water-related and non-water-related uses may be permitted. All aquatic development areas are in an Aquatic Development zoning district.

(5) Conservation Areas: Land and water areas providing resource or ecosystem support functions, or with value for low intensity recreation or sustained yield resources (such as agriculture), or poorly-suited for development, should be designated for non-consumptive uses. Non-consumptive uses are those which can utilize resources on a sustained-yield basis, while minimally reducing opportunities for other uses of the area's resources. These areas are in the City's Aquatic Conservation Zone,

and in the Open Space, Parks & Institutional Zone.

(6) Natural Areas: Those areas which have not been significantly altered by people and which, in their natural state, perform resource support functions vital to estuarine or riparian ecosystems, are in a Natural Area plan designation. Such places can be significant for the study or appreciation of natural, historical, scientific or archeological features. Water areas in the Aquatic Natural Zone and Coastal Lakes & Freshwater Wetlands Zone are included.

Section 2.320 Urban Development

(1) Growth Management. Due to the large amount of urbanizable residential land within the City limits, the City will adopt a growth management strategy to insure the orderly conversion of land to urban uses. The City will apply growth management standards to outlying areas of the City which are largely vacant and currently have few public facilities in order to:

(a) Make urbanizable land available for conversion to urban uses in stages as public facilities adequate to serve urban development become available.

(b) Insure the orderly and economic provision of services.

(c) Discourage undeveloped areas from prematurely developing at non-urban densities.

(d) Maintain undeveloped areas at parcel sizes which can eventually be converted to urban uses.

(e) Encourage the development within urban areas before the conversation of urbanizable areas.

(2) Urban Growth Boundary: Unincorporated areas adjoining the City limits which are needed to accommodate urban development shall be included in the Urban Growth Boundary, along with property presently in Warrenton, and will be appropriately managed. Findings for the placement of the Urban Growth Boundary are included in the Background Report. The City and Clatsop County shall establish an Urban Growth Boundary management agreement with Warrenton having the primary authority for making land use decisions within the Urban Growth Boundary.

(3) No area will be added to the Urban Growth Boundary unless the following factors are considered:

(a) Demonstrated need to accommodate long-range urban population growth requirements consistent with Statewide Planning Goals.

(b) Need for housing, employment opportunities and livability.

(c) Orderly and economic provision for public facilities and services.

(d) Maximum efficiency of land uses within and on the fringe of the existing urban area.

(e) Environmental, energy, economic and social consequences.

(f) Retention of agricultural land as defined, with Class I being the highest priority and Class VI the lowest priority.

(g) Compatibility of the proposed urban uses with nearby agricultural or forestry activities.

(h) Changes to the urban growth boundary shall also conform to the procedures and requirements of Statewide Planning Goal 2, Part II, Exceptions.

(4) The City may adjust the Urban Growth Boundary to make minor additions or subtractions of lands from the Urban Growth Boundary consistent with OAR 660-024-0070. Such adjustment may include an exchange of lands inside the Urban Growth Boundary for lands outside the Urban Growth Boundary pursuant to a voluntary Transfer of Development Rights agreement.

Section 2.330 Annexation

(1) Annexation will be based, in part, on consideration of:

(a) Orderly and economic provision of public facilities and services.

(b) Availability of sufficient land for various uses to insure choices in the real estate market.

(c) Encouragement of new urban uses within the City limits before conversion of unincorporated land.

(2) City water service will be extended to unincorporated areas only if adequate system capacity for the extension exists. Property owners affected may be required to pay for the total cost of the extension. Once annexation occurs, water policies for locations inside the City will apply. All other City public facilities and services not already provided to the area will become available after annexation takes place.

(3) Annexation of a particular area in the Urban Growth Boundary will be considered only after the costs of providing city public facilities and services to the area have been studied and estimated. Before annexation occurs, the method or methods of allocating the cost of new or expanded public facilities and services needed in the five years following annexation shall be determined, and any agreements between the City and a non-city governmental funding source will be made. Use of assessment districts shall be seriously considered as a technique for paying any costs necessary for providing City sewer service to an area.

CITY OF WARRENTON
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ARTICLE 3
LAND AND WATER USE

ORDINANCE NO. 1058-A
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ADOPTED ON JANUARY 25, 2011

ARTICLE 3 LAND AND WATER USE

SECTION 3.100 FINDINGS

Characteristics of Warrenton's existing development include: a concentration of housing near the center of town; collections of residential and commercial buildings close to a few major roads; large public use areas scattered in the City; a tendency for industrial facilities to be on the waterfront, near the airport, or in the vicinity of U. S. Highway 101; and an extensive amount of undeveloped land between some of the built-up areas. Among the factors contributing to these local development patterns have been: overall growth levels, natural features (such as wetlands), street policies, and the accessibility of public facilities and services.

These same factors will have an impact on future development. Anticipated growth levels are expected to require the conversion of large amounts of undeveloped land to residential, commercial and industrial uses. Natural features will lead to the selection of some sites for development, avoidance of others, and limited use of many. Street policies will help determine the location of high intensity uses and the character of new neighborhoods. The availability of certain public facilities and services will affect the directions in which growth can occur. Some of the other factors which will have a bearing on future development will be: existing land and water use patterns, the large number of homes built before 1950, rising housing costs, the manner in which many undeveloped areas were subdivided years ago, the attractiveness of some waterfront sites for industrial or commercial activities, and the potential for commercial growth. This section provides a policy basis for much of the City's Planning and Zoning, and helps meet the requirements of Statewide Planning Goal 2. There are no rural farm or forest lands protected by Statewide Planning Goals 3 or 4 within the UGB. Parts of this Section, together with parts of the *Warrenton Comprehensive Plan Background Report*, address Statewide Planning Goals 10 and 14.

Section 3.110 Inventory

A preliminary assessment of buildable land within the City's UGB includes land that has been identified as completely vacant, as well as land that is partially vacant and theoretically has the potential for additional development based on parcel size, zoning, the location of existing development and environmental constraints. The buildable land inventory was created using assessor's data, aerial photographs and making site visits to confirm buildable status. Redevelopable land was determined by identifying developed employment parcels for which assessed land value is greater than the assessed improvement value.

SECTION 3.200 Buildable Lands (Zoning and wetland maps apply to ability to development)

There are approximately 949 acres of buildable land on 856 lots within Warrenton's UGB. More than 467 acres of this land is zoned for employment uses, the majority of which is industrial (288 acres). Approximately 481 acres are designated for various intensities of residential use. The housing analysis includes additional calculations to determine a more exact accounting of buildable acreage. In addition, 1.45 acres is zoned for mixed uses.

Table 1. Gross Buildable Land by Zoning Type

	Zone	Acres	Lots
Employment	A1	19.66	3
	C1	123.62	238
	C2	2.87	9
	RC	32.45	36
	I1	226.38	64
	I2	61.69	62
	Total	*466.67*	*412*
Mixed	CMU	*1.45*	*6*
Residential	R10	185.58	233
	R40	71.41	51
	RH	126.19	68
	RM	30.38	53
	RGM	67.12	33
	Total	*480.68*	*438*
Total		***948.80***	***856***

Source: Cogan Owens Cogan

Buildable lands are divided into three classes: vacant, partially vacant and re-developable. The results of the inventory include approximately 504 acres of vacant land on 627 lots, 389 acres of partially vacant land on 138 lots, and 56 acres of re-developable land on 91 lots within Warrenton's UGB. Table 2 shows the acreage and number of lots by zoning type.

Table 2. Gross Land by Zoning Type and Land Status

Zone		Partially Vacant	Re-developable	Vacant
A1	Acres		0.23	19.43
	Lots		1	2
C1	Acres	24.84	17.39	81.39
	Lots	26	53	159
C2	Acres	1.55	0.5	0.82
	Lots	3	2	4
RC	Acres	8.1	2.19	22.16
	Lots	3	5	28
I1	Acres	160.52	10.84	55.02
	Lots	7	9	48
I2	Acres	11.5	22.91	27.28
	Lots	8	16	38
CMU	Acres		1.08	0.37
	Lots		4	2
R10	Acres	51.85		133.73
	Lots	38		195
R40	Acres	47.29		24.12
	Lots	14		37
RH	Acres	35.52		90.67
	Lots	14		54
RM	Acres	9.79	0.45	20.14
	Lots	14	1	38
RGM	Acres	38.16		28.96
	Lots	11		22
Total	**Acres**	**389.12**	**55.59**	**504.09**
	Lots	**138**	**91**	**627**

Source: Cogan Owens Cogan

Section 3.210 Land Supply

Buildable land within the City's UGB includes land that is completely vacant, as well as land that is partially vacant and theoretically has the potential for additional development based on parcel size, zoning, the location of existing development and environmental constraints. The buildable land supply was evaluated by reviewing the following information:

- Tax assessor data
- GIS data
- Aerial photographs
- Site visits to identify potential constraints to development or redevelopment
- Consultation with City staff and members of the Warrenton Project Advisory Committee

There are approximately 608 acres of buildable land on 699 lots within Warrenton's UGB zoned to allow for residential use. This includes commercially zoned land where housing is an allowed use. Land considered potentially unbuildable due to environmental constraints was removed from the inventory summarized in Table 1. Environmental constraints include riparian areas, significant wetlands and slopes of greater than 25%. Land with non-significant wetlands was included in the area but reduced by a factor of 25% to account for the fact that such land may be more difficult to develop. The city allows development on such land but requires that land with certain soil types which tend to correspond to wetland areas be subject to a geotechnical survey prior to development approval. Lots that are too narrow or small to meet minimum lot size requirements are also considered unbuildable, as have portions of existing subdivisions which are dedicated to open space in perpetuity.

Table 1. Gross Buildable Land by Zoning Designation that Allow for Residential Use

Zone	Acres	Lots
C1	123.6	238
C2	2.87	9
CMU	1.4	6
R10	185.6	233
R40	71.1	50
RH	126.2	68
RM	30.4	62
RGM	67.1	33
Total	***608.3***	***699***

To more realistically assess the potential for future housing units, additional land was deducted from lots larger than one acre in size to account for land needed for roads and other public facilities. In addition, the acreage for each parcel was converted to the capacity for new buildable lots, assuming the average lot size/densities shown in Table 11 and rounding the acreage down to the nearest whole lot.

Subtracting the areas described above and converting land to buildable lot or housing unit capacity leaves Warrenton with the equivalent of approximately 465 acres of land within the UGB zoned for residential use. This includes some parcels zoned for commercial use, in which residential uses also are allowed.

Table 2. Net Buildable Land by Zoning Designation

Zone	Acres	Parcels
R-40	61.5	44
R-10	167.2	233
R-M	21.7	53
R-H	83.3	68
RGM	58.1	33
C-1	73.3	158
C-MU	0.2	2
Total	***465.3***	***591***

Source: Cogan Owens Cogan

Section 3.220 Population Projections

Local governments are required by the Oregon Department of Land Conservation and Development (DLCD) administrative rules to use coordinated county and city population projections for the purposes of estimating housing and employment needs. If other projections are used, the jurisdiction must prepare and present enough data to justify the use of the alternative projections. Use of alternative projections ultimately requires the city and county to revise the coordinated county and city projections. Such a process typically requires a significant level of resources and takes several months. Clatsop County worked with cities within the county to prepare a set of coordinated population projections in 2005.

The 2006 population of Warrenton was estimated to be 4,505 based on coordinated county/city population projections and adjusted slightly to account for a very small number of housing units and people between the city limits and urban growth boundary. This compares to a population of 3,292 in 1990. Warrenton's population is expected to increase by approximately 1.8% per year over the next 20 years, generally consistent with growth rates during the last 15 years.

Table 3 summarizes historical and projected future population, assuming an updated current (2006 population estimate) and the future growth rate assumed in the coordinated county city forecasts. It also accounts for population within the entire UGB as described above.

Table 3. Historical and Future Population Data and Forecasts

	1990 *	2000*	2006	2017	2027
Population	3,292	4,096	4,503	5,449	6,481

* Includes only estimated population within the city limits. Estimates for future years include population estimated within the entire UGB.

Section 3.230 Housing Occupancy and Structure Type

In 2006, there were an estimated 1,859 households in Warrenton, compared to 1,281 in 1990. There were an estimated 2,049 housing units in Warrenton in 2006, indicating a vacancy rate of approximately 10.2%, compared to a vacancy rate of 9.6% and 7.3% in 2000 and 1990, respectively. Homes classified as vacant fall into two general categories – those that are vacant because they are in the process of being sold or rented and are temporarily unoccupied for relatively short periods of time; and those that are occupied only seasonally (second homes or vacation homes) and considered to be vacant during a majority of the year. Year 2000 Census data indicates that about 3.2% of all housing units were used for seasonal occupancy (i.e., second/vacation homes).

Most homes in Warrenton are classified as single-family detached dwellings (over 65% in 2000), with manufactured homes (in parks) accounting for almost half of the remainder (14.3%) according to the 2000 Census.

Table 4. Housing Units by Structure & Occupancy, 2000

Unit Type	Total	Occupied
1 Unit Detached	62.2%	62.1%
1 Unit Attached*	3.6%	3.2%
2 Units	1.5%	1.3%
3 or 4 Units	4.3%	4.2%
5-9 Units	4.6%	4.2%
10-19 Units	3.4%	3.5%
20-49 Units	3.6%	4.0%
50+ Units	3.1%	3.2%
Manufactured Homes	13.8%	14.3%
Other	0.0%	0.0%

Source: US Census

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

In the City of Warrenton, 65% of year-round residents own their homes, while 35% are renters.

Section 3.240 Housing Costs, Household Incomes and Housing Affordability

Based on data from ESRI BIS, average and median home values in 2006 were approximately $208,000 and $192,000 respectively; with 43% of homes in the $100,000 - $200,000 price range and 34% in the $200,000 - $300,000 (see Table 5).

Table 5. Home Value of Specified Owner Units, 2006

Home Value	Number of *Homes*	% of *Total*
Less than $50,000	108	9%
$50,000-$99,999	50	4%
$100,000-$149,999	209	17%
$150,000-$199,999	321	26%
$200,000-$299,999	424	34%
$300,000-$399,999	46	4%
$400,000-$499,999	41	3%
$500,000-$749,999	46	4%
$750,000-$999,999	4	<.4%
$1,000,000 and Above	0	0%
Total Units	1,254	100%
Average Home Value: $207,530		
Median Home Value: $191,919		

Source: US Census, ESRI BIS, Marketek

Housing costs in Warrenton are relatively comparable to those for the state as a whole. At the same time, incomes tend to be below state averages. Table 6 summarizes data related to household income for Warrenton residents in comparison to the state as a whole. It indicates a median household income of under $42,000 in Warrenton, about $8,000 less than for the state as a whole. It also shows a higher percentage of residents in the two lowest income categories (below $25,000) in Warrenton compared to the state, relatively similar percentages with middle incomes, and a lower percentage with upper incomes.

Table 6. Household Income, Warrenton, 2006

Income	Warrenton	State of Oregon
Less than $15,000	16.1%	11.9%
$15,000 to $24,999	14.1%	10.4%
$25,000 to $34,999	10.2%	11.1%
$35,000 to $49,999	17.8%	16.6%
$50,000 to $74,999	20.9%	20.8%
$75,000 to $99,999	11.4%	12.5%
$100,000 to $149,999	6.2%	10.8%
$150,000 to $199,999	1.6%	3.0%
$200,000 and more	1.7%	2.9%
Median Household Income	**$41,791**	**$50,051**

Source: ESRI BIS, Marketek

Housing affordability is typically assessed in one of two ways – either by estimating the percentage of households which spend more than 30% of their monthly income on housing (the standard measure of affordability) or by comparing incomes to the supply of housing at prices that people in those income levels could afford. The most recently available data related to the first measure comes from the 2000 US Census. That data indicated that just over 26% of all homeowner households spent more than 30% of their incomes on housing, while about 39% of renter households did the same. These percentages likely have climbed since the year 2000, given increases in housing costs, particularly for owner-occupied housing during this period.

Table 7 compares household incomes to the supply of homes available at prices that those households could afford if they spent approximately 30% of their monthly income on housing costs. The table indicates that there is a significant gap between the residents' incomes and housing that is affordable to them for the very lowest income range (below $15,000) and a more moderate gap for people earning between $35,000 and $50,000. Households in some of the upper income ranges also have a shortage of (higher priced) housing available to them, meaning that they are likely buying or renting housing in lower price ranges which may result in gaps for people in lower income ranges.

Table 7. Comparison of Housing Incomes and Costs, Warrenton, 2006

Income	*Households*	*Affordable Monthly Housing Costs*	*Supply*			*Surplus/ -Gap*
			Owner housing	*Rental housing*	*Total*	
Less than $15,000	299	Less than $325	94	55	149	-150
$15,000 to $24,999	262	$325-$624	47	252	299	37
$25,000 to $34,999	190	$625-$874	114	155	269	79
$35,000 to $49,999	331	$875-$1249	211	63	274	-57
$50,000 to $74,999	389	$1250-$1874	378	19	397	8
$75,000 to $99,999	212	$1875-$2499	233	0	233	21
$100,000 to $149,999	115	$2500-$3749	77	0	77	-38
$150,000 to $199,999	30	$3750-$4999	38	0	38	8
$200,000 and more	32	$5000 or more	11	0	11	-21

This analysis indicates a need for more units in the very lowest price ranges as well as more units affordable to households with moderate incomes (just above and below Warrenton's median household income).

Section 3.250 Projection of Future Households and Housing Units

As noted previously, the number of future housing units needed and built in Warrenton will be affected not only by the projected increase in population but also by the future vacancy and seasonal home occupancy rates.

At less than 5%, Warrenton has a very low seasonal occupancy rate in comparison to other coastal communities. There have been no future projections of changes in seasonal occupancy rates for Warrenton or the North Coast area published by public agencies or private firms. Some information is available about national trends for the second home market, including the following observations and predictions:

- Approximately one in six owners of second homes have purchased their second homes for retirement.

- The typical current second home owner is in his or her early 60s, with an annual household income of $76,000.

- The baby-boomer population, many of whom are nearing retirement age, own a large share of existing second homes. On average, future second-home buyers are expected to be younger.

- While many second home owners move into these homes full-time after retirement, a large percentage of coastal second-home owners eventually return to larger urban areas where they are closer to health and other support services.

- The second home market has expanded significantly in the Astoria area in the last several years.

- Most project advisory committee members predict that the seasonal occupancy rate in continue to increase over the next 20 years.

Taking the above factors into account, for the purposes of this analysis, the seasonal occupancy is projected to decrease slightly over the next 20 years from 3.5% to 7%. Average household sizes are expected to decrease slightly from 2.45 to 2.35 persons per household.

Warrenton's population is expected to increase by approximately 1.8% per year over the next 20 years, generally consistent with growth rates during the last 15 years. Table 7 summarizes historical and projected future population, assuming an updated current (2006 population estimate) and the future growth rate assumed in the coordinated county city forecasts. It also accounts for population within the entire UGB as described above. The number of housing units is projected to grow by a slightly higher rate, similar to trends experienced during the last several years in Warrenton and other coastal communities. This is projected to result in an increase of 1,147 housing units between 2006 and 2027.

Table 8. Historical and Projected Future Population, Households and Housing Units, 1990 - 2027

	1990	2000	2006	2017	2027
Population	3,292	4,096	4,503	5449	6,481
Households	1,281	1,621	1,838	2,270	2,758
Housing Units	1,189	1,799	2,025	2,561	3,172
Vacancy Rate	7.2%	9.9%	10.2%	12.8%	15%

Section 3.260 Future Needed Housing Types

The following trends are expected to affect the need for different types of housing:

- Increasing cost of land and housing in coastal and other communities throughout Oregon.
- Relatively modest increases in wages, consistent with trends during the last ten years.
- Continued need for relatively low cost housing for households and families with lower incomes, including workers in the retail/tourism sector.
- Continued expansion of the second home market in coastal communities such as Warrenton but with a lower seasonal occupancy rate than other coastal communities.
- Continued need for some manufactured housing as a potential supply of low-cost, workforce housing, although with a decreasing supply of this type of housing consistent with recent trends and a concurrent increase in the share of other relatively affordable housing types (see below).
- Potential increase in need and market for multi-family and single-family attached housing as a potential supply of low and moderate cost housing.

These factors and conditions are expected to have the following impacts on the need for different types of housing in Warrenton:

- Continued need for some manufactured housing as a potential supply of low-cost, workforce housing.
- Increased need for multi-family and single-family attached housing as a potential supply of low and moderate cost housing.
- Decreasing size of lots in comparison to recent trends as land and housing prices rise.

The following table identifies current and projected percentages and numbers of homes by housing type in Warrenton.

Table 9. Existing and Projected Future Housing Units by Type, 2006 - 2027

Unit Type	Housing Units			
	2006		2027	
	Number	*Percent*	*Number*	*Percent*
1 Unit Detached	1,260	62.2%	1,729	54.5%
1 Unit Attached*	73	3.6%	190	6.0%
Duplexes	30	1.5%	111	3.5%
Triplexes, four-plexes	87	4.3%	159	5.0%
5 or more units	298	14.7%	539	17.0%
Manufactured Home	279	13.8%	444	14.0%
Total Units	**2,025**		**3,172**	

Source: US Census and Cogan Owens Cogan

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

Section 3.270 Future Land Needs

The amount of land needed for future housing depends on the number of housing units expected and the average density (or lot size) at which they are developed. State regulations require that the City estimate the amount of land needed in each zoning designation where housing is allowed. In Warrenton, housing can be constructed in several residential (R-1) and commercial (C-1) zones. Currently, housing is generally distributed among these zones as follows:

- Most existing housing is located in the R-10 and R-M zones.
- The next largest share of housing is located in the RGM and R-40 zones; a modest amount is located in the C-1, C-MU and A-1 zones.

Similar trends are expected in the future. The following distribution among zones is expected:

- A modest amount of new single-family detached housing is expected to be located in the R-40 and R-H, with larger amounts in the R-1- and R-M zones.
- Single-family attached housing will be located R-M, R-H C-1 and C-MU zones. This may include some mixed (residential/commercial) use development in the C-MU zone.

- Duplexes will be located primarily in the R-M and R-H zones, with small percentages in the two commercial zones.
- Multi-family housing will be located primarily in the R-H zone, with smaller amounts in the C-1 and C-MU zones.
- Manufactured homes in parks will continue to be located in the R-M zone. Manufactured homes on individual lots will be located in a variety of residential zones.
- The RGM zone provides a supply of longer-term future land, which will be developed primarily for single-family detached housing, duplexes and possibly some single-family attached housing. Ultimately it is expected to be zoned as R-10 but some may be needed as R-M land.
- Over the long term, R-40 land is expected to be served by public facilities and developable at densities allowed for such areas (R-10 equivalent density).

The following two tables summarize the projected distribution and average density of future development by housing type and city zoning designation based on the assumptions above. As noted above, it reflects the assumptions above and should be considered a projection. It does not require a certain distribution among different zones or preclude a different percentage or number of housing units be built in any given zone or area, assuming there is adequate land to accommodate them.

Table 10. Projected Distribution of Future Housing Units by Housing Type and Zoning Designation, 2027

Housing Type	R-40	R-10	R-M	R-H	C-1	C-MU
1 Unit Detached	5%	44%	44%	5%	2%	0%
1 Unit Attached*	0%	0%	20%	50%	20%	10%
Duplexes	0%	0%	40%	50%	5%	5%
Triplexes, four-plexes	0%	0%	0%	90%	5%	5%
5 or more units	0%	0%	0%	90%	5%	5%
Manufactured Home	10%	45%	45%	0%	0%	0%

Source: Cogan Owens Cogan

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

Table 11. Projected Average Lot Size for Development by Zoning Designation and Housing Type, 2027

Housing Type	R-40	R-10	R-M	R-H	C-1	C-MU
1 Unit Detached	40,000	10,000	8,000	5,000	5,000	5,000
1 Unit Attached*			2,500	2,500	2,500	2,500
Duplexes			2,500	3,500	3,500	3,500
Triplexes, four-plexes				3,300	3,300	3,300
5 or more units				2,400	2,400	2,400
Manufactured Home	40,000	10,000	7,000	5,000	5,000	5,000

Source: Cogan Owens Cogan

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

Tables 12 and 13 indicate the number of new housing units and amount of land needed for each type of housing in each zoning designation. Average densities in housing units per acre are shown as "net densities," i.e., not including land needed for roads and other public services because such areas already have been subtracted from the supply of buildable land.

Table 12. Projected Total Future Housing Units and Acres of Land Needed by Housing Type and Zoning Designation, R-40, R-10 and R-M zones, 2027

Housing Type	R-40		R-10		R-M	
	Percent	*Number*	*Percent*	*Number*	*Percent*	*Acres*
1 Unit Detached	23	21.6	206	48.4	206	38.7
1 Unit Attached*	0		0		23	1.4
Duplexes	0		0		32	
Triplexes, four-plexes	0		0		0	
5 or more units	0		0		0	
Manufactured Home	17	16.0	74	17.4	74	12.2
Total	***40***	***37.6***	***280***	***65.8***	***335***	***52.3***

Source: Cogan Owens Cogan

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

Table 13. Projected Total Future Housing Units and Acres of Land Needed Designation, R-H, C-1 and C-MU zones, 2027

Housing Type	R-H		C-1		C-MU	
	Percent	*Acres*	*Number*	*Acres*	*Percent*	*Acres*
1 Unit Detached	23	2.7	9	1.1	0	0.0
1 Unit Attached*	59	3.5	23	1.4	12	0.7
Duplexes	41	3.4	4	0.3	4	0.3
Triplexes, four-plexes	65	5.0	4	0.3	4	0.3
5 or more units	217	12.2	12	0.7	12	0.7
Manufactured Home	0	0.0	0	0.0	0	0.0
Total	***405***	***26.8***	***52***	***3.7***	***32***	***2.0***

Source: Cogan Owens Cogan

* This is the Census term for single-family attached housing (e.g., townhouses or rowhouses)

The following table summarizes the difference between the supply of buildable land and the amount of land needed in each zone to meet these future land needs. There appears to be an overall surplus of residential land of over 277 acres. A portion of this land will be used for commercial purposes. However, even after taking most of the commercially zoned land out of the inventory, there still would be an overall surplus of land available for residential development.

Table 14. Comparison Between Land Supply and Need by Zoning Designation, 2027

	Supply	Need	Gap
R-40	61.5	37.6	23.9
R-10	167.2	65.8	101.4
R-M	21.7	52.3	-30.6
R-H	83.3	26.8	56.5
RGM	58.1		58.1
C-1	73.3	3.7	69.5
C-MU	0.3	2.0	-1.8
Total	***465.3***	***188.3***	***277.0***

Source: Cogan Owens Cogan

Project advisory committee members noted that some areas currently designated as wetlands would not necessarily meet the definition of wetlands if an official wetland delineation of those properties were undertaken. Approximately 1,130 acres of land designated for residential use in the city are covered by significant wetlands. If there were fewer areas with wetlands in Warrenton the surplus of buildable lands would be

even larger. For example, if 20% of the lands currently designated as wetlands were in fact considered buildable, approximately 225 additional acres of land would be available for residential development. After deducting for land needed for roads and other public facilities, this would result in about 180 net acres of land, or almost double the surplus currently calculated.

Section 3.280 Conclusions

Following is a brief summary of conclusions.

- The analysis indicates a significant surplus of land overall within Warrenton's UGB and the ability to accommodate growth during a 20-year period within expanding the city's UGB or relying on land within adjacent cities urban areas to accommodate needs projected in Warrenton.
- The analysis shows a surplus in most individual plan designations, with the exception of RM and C-MU zones. This could be remedied by rezoning some C-1 land to C-MU and by zoning land in any of a number of residential zones (e.g., R-10, RGM or R-40) to RM. Or more land in one of these other zones could be assumed to be developed for single family detached housing (and less land in the RM zone).
- The needs analysis generally identifies a significant gap between incomes and housing prices with a shortage of housing for households with very low incomes (under $15,000) and a moderate gap for those in the $35,000 to $50,000 household income range. There also is a smaller gap in some of the upper income categories, while there is a surplus of housing affordable to households in other income ranges.
- There is a need for additional multi-family units and some other types of units that are potentially more affordable to those with lower or moderate incomes, including duplexes, tri-plexes and single family detached homes (i.e., townhouses). The land needs analysis incorporates this finding.
- The housing market cannot be expected to meet the projected housing needs of Warrenton residents alone, particularly for people with very low incomes. A variety of strategies can be implemented by the City in partnership with non-profit and for-profit developers and others to encourage the development of housing in price ranges and types that would be affordable to a wider range of residents. Many of those strategies are identified in the following *Proposed Housing Policies* section.

Section 3.290 Goals

Achieve efficient and well-integrated development patterns that meet the needs of residents and property owners with a variety of incomes and housing needs, are compatible with natural features, and are consistent with the City's ability to provide adequate services.

SECTION 3.300 POLICIES

Section 3.310 Residential Lands

(1) It is the City's policy to encourage the development of housing needed to accommodate desired growth, and to provide every Warrenton household with the opportunity to obtain a decent home in a suitable neighborhood. Residential construction shall occur primarily in the following four types of areas:

(a) The High Density Residential zone is intended to encourage the development of duplexes and other multi-family dwellings. It provides for high density uses in locations close to the downtown area or other locations which have suitable streets, utilities and other characteristics. Certain non-residential uses are allowed if they will not detract from the character of this district. Land in the Hammond area that was in the Town's R-H zone has been placed in this zone.

(b) The Medium Density Residential Zone is intended to accommodate a variety of housing types including single-family dwellings, duplexes and, where appropriate, manufactured dwelling subdivisions and manufactured dwelling parks. This intensity of residential use is envisioned for locations in the City where community services and adequate access are available. Residential densities permitted are somewhat greater than those permitted in an R-10 zone. Certain public facilities and other non-residential uses are also permitted when desirable conditions and safeguards are satisfied. Those lands in the Hammond area that were in the Hammond R-6 zone have been placed in this zone.

(c) The purpose of the Intermediate Density Residential Zone is to provide areas within the City which have the capacity to accommodate single-family dwellings in conventional subdivisions or planned unit developments. These areas are intended for service by municipal utilities and urban type street systems, and, consequently, the residents must be willing to support the costs associated with this density of development. Certain public facilities and other non-residential uses are permitted when desirable conditions and safeguards are satisfied. This zone includes those areas in Hammond that were in Hammond's Low Density Residential Zone (R-10).

(d) The Low Density Residential Zone is intended for areas which are physically isolated from the developed portions of the City, and for which extension of sewer and water services would be prohibitively expensive. Lands in this zone must be able to support development with on-site sewage disposal

systems, and comply with all local, state and federal requirements. Agriculture, open space and residential uses will be permitted in this zone subject to wetlands, weak foundation soils, and active dune constraints.

(2) Residential densities in each zone will vary with the type of development and the characteristics of the site and surrounding area.

(3) New housing developments with four or more dwelling units which carry out particular functions considered beneficial to the community may be allowed to have higher residential densities than permitted for otherwise comparable developments. Functions which qualify include those which the City believes will cluster development in a sound manner or promote energy conservation.

(4) Planned unit developments will be permitted in a special overlay zoning district intended to provide for developments incorporating a single type or variety of housing types and related uses which are planned and evolve as a unit. The purpose of this district is to provide a more desirable environment through application of flexible and diversified land development standards in an overall site development plan approved by the City. Commonly-owned land and facilities may be allowed. Planned unit developments will be encouraged on tracts large enough to accommodate ten or more dwellings.

(5) New multifamily residential dwellings may be allowed in a planned unit development if otherwise allowed in the base zone.

(6) New single family attached, multifamily, and mixed use housing may be allowed in some of the City's commercial zones. Residential densities in these commercial zones may not exceed those in a High-Density Residential district.

(7) Manufactured dwellings used for residential purposes will be permitted in manufactured dwelling parks or special subdivisions that meet appropriate standards, such as screening and street access requirements. Manufactured dwellings shall also be allowed on individual lots in some of the City's residential zone as permitted uses, subject to standards.

(8) Residential developers will generally be responsible for providing streets, utilities, storm drainage facilities and other improvements necessary for the development of a housing site. Some of these responsibilities are discussed further in the Public Facilities and Services, Transportation and Natural Features sections of this Plan.

(9) The City supports the efforts of the Northwest Oregon Housing Association, U.S. Department of Agriculture and other organizations to make funds available for rehabilitation or winterization of local housing. Consideration will be given to adopting a housing code to help insure that this and other housing is kept up to minimum standards.

(10) The City shall encourage establishment of a system which would make it possible for every jurisdiction in the County to get its fair share of subsidized housing. In connection with this activity, the City shall support efforts of developers, non-profit groups, public agencies and others to evaluate the desirability of public lands in the County for subsidized housing and, when feasible, to make use of sites appropriate for this purpose.

(11) The City will zone adequate land to meet identified future housing needs for a broad range of housing types, including single-family attached and detached homes, manufactured homes, duplexes and multi-family dwellings.

(12) The City will encourage the use of sustainable development and building materials including use of energy efficient materials and design principles.

(13) The City will ensure compliance with federal and state fair housing laws, which affirm access to housing opportunities for all people in Warrenton.

Section 3.310.1 Strategies

(1) Help identify opportunities for builders and developers to consolidate buildable land to promote more efficient development.

(2) Regularly update the City's inventory of buildable land (at least every five years) and use it to both identify housing development opportunities and assess the ability to meet future housing needs. If growth is occurring at a faster rate than previously predicted, work with the County to update the county's coordinated population forecast and the City's housing needs analysis.

(3) Discourage development within the R-40 zone until services have been provided in those areas and land has been rezoned to urban densities (e.g., R-10 or RM).

(4) Provide water and sewer services to land designated as R-40 to allow for urban level development.

(5) Rezone R-10 land as needed in the future to meet the need for multi-family housing types and/or single-family residential housing on smaller lots as needed based on housing market conditions and updated housing needs analyses.

(6) Work with the development community to ensure creation of new housing that meets identified future needs.

(7) Monitor pubic facility capacity to ensure that proposed new residential developments can be adequately served by water, sewer, transportation, drainage and other public facilities.

(8) Consider passing an ordinance requiring replacement of affordable housing in conjunction with closure of manufactured home parks.

(9) Support statewide efforts to allow for inclusionary housing and affordable housing funding mechanisms currently prohibited or not allowed by state law, such as real estate transfer taxes or "flipping fees."

(10) Consider waiving or deferring city fees such as development fees or system development charges for affordable housing projects that meet defined criteria and result in permanently affordable housing.

(11) Support mechanisms and organizations that help reduce the cost of or leverage other monies to develop affordable housing such as community land trust, housing trust funds or similar entities.

(12) Consider the use of density bonuses or other incentives to encourage the development of affordable housing.

(13) Work with other public agencies and/or other organizations to provide or assist in paying for technical assistance for housing projects targeted to households with low or moderate incomes developed by nonprofit organizations.

(14) Work with state and federal agencies, and other organizations to acquire and bank vacant or underutilized properties, including urban reserve lands, for the future development of housing affordable to households with low and very low incomes.

(15) Negotiate agreements to develop housing affordable to residents with low or moderate incomes on lands to be annexed.

(16) Advocate for national and state funding from the National Housing Trust Fund, Oregon Housing Trust Fund, and Lenders Tax Credit.

(17) Encourage and facilitate Transfer of Development Rights (TDR) transactions to preserve agricultural, natural resource and open space lands and promote efficient development.

Section 3.320 Commercial Lands

(1) It is the City's policy to promote convenient and attractive commercial areas that, along with other commercial facilities in the County, provide an adequate level of trade and services for local citizens, other County residents and tourists. Commercial enterprises may be permitted in these three kinds of areas.

(a) The Marine Commercial Shorelands Zone is reserved for water-dependent developments and associated uses on shorelands adjoining certain portions of the Skipanon waterway. A mixture of water-dependent uses are allowed, including commercial service and storage, and recreation-oriented uses. Marine Commercial Shoreland areas have unique characteristics that make them especially suited for water-dependent development. Characteristics that contribute to suitability for water-dependent development include:

(i) Deep water close to shore with supporting land transportation facilities suitable for ship and barge facilities;

(ii) Potential for aquaculture;

(iii) Protected areas subject to scour which would require little dredging for use as marinas;

(iv) Potential for recreational utilization of coastal waters or riparian resources.

(b) The purpose of the Recreational - Commercial zone is to provide for water-dependent and water-related development along certain shorelands in Warrenton near the Hammond Marina and the Skipanon River marinas. Water-dependent recreational and tourist-related commercial development have the highest priority in the Recreational-Commercial zone. Other uses may be allowed so long as they do not pre-empt water-dependent uses. Lands in the Town of Hammond's C-2 zone are in this zone.

(c) The purpose of the General Commercial Zone is to allow a broad range of commercial uses providing products and services in the downtown area, the Hammond business district, and along the highway 101 corridor.

(d) The purpose of the Mixed Use Commercial Zone is to strengthen certain established residential areas having frontage on state highways as transition areas between commercial centers and outlying residential areas. The District is intended to support this goal through elements of design and appropriate mixed-use development. Mixed-use development features design standards that allow residential and commercial uses to occur simultaneously on the same lot.

(e) The purpose of the Urban Recreation/Resort Zone is to control development on certain shoreland areas designated Other Urban Shorelands in the Comprehensive Plan. This zone is appropriate for large tracts of land suitable for development of golf courses and other uses listed in the zone.

(2) Precautions will be taken to minimize traffic congestion associated with nearby commercial uses, particularly on U.S. Highway 101, Main Avenue, East Harbor Drive, Neptune Drive and Marlin Avenue. Groupings of businesses, common access points and other appropriate techniques will be encouraged. Sufficient parking on either jointly-used lots or individual business sites will be required for new commercial developments.

(3) A new regional shopping center or large regional stores are a permitted use in the General Commercial district near U.S. Highway 101 or East Harbor Drive, if the development will enhance market choices available to consumers and improve the local economy through retail diversity and attraction of new businesses. Adequate attention must also be given to the size, shape and location of the site; the organization of the shopping center facilities; access points, on-site traffic circulation; parking and loading space; and landscaping and sign installation.

(4) If the City determines that more land is needed in the General Commercial district, consideration will be given to including an area west of S.E. Marlin Avenue, north of U.S. Highway 101, east of the right-of-way for S.E. King Avenue and South of the right-of-way for S.E. Seventh Street.

(5) The City supports the efforts to develop a regional shopping district adjacent to U.S. Highway 101. The City finds that such a development would strengthen the local economy, attract new businesses to Warrenton and increase the diversity of retail commercial uses available to Clatsop County residents.

Section 3.330 Industrial Lands

(1) It is the City's policy to support the establishment of a variety of well-designed industrial facilities in appropriate locations in order to expand employment opportunities, make use of land best suited for industry, increase the local tax base and insure a stable economy. Industrial development shall take place in the following areas:

(a) The purpose of the General Industrial Zone is to provide sites for light, heavy, and airport-related industrial activities in the City of Warrenton. These areas are suitable for uses involving manufacturing, fabrication, processing, trans-shipment and bulk storage. General Industrial areas are near or adjacent to arterial transportation corridors.

(b) Water-Dependent Industrial Shoreland areas have unique characteristics that make them especially suited for water-dependent development. Characteristics that contribute to suitability for water-dependent development include:

(i) deep water close to shore with supporting land transportation facilities suitable for ship and barge facilities;

(ii) potential for aquaculture;

(iii) protected areas subject to scour which would require little dredging for use as marinas;

(iv) potential for recreational utilization of coastal waters or riparian resources.

Uses of Water-Dependent Industrial Shorelands areas shall maintain the integrity of the estuary and coastal waters. Water-dependent uses receive highest priority, followed by water-related uses. Uses which are not water-dependent or water-related are provided for, but only when they do not foreclose options for future higher priority uses and do not limit the potential for more intensive uses of the area.

(2) Appropriate industrial, commercial and other uses are allowed to occur in the Aquatic Development Zone (A-1). Waters in these locations may be used more intensively than those in a Conservation or Natural zone. Marinas, port facilities, aquaculture and other water-dependent development facilities are the primary uses which are permitted with standards or allowed as a conditional use. Piers, secured floats, dredging and filling are acceptable when adequately justified.

(3) Some industrial uses may also be allowed in other types of zones, primarily commercial districts. For example, boat building and seafood processing are permitted with suitable conditions in a Marine Commercial Zone. Printing firms may locate in General Commercial areas.

(4) Any industrial development exempt from taxation under ORS 307.120, Chapter 705, Oregon Laws 1979, or similar statutes as now or may hereinafter be enacted shall not be allowed unless specifically authorized. Any applicant must prove that no need for additional public services will directly or indirectly result from the industrial development which will cause a burden on or tax shift to other local taxpayers. Payments or other considerations to affected local public agencies may be made by applicant or others in lieu of taxes to offset any revenue deficit.

Section 3.340 Agriculture, Forestry, Wetlands and Open Space

(1) Open Space: It is the City's policy to encourage efficient urban development, protect environmentally sensitive areas, and otherwise benefit the public by setting aside appropriate locations for open space, agriculture and forestry. Rural development and conservation areas or zones, described elsewhere in this plan, include important open-space tracts, such as portions of Fort Stevens State Park. Cluster development, appropriate landscaping and other efforts to preserve open space are encouraged in urban development areas. The extensive estuarine areas within the City limits and UGB are a significant open space resource.

(2) Agriculture: Agricultural operations are permitted in Rural Development and Conservation areas. Large tracts of land in Urban Development areas also may be used for these purposes. A major concern is avoiding nuisances to nearby property used for urban purposes.

(3) Forestry: Forestry operations are permitted in Rural Development and Conservation areas. Large tracts of land in Urban Development areas also may be used for these purposes. A major concern is avoiding nuisances to nearby property used for urban purposes.

(4) Wetlands: The City is preparing a Wetland Conservation Plan to guide management of the extensive areas of non-tidal wetlands in the City and UGB area. Tidal wetlands are addressed in Article 5 of this Plan.

(5) The purpose of the Open Space & Institutional zone is to provide for development, use and management of parks, school grounds, golf courses, cemeteries and other relatively large tracts of publicly-used land.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 4
NATURAL FEATURES

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 4 NATURAL FEATURES

SECTION 4.100 FINDINGS

Concern for natural features is important for the future of Warrenton. The purpose of this part of the Comprehensive Plan is to indicate what actions should be taken to reflect this concern. The *Major Natural Features Areas* map shows the location of the City's estuary waters and wetlands, estuary shorelands, and beach and dune shorelands.

Natural features in Warrenton and nearby areas provide the City with a variety of opportunities for development. Opportunities for port and industrial growth are created by the availability of large amounts of relatively flat land and accessibility to deep water portions of the Columbia River Estuary, productive fish habitat and valuable timber resources.

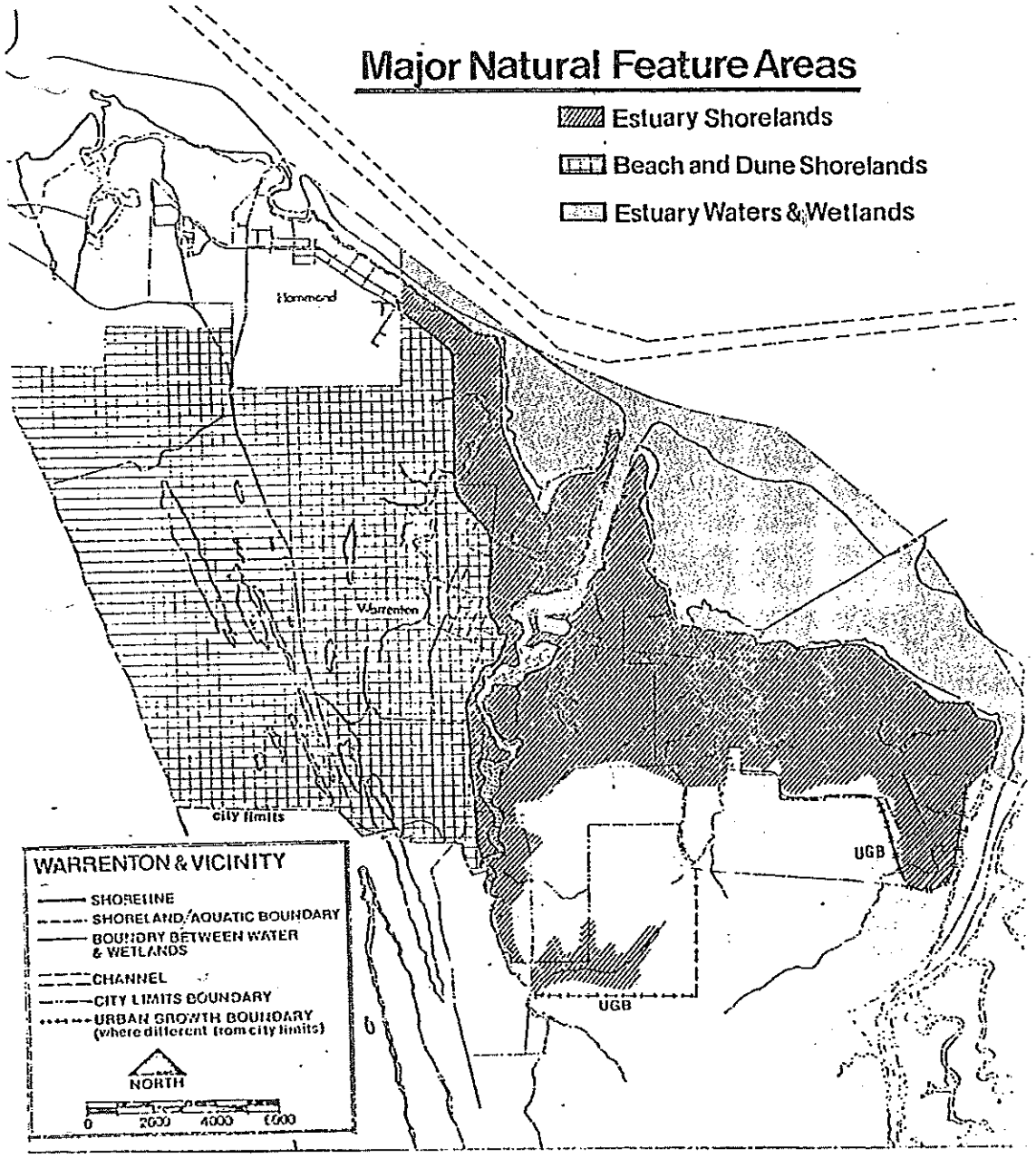
Because of its close proximity to the Columbia River bar and the fact that deep draft vessels can arrive within the City limits on one tide after crossing the bar, water-dependent development sites within the City are uniquely situated to provide facilities for the handling of bulk commodities for the entire Columbia River basin and the western United States. The potential for commercial, recreational and residential expansion exists due to the City's industrial growth prospects and to the scenic and recreational attractions in the area, such as the Columbia River waterfront, the Pacific Ocean and adjoining dune areas, and the Skipanon River marina facilities. These factors, plus other geographical advantages and the availability of public facilities and services, make Warrenton a prime area for development within the region.

There are a number of obstacles which could endanger people and their property and could diminish the broad range of natural resources that benefit the City. Potential hazards to people and property in the area can result from occasional flooding, compressible soils, a high water table, wind and water erosion, steep slopes and other local features. Damage to or destruction of important natural resources can occur because of various actions including discharging large amounts of wastes in surface and subsurface waters, unnecessary or improper dredging and filling, inadequate grading and drainage techniques, removal of needed vegetation, construction in valuable fish and wildlife habitats, and air pollution.

This section establishes goals and policies protecting many of the City's natural features, including those protected by Statewide Planning Goal 5: open spaces, scenic and historic areas, and natural resources. Additional background information on Warrenton's Goal 5 resources is in the Goal 5 section of the *Warrenton Comprehensive Plan Background Report.* This section addresses some natural hazards in Warrenton, such as flood hazards and compressible soils, covered by Statewide Planning Goal 7. Goal 6 resources (air, water and land resources) are also addressed.

OAR 660-023-0024 (2) establishes that the requirements of Statewide Planning Goal 16 and 17 supersede the requirements of Statewide Planning Goal 5 for natural resources also subject to and regulated by those goals. As a result, whether and under what circumstances development may impact wetlands and riparian corridors in estuarine and coastal shoreland areas is governed by the policies implementing Goals 16 and 17 rather than the City's adopted Goal 5 implementation program.

Wetlands and riparian corridors are important to the citizens of Warrenton as natural resources. To ensure that this goal is attainable, wetland and riparian corridor mitigation, restoration creation and enhancement shall be allowed in all zoning district where practicable.


Major Natural Feature Areas
Estuary Shorelands
Beach and Dune Shorelands
Estuary Waters & Wetlands
Hammond
Warrenton
city limits
UGB
UGB
WARRENTON & VICINITY
SHORELINE
SHORELAND/AQUATIC BOUNDARY
BOUNDRY BETWEEN WATER & WETLANDS
CHANNEL
CITY LIMITS BOUNDARY
URBAN GROWTH BOUNDARY (where different from city limits)
NORTH
0
2000
4000
6000

SECTION 4.200 GOALS

(1) Protect, conserve, develop where suitable and appropriate, and restore Warrenton's land, water, and air resources.

(2) Recognize the value of these resources for specific types of urban uses and activities, the economy, fish and wildlife habitat, recreation and aesthetics.

(3) Reduce the hazard to human life and property and the adverse affects on natural resources resulting from the use of land, water and air in the Warrenton area.

SECTION 4.300 POLICIES

Section 4.310 Soils

(1) Hazards resulting from poor soils shall be minimized by using sound soils data and engineering principles to determine public and private development techniques and by requiring those developing property, when appropriate, to assume responsibility for certain hazard-related costs.

(2) Prior to approval of a subdivision or issuance of a building permit, the City may require an on-site soil survey when it is believed construction on the site may be hazardous to facilities on the parcel or to nearby property due to the load-bearing capacity of the soil, the potential for wind or water erosion, or the wetness or slope characteristics of the soil. In locations shown to have soils which tend to cause problems for development, the City may require the following from the developer before approving a development: (a) a report prepared by an expert showing how difficulties will be minimized, (b) a performance bond assuring that any adverse effects which do occur will be corrected, and (c) reasonable fees for review costs.

(3) On-site soil surveys will be required before approving new structures proposed for areas which have Braillier or Bergsvik soils (these are highly-compressible soils), according to the *Soil Survey of Clatsop County* prepared by the Soil Conservation Service, February 1988. If an on-site soil survey indicates that significant amounts of these soils are in locations which are desired for development, a report indicating techniques to be used to minimize problems will be mandatory. A similar approach may be used by the City Engineer before issuing permits for construction of large scale commercial, industrial, governmental or multifamily residential developments on areas of Coquille variant silt loam and Coquille-Clatsop complex soils.

(4) Soils information indicates that certain types of soil within the City of Warrenton may cause corrosive action to foundations and pipes. The *Soil Survey of Clatsop County* or an adequate on-site soil survey will be needed to determine where such soils exist. Corrosion-resistant materials may be required for foundations or underground pipes in large-scale developments in these areas.

Section 4.320 Flood Hazards

(1) Public and private losses due to flood conditions shall be reduced by requiring buildings in flood hazard areas to be properly elevated or flood-proofed and by undertaking other measures necessary to avoid hazardous situations.

(2) A flood hazard permit will be required for all types of development, including dredging and filling, in areas of special flood hazards identified by Federal Emergency Management Agency's (FEMA) Federal Insurance Rate Maps (FIRM). The FIRM maps were originally dated May 15, 1978 (as amended) and have been updated in March 2010 by FEMA.

(3) Standards will be used in special flood hazard areas, which assure that:

(a) all building construction is elevated or floodproofed to the base flood level;

(b) all new construction and substantial improvements shall be anchored;

(c) all new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage;

(d) new or replacement of utility systems are designed to preclude flood loss; and

(e) other measures necessary to avoid flood hazards are undertaken.

(4) The City will work to maintain and improve the system of dikes, which help prevent flooding in Warrenton, including possible construction of new pump stations and more efficient tidegates.

Section 4.330 Drainage and Erosion

(1) Runoff and water erosion shall be controlled by requiring sound management practices in proposed subdivisions and large-scale commercial developments and by preparing and implementing a comprehensive stormwater drainage study.

(2) The City will continue to improve its storm drainage system.

(3) All proposed subdivisions and large-scale commercial developments must submit an engineered stormwater plan with construction plans. The plan shall meet the stormwater requirements in Chapter 3.6 of the City's Development Code.

(4) Drainage plans shall include provisions needed to control water erosion associated with construction. Control with vegetation, particularly with plants already on the site, should be stressed. Grade stabilization structures, debris basins, energy dissipators or other facilities may also be required.

Section 4.340 Topography

(1) The City supports use of development techniques which maintain the natural topography, appropriately control grading and excavation, and reduce slope-related problems.

(2) Engineering practices which limit changes in the natural topography to the least amount necessary to build the desired development and achieve various objectives of this part of the Comprehensive Plan are encouraged.

(3) A site study, showing how drainage, erosion and other potential slope-related problems will be minimized, may be required by the City for construction requiring a building permit which is proposed for slopes of 10% or more. This study must be prepared by a qualified individual, approved by the City and used in the development of the site.

(4) The City will require sites used for the commercial excavation of sand and other resources to use methods which protect nearby property and residents, including limiting slopes to less than 65% on the sides of excavation pits. These sites shall eventually be restored by grading, vegetation and other means so that the parcel will be usable for other purposes.

(5) The City will consider adopting Chapter 70 of the Uniform Building Code to control grading and excavation.

Section 4.350 Water Quality

(1) The City supports protection of water quality by responsibly managing and constructing various public facilities, adequately controlling private development practices and taking other actions to avoid water pollution.

(2) All buildings needing sanitary sewer service will be required to hook up to City sewer lines when they are on a parcel abutting a public right-of-way and are within 300 feet of an existing sewer line. Before a building permit is issued for new buildings which need sewer service, suitable evidence will be submitted showing they will be hooked up to a City sewer line or that a sewage disposal system meeting state and federal regulations will be used.

(3) Proposed subdivisions without adequate access to City sewer lines will be required to have lots with:

(a) building site soils suitable for the type of sewage disposal system which will be used, and

(b) enough land to meet state and federal standards for the system.

(4) The City will use environmentally sound techniques in the construction and operation of public water and sewer systems. Activities shall be coordinated with state and federal regulatory agencies. The City will work with these agencies, the County, Weyerhaeuser Industries and others to protect the quality of Warrenton's watershed.

(5) Warrenton will work with the County and other local governments to maintain the quality of groundwater resources. Activities will include efforts to monitor groundwater pollution and improve local, state and federal controls. Actions shall also be taken to avoid any detrimental draw-down of the groundwater supply.

(6) Efforts will be made to work with other governmental bodies to find a satisfactory long term solution to Clatsop County's solid waste disposal problem. The City will support efforts to increase opportunities for recycling.

(7) Local development and nuisance regulations shall be used to help control non-point sources of water pollution. For example, new developments with large paved areas for vehicular use may be required to eliminate excessive amounts of oil, gas or other chemicals from run-off waters. The City will also work with other governments to reduce non-point sources of pollution.

(8) The City will insure that the actions it takes are consistent with applicable state and federal water quality regulations.

(9) The City recognizes that Warrenton lies in a critical groundwater area and shall refuse to permit uses which the Department of Environmental Quality (DEQ) determines could pollute or adversely affect the aquifer. The City shall rely on the DEQ and/or other qualified experts to determine the impacts of proposed uses and to develop a program to protect the aquifer from damage.

Section 4.360 Air Quality and Noise

(1) It is the City's policy to preserve air quality and minimize noise through compliance with applicable state and federal regulations, use of additional local requirements and other means.

(2) Before building permits will be issued for large-scale, non-residential developments, suitable information shall be submitted which shows that the development will not violate state or federal air quality and noise regulations. When appropriate, such evidence may also be required before issuing building permits for uses which generate high levels of noise or substantial amounts of air pollution.

(3) Prior to approving new subdivisions or issuing a permit for construction of noise-sensitive non-residential buildings, the City may require use of buffers, noise barriers such as berms, walls or other methods to prevent or reduce noise problems. These methods shall be considered when a noise-generating use is located near a major road or a residential, conservation, scenic or outdoor recreation area. Other regulations, including provisions governing nuisances, shall also be used to help eliminate excessive noise and, to some extent, minimize air pollution.

(4) Persons proposing major development within the Port of Astoria Airport's 55 Ldn noise boundary will be notified of their location within an airport noise impact area.

(5) The City will work to develop a hazard overlay zone based on the Port of Astoria Airport noise contour projections. Efforts will be taken to control the future location of noise-sensitive uses within these areas where higher-than-normal noise levels can be expected.

Section 4.370 Fish and Wildlife

(1) The City supports maintenance of important fish and wildlife habitat by protecting vegetation along many water bodies, classifying suitable land and water locations as conservation areas and otherwise encouraging protection of valuable fish and wildlife habitat.

(2) Identified riparian vegetation along rivers, sloughs, coastal lakes and significant wetlands shall be maintained except where direct water access is required for water-dependent or water-related uses. Temporary removal of riparian vegetation due to construction practices or landscaping may be permitted subject to a revegetation plan approved by the City which specifies:

(a) temporary stabilization measures, and

(b) methods and timing for restoration of riparian vegetation.

(3) Fish and wildlife resources will be protected in part by including an extensive amount of local water area, including Alder Cove and Youngs Bay in "conservation aquatic" or "natural aquatic" zones. In addition, identified significant shoreland and wetland habitats will be included in a conservation category to protect these areas from uses inconsistent with the preservation of natural values.

(4) Owners of private property on which valuable habitat is located will be assisted in taking advantage of reduced property taxes for protecting such areas.

(5) Fishing and hunting will be allowed in accordance with state laws. The discharge of firearms for hunting shall only be permitted in appropriate undeveloped areas.

Section 4.380 Scenic and Historic Resources

(1) It is the City's policy to enhance the scenic quality of the area by requiring that adequate visual buffers, suitable landscape plans and other techniques be used in appropriate new developments; and to work with individuals to identify and protect important historical and archaeological sites.

(2) To maintain the scenic quality of the area, adequate visual buffers will be required for:

(a) new non-residential developments which are close to property zoned residential, conservation or natural,

(b) new industrial developments near commercially zoned land, and

(c) any new development abutting Ridge Road.

(3) Excessive sign sizes and numbers of signs shall be discouraged by Development Code regulations. Particular attention shall be given to achieving appropriate sign installation along water bodies, near major roads and in large-scale developments. Except for desirable publicly-owned signs, no new off-premise posting shall be allowed.

(4) In new subdivisions and large-scale developments, utility lines, including electricity, communications, street lighting and cable television, shall be required to be placed underground unless soils, topography or other conditions make underground installation unreasonable or impractical. Appurtenances and associated equipment such as surface-mounted transformers, pedestal-mounted terminal boxes and meter cabinets may be placed above ground.

(5) The City will review land use activities that may affect known archaeological sites. If it is determined that a land-use activity may affect the integrity of an archaeological site, the City shall consult with the State Historic Preservation Office on appropriate measures to preserve or protect the site and its contents. Indian cairns, graves and other significant archaeological resources uncovered during construction or excavation shall be preserved intact until a plan for their excavation or re-internment has been developed by the State Historic Preservation Office. Upon discovery of new archaeological sites, the City will address the requirements of Statewide Planning Goal 5 through a Comprehensive Plan amendment.

Section 4.390 Energy Conservation

(1) It is the City's policy to guide land development, land management, community facility improvements and transportation systems in a manner that maximizes the conservation of energy, based on sound economic principles.

(2) The City will provide sufficient buildable land for multi-family dwellings and, when appropriate, will provide residential density bonuses for actions which cluster development in a sound manner or otherwise promote energy conservation.

(3) Consideration will be given to the long-term energy costs of community facility improvements. Whenever possible the City shall use methods which minimize use of energy, such as aerobic sewage treatment lagoons and gravity sewer lines. Transportation systems shall also be designed to reduce unnecessary energy use.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 5
COLUMBIA RIVER ESTUARIES AND ESTUARY SHORELANDS

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 5 COLUMBIA RIVER ESTUARY AND ESTUARY SHORELANDS

SECTION 5.100 FINDINGS

A major portion of Warrenton consists of tidally influenced waters and wetlands, and adjacent shorelands. A brief overview of the Columbia River Estuary in Warrenton is provided here, along with a description of the regulatory environment influencing estuary development, and the City's approach toward managing uses and activities in and around the estuary.

Warrenton had about eleven miles of shoreline on the Columbia River Estuary prior to the merger in December 1991 with Hammond. The merger brings total Warrenton shoreline to about 13 miles. Estuary aquatic areas within Warrenton include development areas of regional economic significance, scenic areas, and natural areas. Much of Warrenton was once part of a large forested tidal swamp. It is now protected by flood control dikes. Most of the former forested swamp is now developed for commercial, residential and industrial uses.

The City regulates development in the estuary through the City Comprehensive Plan and Zoning Ordinance. Oregon establishes minimum standards for these local regulations through Statewide Planning Goal 16. Similarly, Statewide Planning Goal 17 sets minimum standards for local regulations on estuary shorelands. In the Columbia River Estuary, these two statewide planning goals are implemented through the *Columbia River Estuary Regional Management Plan*, prepared by CREST. Key elements of this Plan are adopted into Warrenton's Comprehensive Plan and Zoning Ordinance.

The City of Warrenton treats significant wetlands and riparian corridors that are located in the City's Goal 17 Shoreland zone as Goal 5 resources.

The management system for Columbia River Estuary aquatic areas and shorelands in Warrenton consists of land and water designations, policies, and implementing measures in the City's Zoning Ordinance. The land and water designations that follow are applied to Columbia River Estuary aquatic and shoreland areas as described in subarea descriptions (summarized below from the *Columbia River Estuary Regional Management Plan*), and as shown on the City's zoning map.

Natural Aquatic areas are designated to assure the protection of significant fish and wildlife habitats; of continued biological productivity within the estuary; and of scientific, research, and educational needs. These areas are managed to preserve natural resources in recognition of dynamic, natural, geological, and evolutionary processes. Natural Aquatic areas include all major tidal marshes, tide flats, and seagrass and algae beds. The designation is intended to preserve those aquatic natural resource systems existing relatively free of human influence. These areas are in the City's Natural Aquatic Zone (A-3).

Conservation Aquatic areas are designated for long-term uses of renewable resources that do not require major alterations of the estuary, except for the purpose of restoration. They are managed for the protection and conservation of the resources found in these areas. The Conservation Aquatic designation includes areas needed for the maintenance and enhancement of biological productivity, recreational resources, aesthetic features and aquaculture. The Conservation Aquatic designation includes areas that are smaller or of less biological importance than Natural Aquatic areas. Areas that are partially altered and adjacent to existing moderate intensity development which do not possess the resource characteristics of other aquatic areas are also included in this designation. These areas are in the City's Conservation Aquatic Zone (A-2).

Development Aquatic areas are designated to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses. The objective of the Development Aquatic designation is to ensure optimum utilization of appropriate aquatic areas by providing for intensive development. Such areas include deep-water adjacent to or near the shoreline, navigation channels, subtidal areas for in-water disposal of dredged material, areas of minimal biological significance needed for uses requiring alteration of the estuary, and areas that are not in Conservation or Natural designations. These areas are in the City's Development Aquatic Zone (A-1).

Rural Shoreland areas are designated to protect agricultural land from urban expansion; to restrict development along undeveloped shorelines; to function as a buffer between urban areas; and to maintain open spaces and opportunities for recreational uses. Shorelands in the Rural Shoreland designation include agricultural and recreational areas, low density residential areas and areas where public facilities are generally not fully available.

Development Shoreland areas are designated to provide for water-related and water-dependent development along the estuary's shoreline. Development Shoreland areas include urban or developed shorelands with little or no natural resource value, and shorelands with existing water-dependent or water-related uses. These areas are in the City's Recreational-Commercial Zone (R-C).

Water-Dependent Development Shoreland areas have unique characteristics that make them especially suited for water-dependent development. Characteristics that contribute to suitability for water-dependent development include:

(1) Deep water close to shore with supporting land transportation facilities suitable for ship and barge facilities;

(2) Potential for aquaculture;

(3) Protected areas subject to scour which would require little dredging for use as marinas;

(4) Potential for recreational utilization of coastal waters or riparian resources.

These areas are managed for water-dependent recreational, commercial and industrial uses. These areas are in the City's Marine Commercial Zone (C-2), and Water-Dependent Industrial Zone (I-2). An inventory of these sites is included in Section 5.301 (Table 1 and Table 2).

Section 5.110 Estuary Channels Subarea Findings

(1) General Description - This subarea includes the deep water portions of the estuary from Jetty A (RM 3) to the upper end of Rice Island (RM 22.5). The subarea contains the authorized navigation channel. The subarea boundary generally follows the 20-foot bathymetric contour; however, it varies from this contour in the vicinity of cities and other subareas containing deep channels. There are no intertidal wetland or shoreland areas. Portions of Clatsop, Pacific and Wahkiakum Counties, and Astoria and Warrenton are within this subarea. The Warrenton portion comprises only a small portion of this 16,500 acre subarea.

(2) Aquatic Designations - All aquatic areas in the Estuary Channels Subarea in Warrenton are designated Conservation except:

(a) The main navigational channel and a flowlane disposal area on each side of the channel (either 600 feet wide or extending to the 20 foot bathymetric contour, whichever is narrower) is designated Aquatic Development.

(b) Dredged material disposal sites CC-E-8.5 and CC-E-21.0, listed in the *Columbia River Estuary Dredged Material Management Plan*, are designated Aquatic Development.

Section 5.120 Tansy Point/Alder Cove Subarea Findings

(1) General Description - This subarea includes aquatic areas in Alder Cove and the Columbia River out to the pierhead line, and shorelands between the waterward extension of Railroad Drive (the old Warrenton/Hammond boundary) and the mouth of Alder Creek. This subarea contains about 600 acres of both shorelands and aquatic areas within the City of Warrenton.

(2) Aquatic and Shoreland Designations

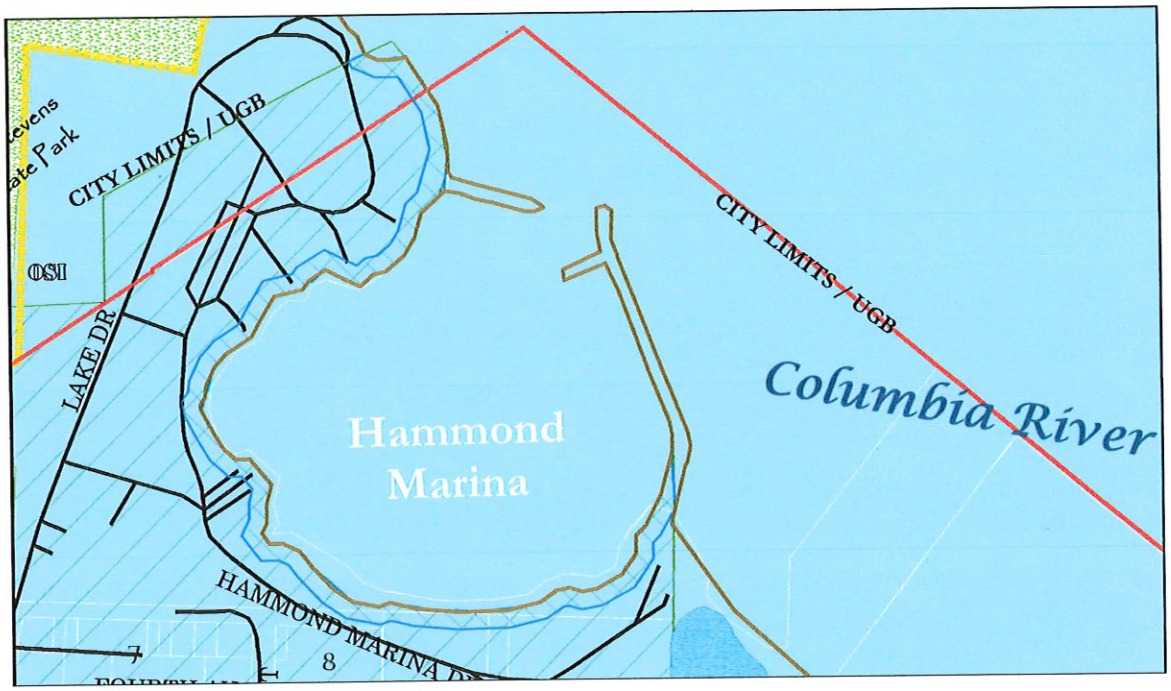
(a) Development Aquatic:

- The aquatic area bounded by the shoreline on the South, the pier-head line to the North, the waterward extension of Railroad Drive on the West and Tansy Point on the East.

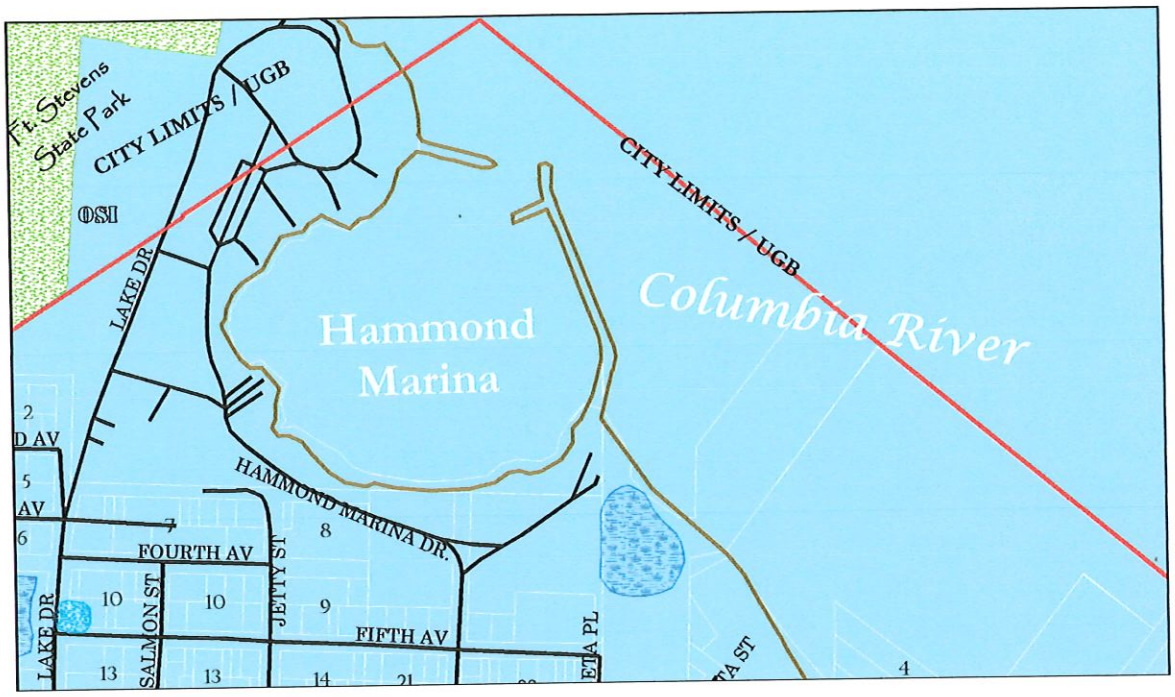
Riparian Corridor Unit No. 1

COLUMBIA RIVER - HAMMOND MARINA

0 foot Riparian Corridor



Riparian Corridor Unit #1a
Columbia River- Hammond Marina

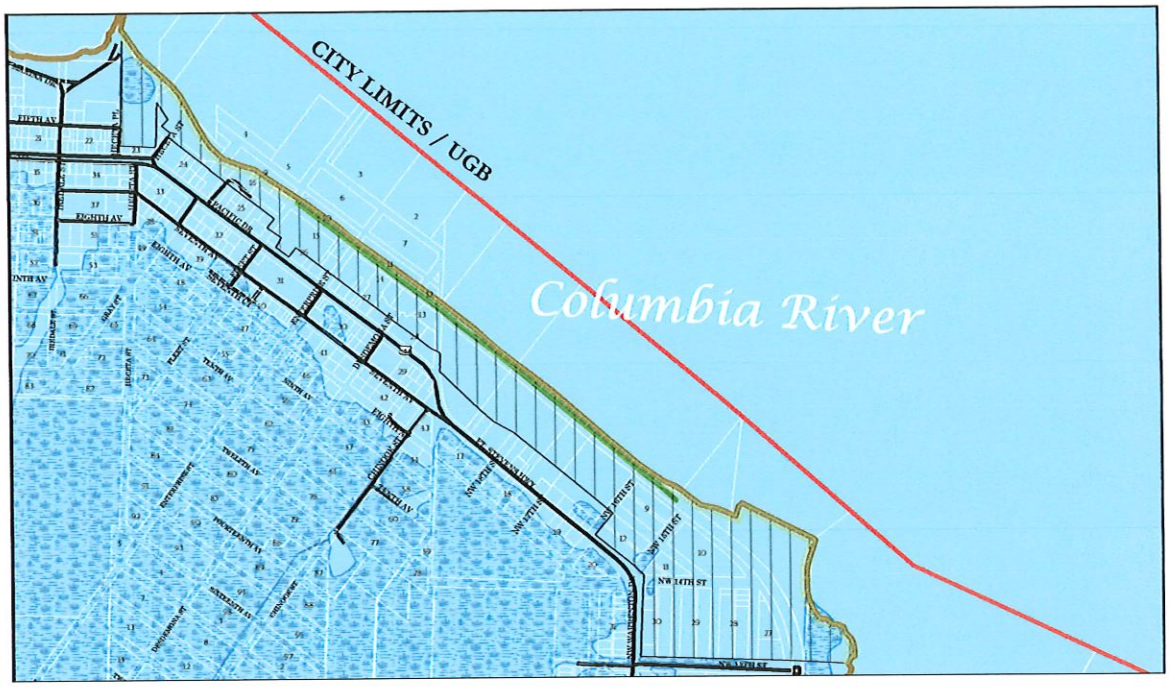


This area of shoreline consists of approximately 500 linear feet on the Columbia River, adjacent to the Hammond Marina. This area (see attached photo) is undeveloped and undisturbed by man. There is evidence of natural erosion to the sandy beach caused by waves from the Columbia River and tidal influence of the Pacific Ocean. Inland, abutting the sandy beach area is overgrown vegetation consisting of brush and trees. This area shall be protected with a 75 foot riparian corridor setback to protect the natural vegetation in this location. The 75' setback shall be measured: starting at the point where the sandy beach recedes into brush, and going inland.

Riparian Corridor Unit No. 2

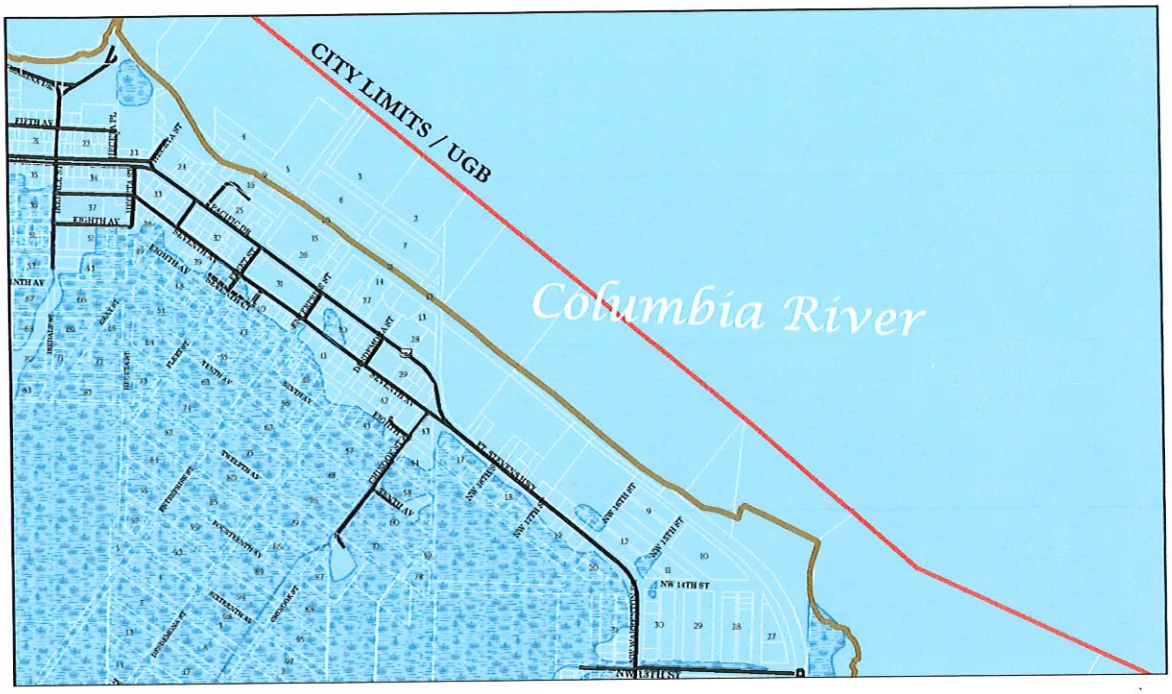
COLUMBIA RIVER: HAMMOND MARINA TO NW 13th Street

0 foot riparian corridor



Riparian Corridor Unit #2a

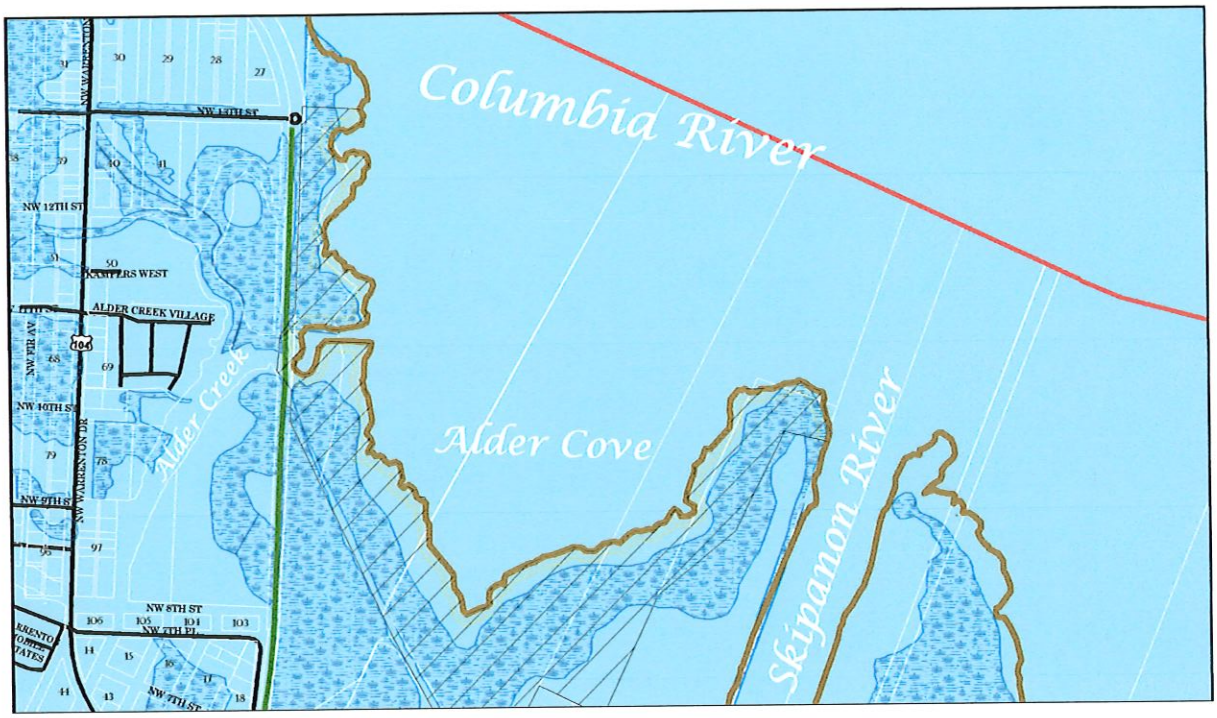
Columbia River - Carruthers Park



This area is associated with Carruthers Park and consists of approximately 400 linear feet of shoreline on the Columbia River. The shoreline area has existing riprap (see attached photos) placed on slope of the bank; plus an observation deck (see attached photos), which extends slightly over the bank but not into the waters of the Columbia River. The observation deck footings (see attached photo) are on land, slightly back from the bank of the river. There is also a foot trail (see attached photos) on the rise of the land, just back from the "bank" of the river going both east and west. The location of the observation deck bisects the foot trail. A 75 foot riparian setback is imposed to protect the remaining natural riparian vegetation. Repairs to the riprap and the observation deck shall be in compliance with the city's development code.

RIPARIAN CORRIDOR UNIT 3
Columbia River: NW 13th Street to mouth of Skipanon

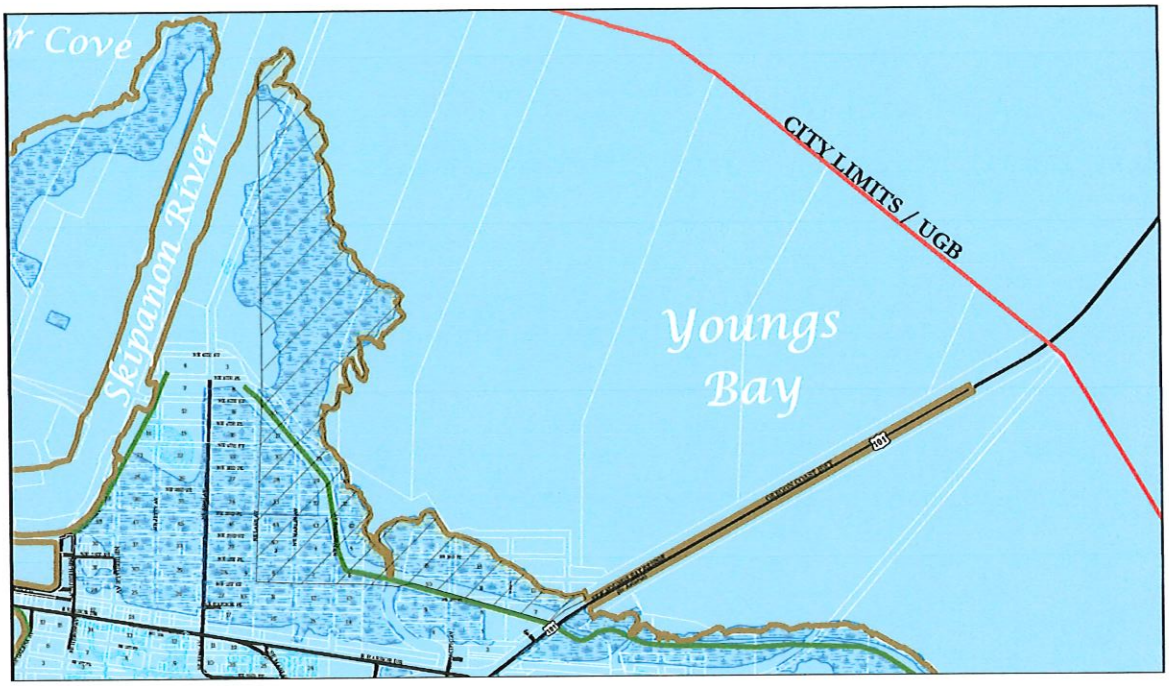
75 foot Riparian Corridor



Riparian Corridor Unit 4

Columbia River: Mouth of Skipanon River to Youngs Bay Bridge

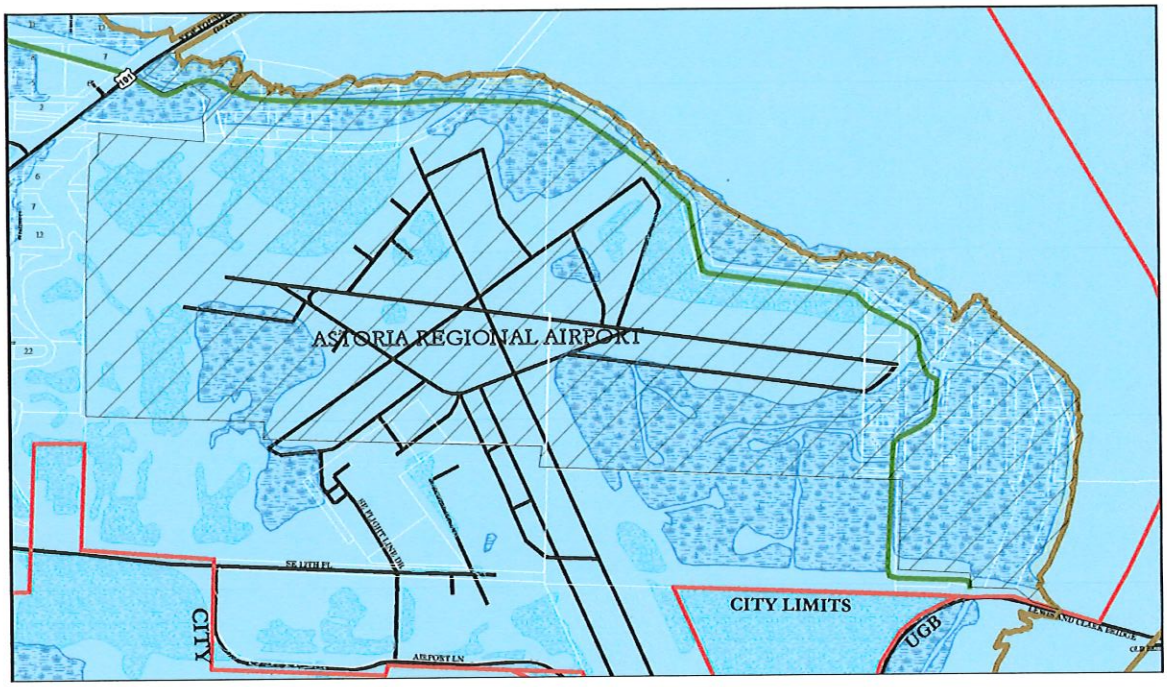
75 foot Riparian Corridor



RIPARIAN CORRIDOR UNIT 5

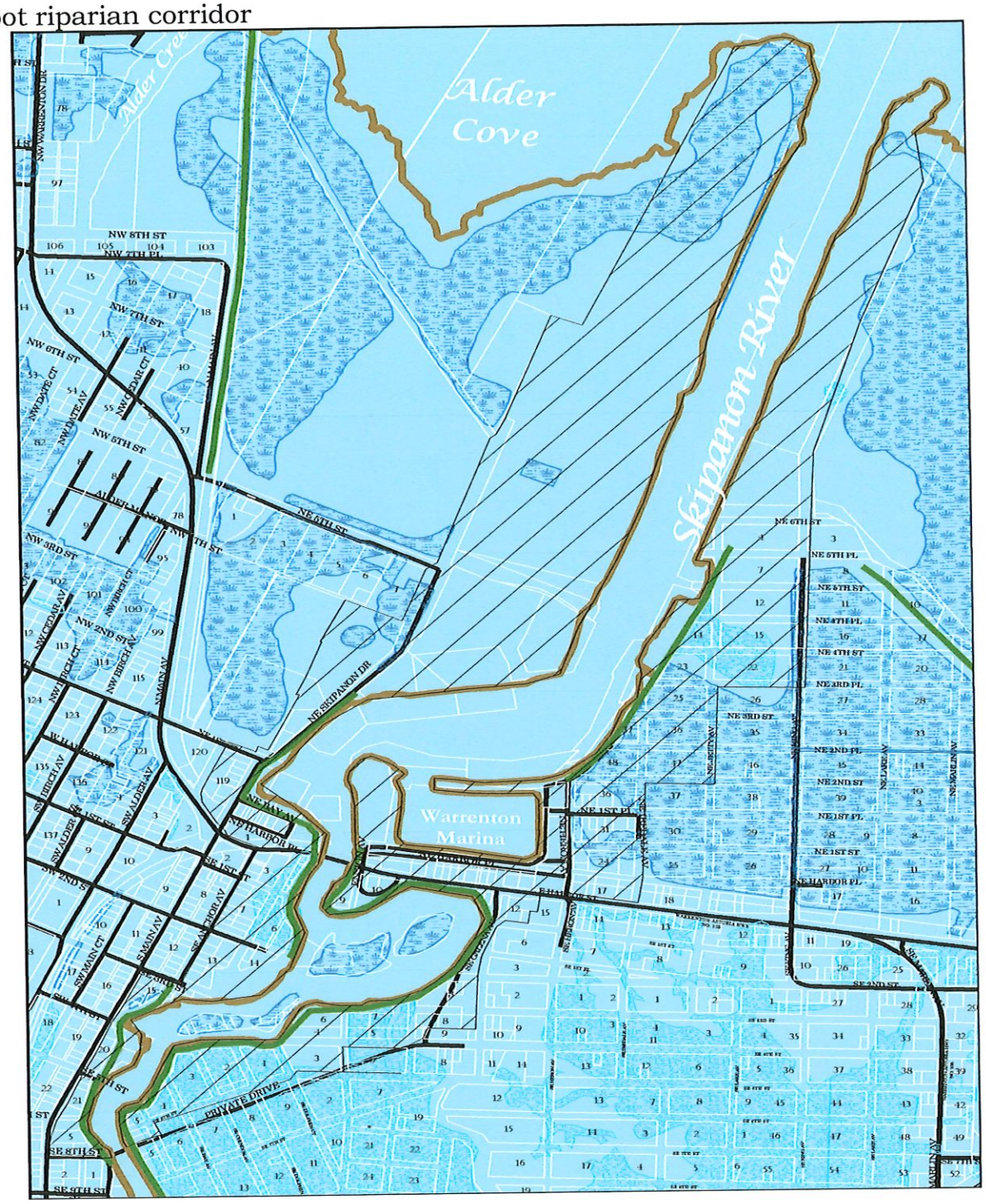
Columbia River: Youngs Bay Bridge to Lewis and Clark River Bridge

75 foot riparian corridor



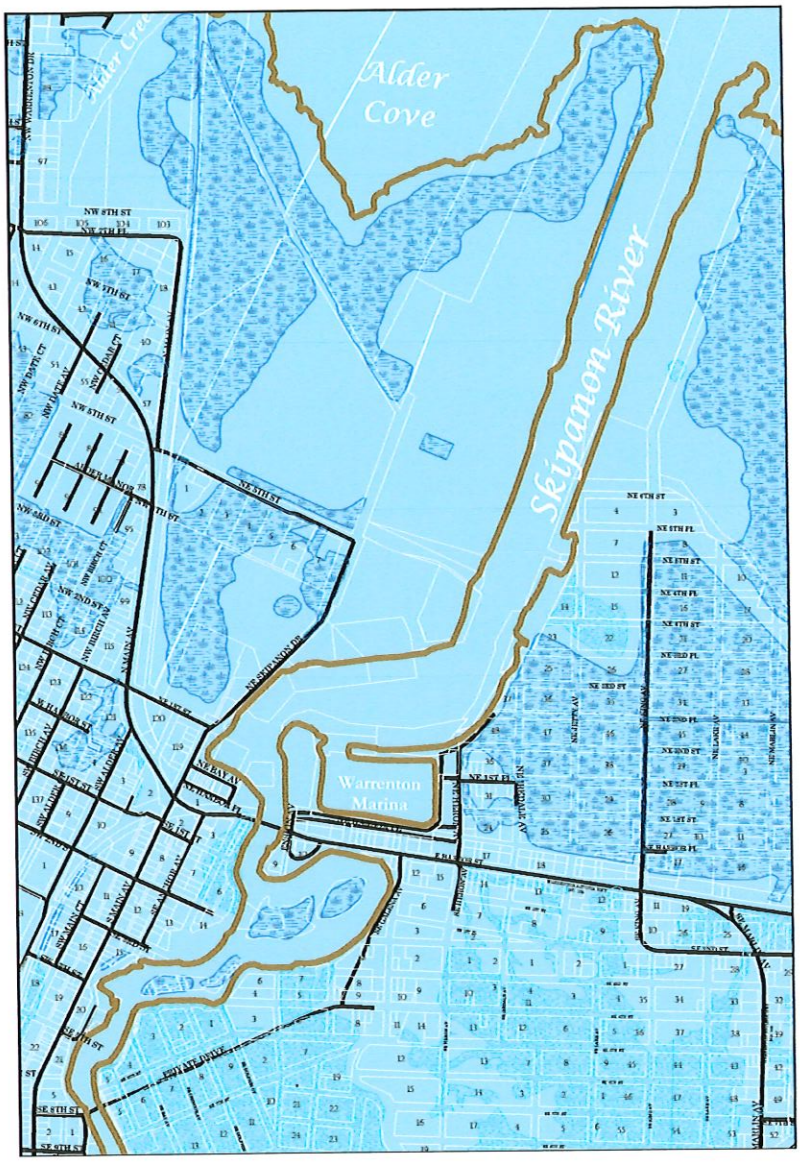
RIPARIAN CORRIDOR UNIT 6
Lower Skipanon River

0 foot riparian corridor



Riparian Corridor Unit #6(a-1)

Skipanon River Channel
East Bank

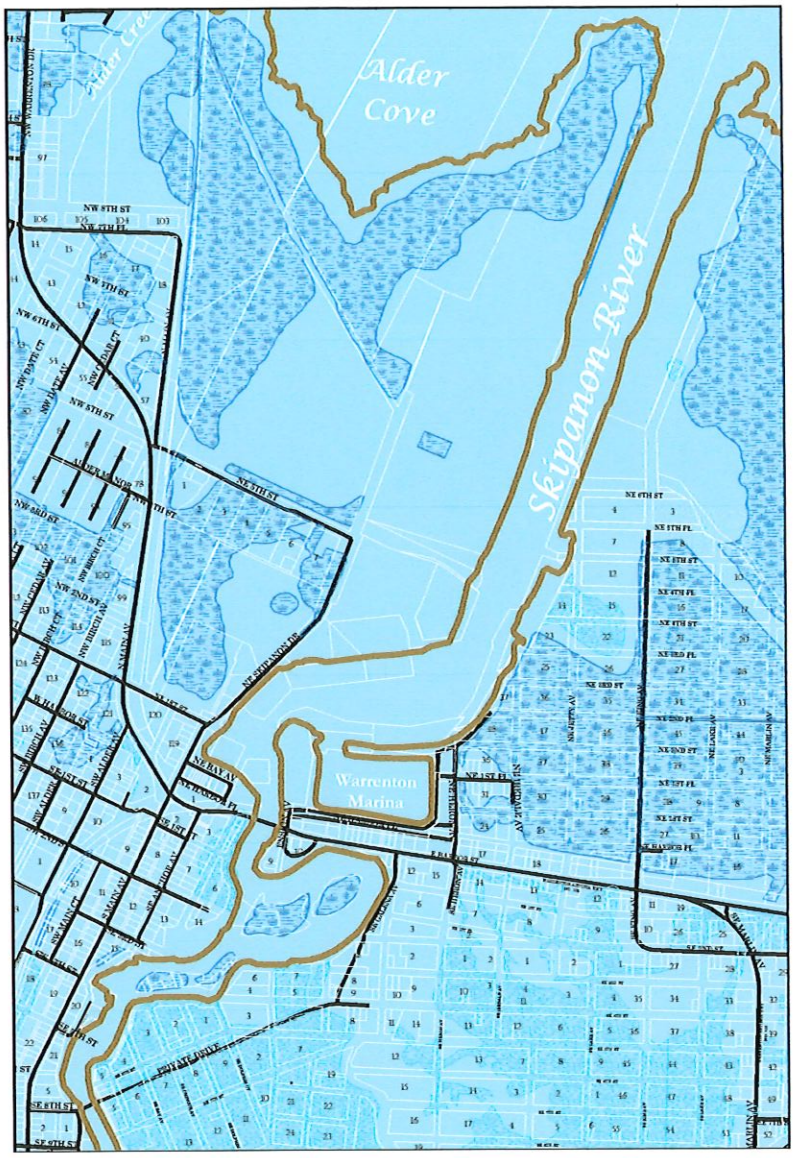


East Bank Skipanon River -- This area of concern consists of natural riparian vegetation along this portion of the east bank of the Skipanon River. There is a gravel access road on top of an existing dike with natural vegetation on both sides of the dike. A 50' riparian setback is imposed, starting on the east edge of the gravel access road and measuring 50' eastward to protect the riparian vegetation in this location. Maintenance and repair of the existing dike and gravel access road are allowed and shall be incompliance with the city's development code.

Amended by Ordinance 1101-A, November 16, 2006

Riparian Corridor Unit #6(a2)

Skipanon River Channel
West Bank

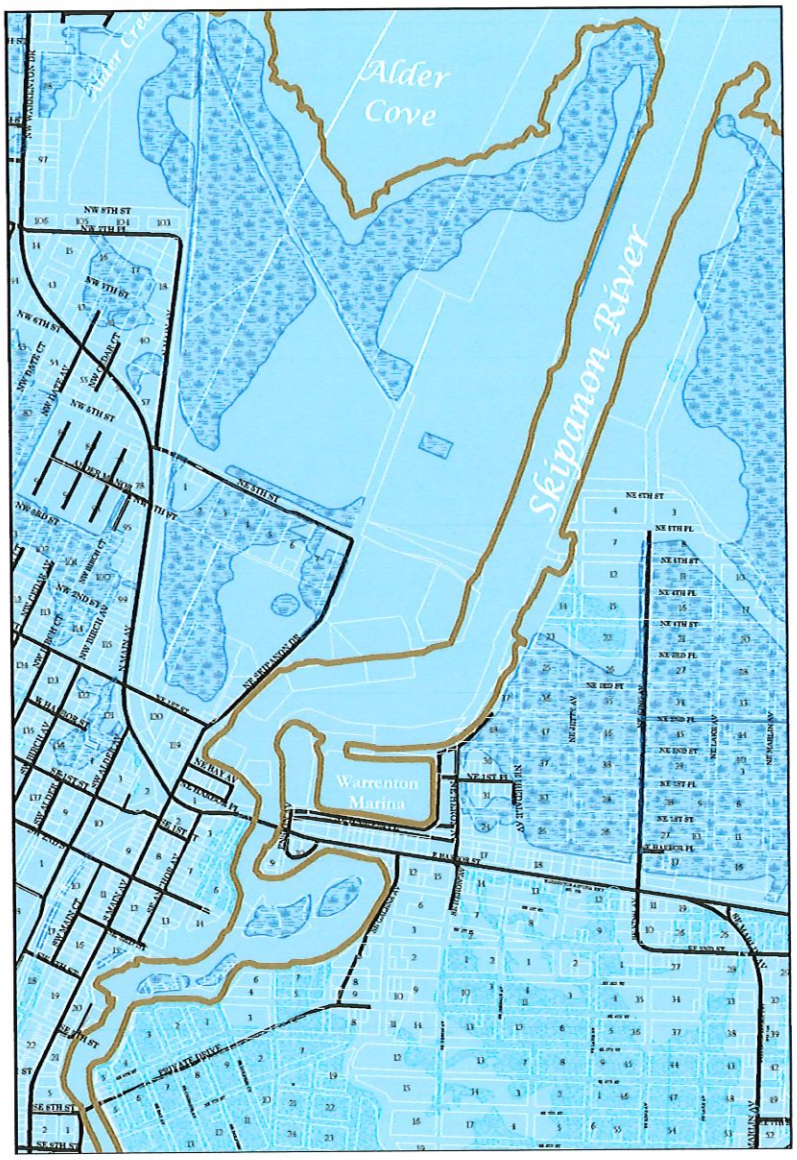


West Bank Skipanon River -- This area is located on the west bank of the Skipanon River channel before the bend of the river and the Warrenton Marina. Oregon Administrative Rules 660-023(5) & (8)(c) allows no riparian setbacks to be imposed where water-dependent/water-related uses and activities are adjacent to the shoreland vegetation. There is an existing water-dependent business on the west side of the river, which is in the city's water-dependent /water-related zone (I-2). No riparian setback is required for this area.

Amended by Ordinance 1101-A, November 16, 2006

Riparian Corridor Unit #6(b)

Skipanon City Park and Trail

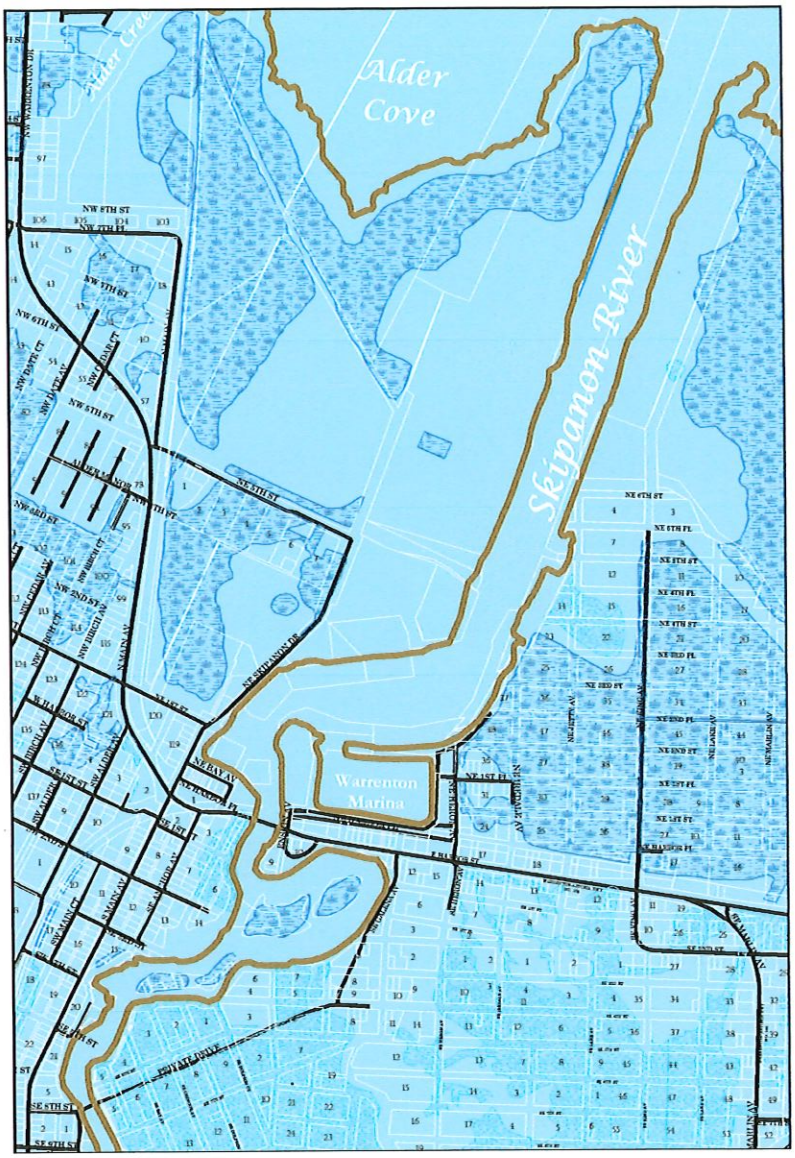


This area is adjacent to the Skipanon City Park and trail (see photos). Riparian vegetation exists in this area at varying widths with a trail constructed of asphalt, (approximately 2 feet wide). This trail is bordered on both sides with natural vegetation. The trail starts at the city park and heads north to the Skipanon River Bridge. There is an aged, existing dock with a portable boat ramp (see photo) located approximately halfway between the city park and the bridge. The location of the dock and ramp rests on the riparian vegetation between the trail and the river. The riparian vegetation between the trail and the river shall have a 50' riparian setback to protect the natural vegetation.

Amended by Ordinance 1101-A, November 16, 2006

Riparian Corridor Unit #6(c)

Skipanon River Islands

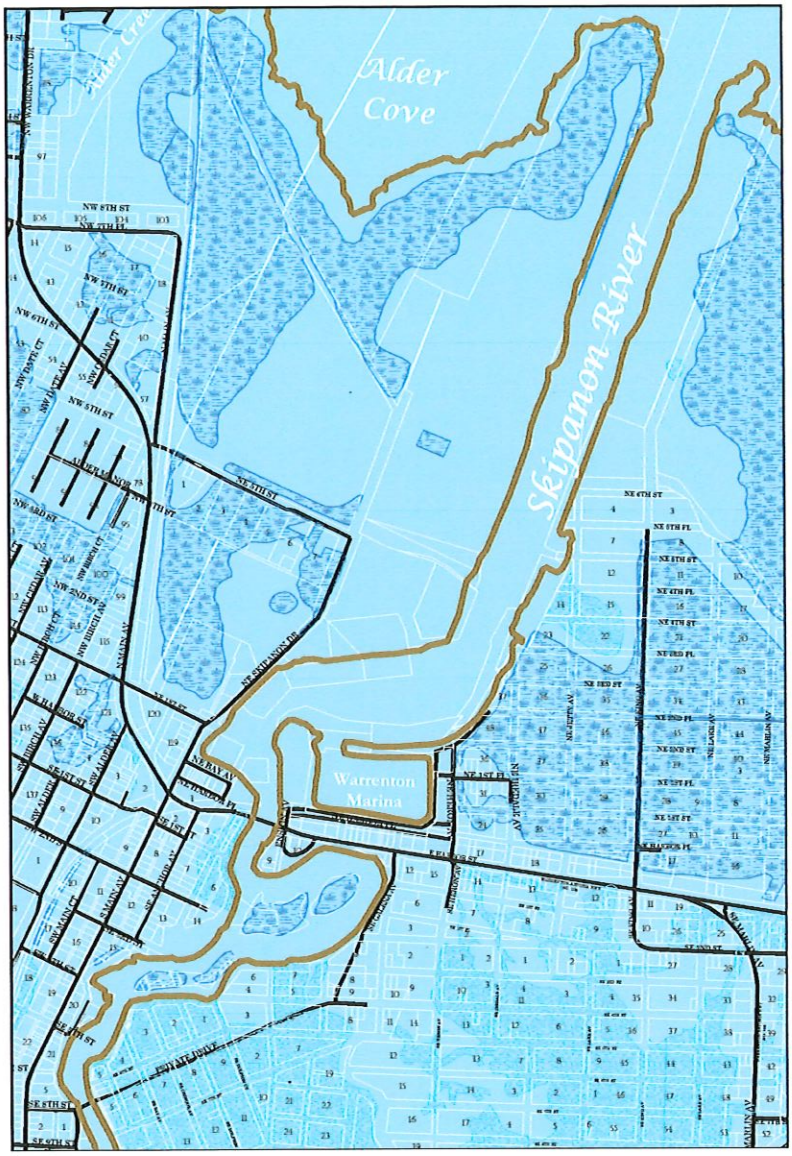


These five (5) small islands (see photo) are zoned aquatic conservation (A-2), and are undeveloped. They are located in the Skipanon River, south of the Skipanon Bridge. The Skipanon River is affected by the tidal influence of the Pacific Ocean, which causes several of these islands to be under water during high tide. These five (5) islands shall have a 50' riparian setback to protect the natural riparian vegetation.

Amended by Ordinance 1101-A, November 16, 2006

Riparian Corridor Unit #6(d)

Skipanon City Park and Trail

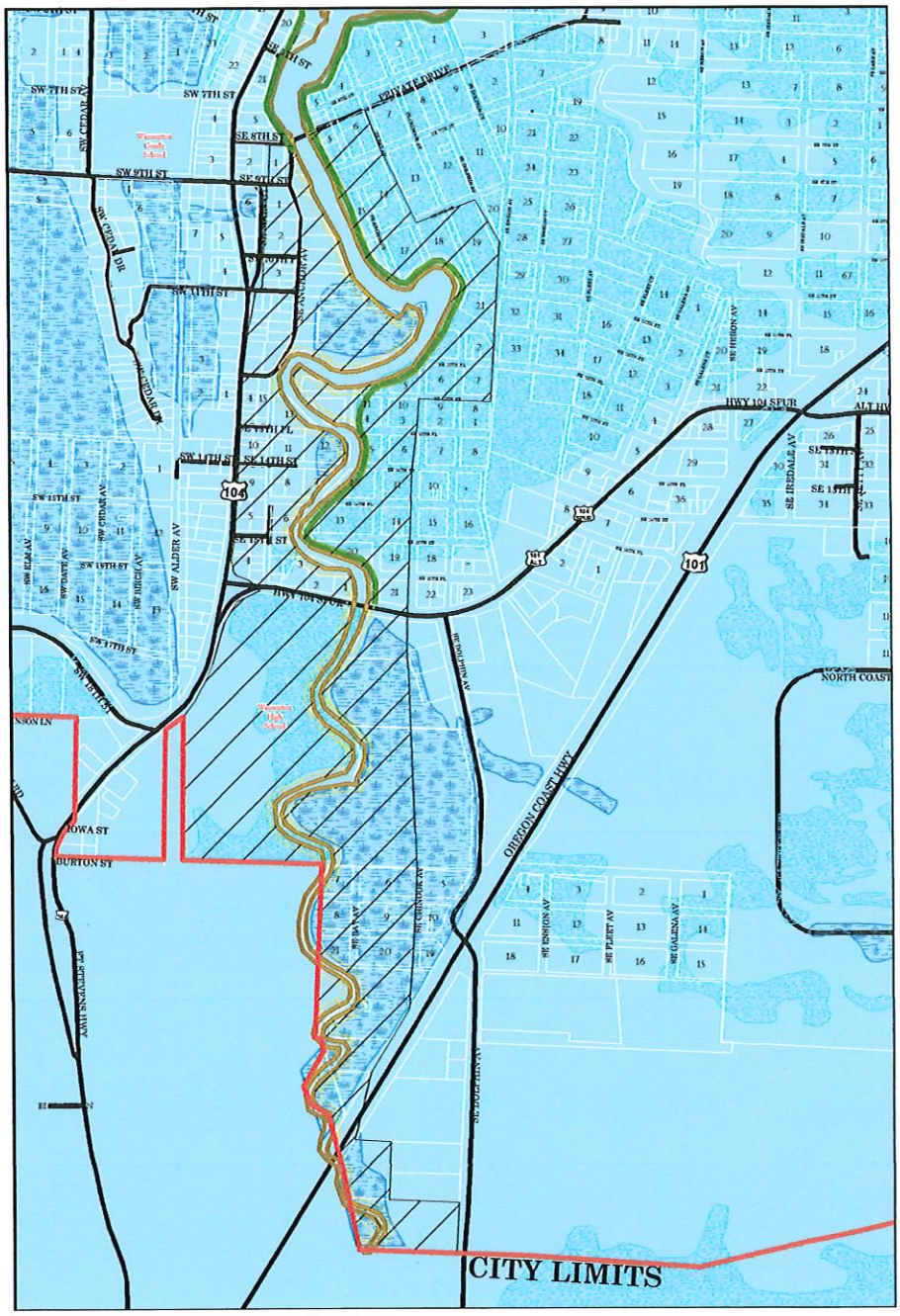


This area is in the same vicinity as Unit #6(b) and shall be protected by placing a 50' riparian setback between the existing trail and the Skipanon River.

Amended by Ordinance 1101-A, November 16, 2006

RIPARIAN CORRIDOR UNIT 7
Upper Skipanon River

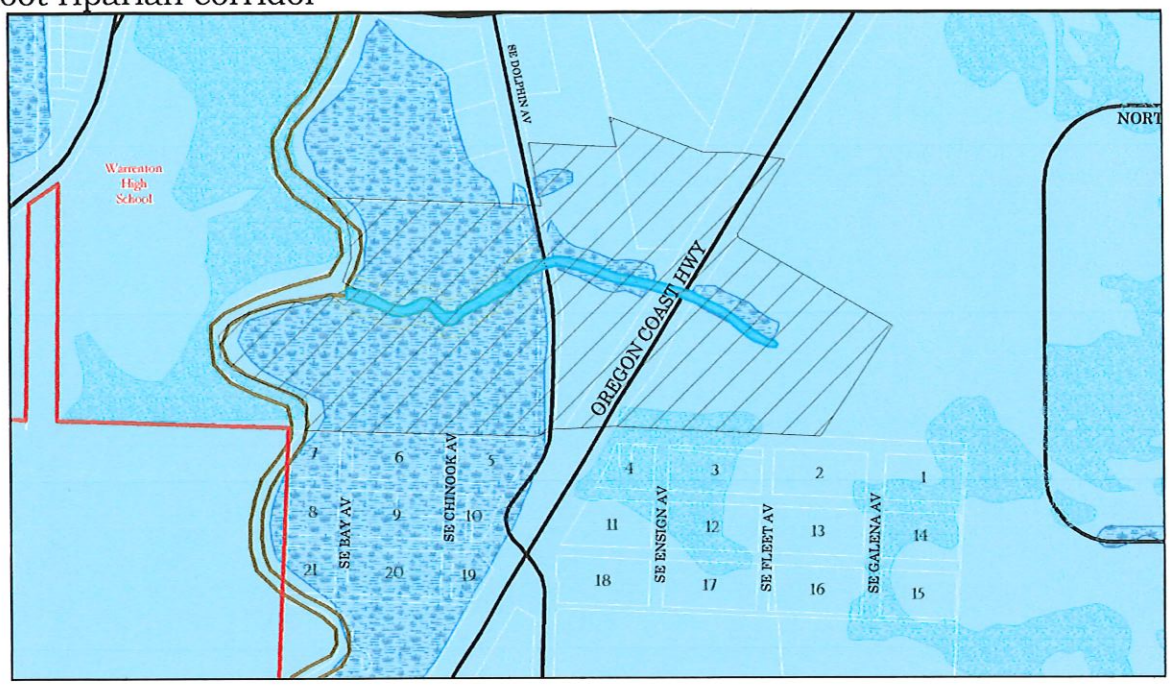
50 foot riparian corridor



RIPRIAN CORRIDOR UNIT 8A & 8B
Unnamed Tributary to the Upper Skipanon

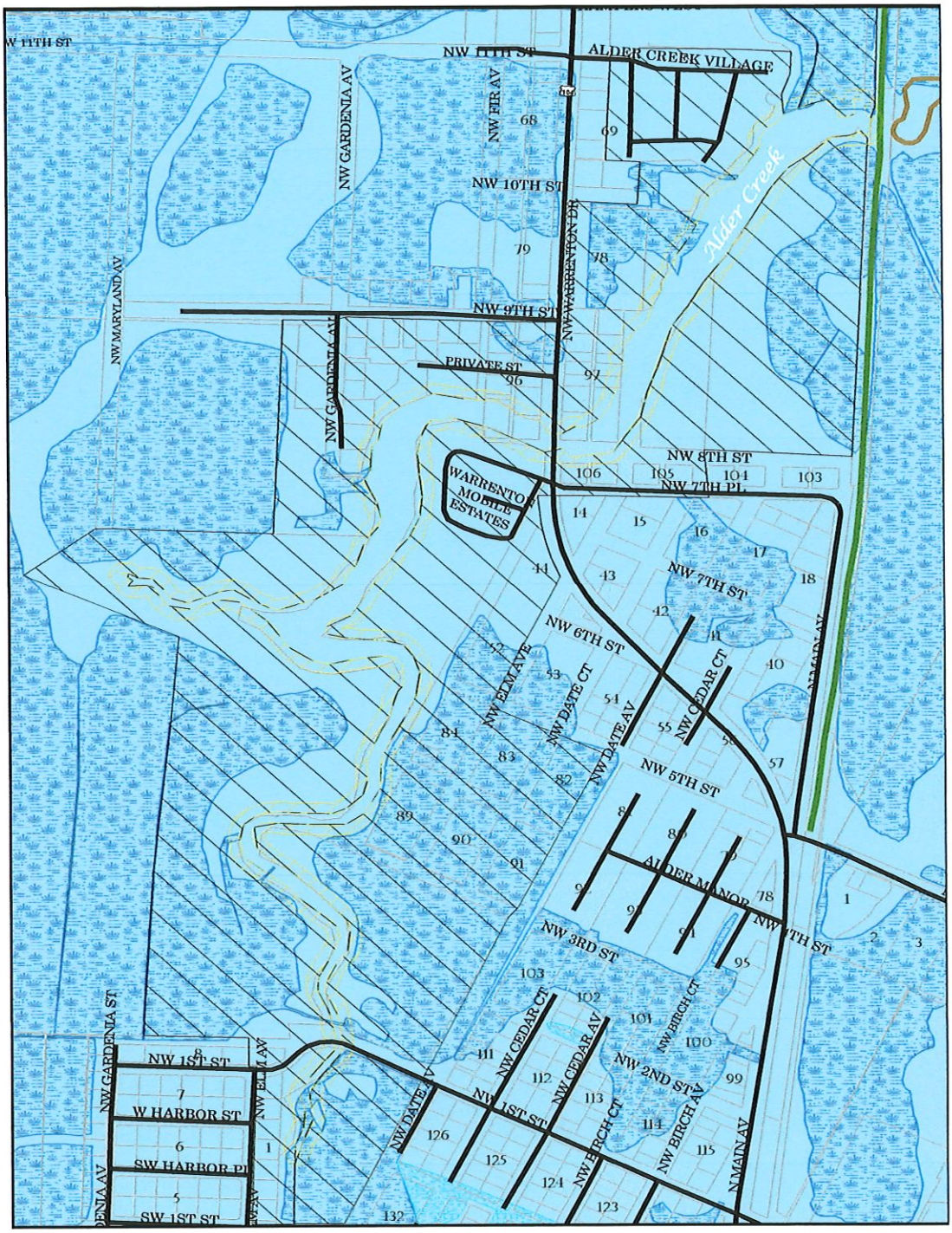
0 foot riparian corridor

50 foot riparian corridor



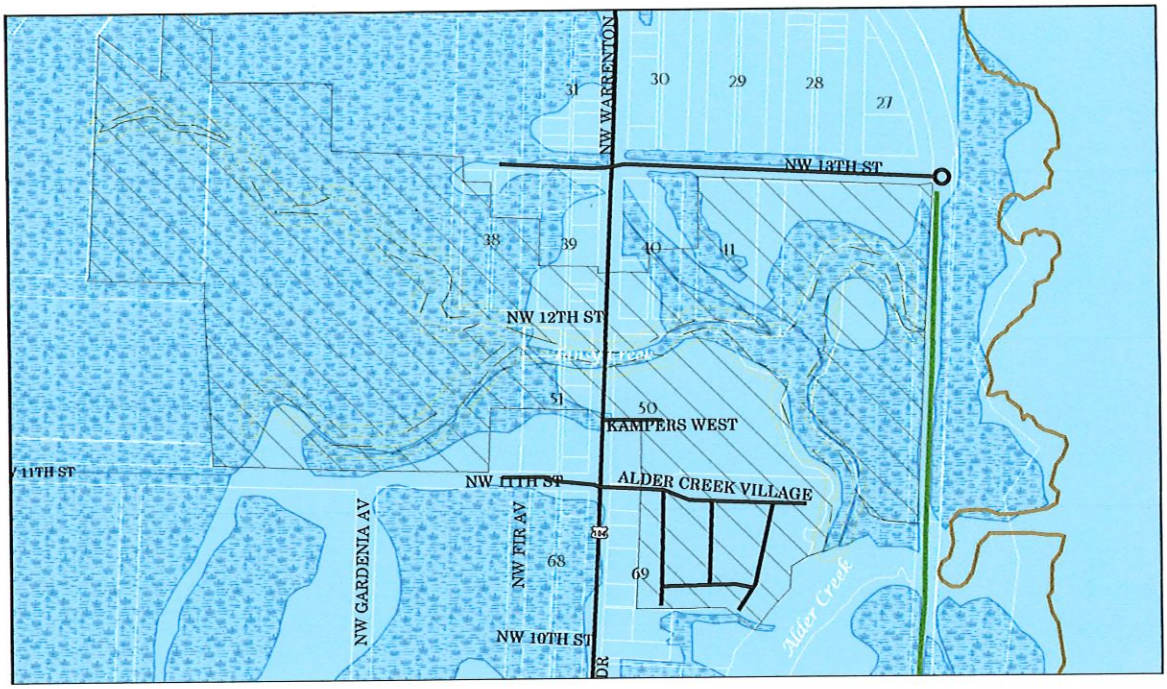
RIPARIAN CORRIDOR UNIT 9
Alder Creek

50 foot riparian corridor



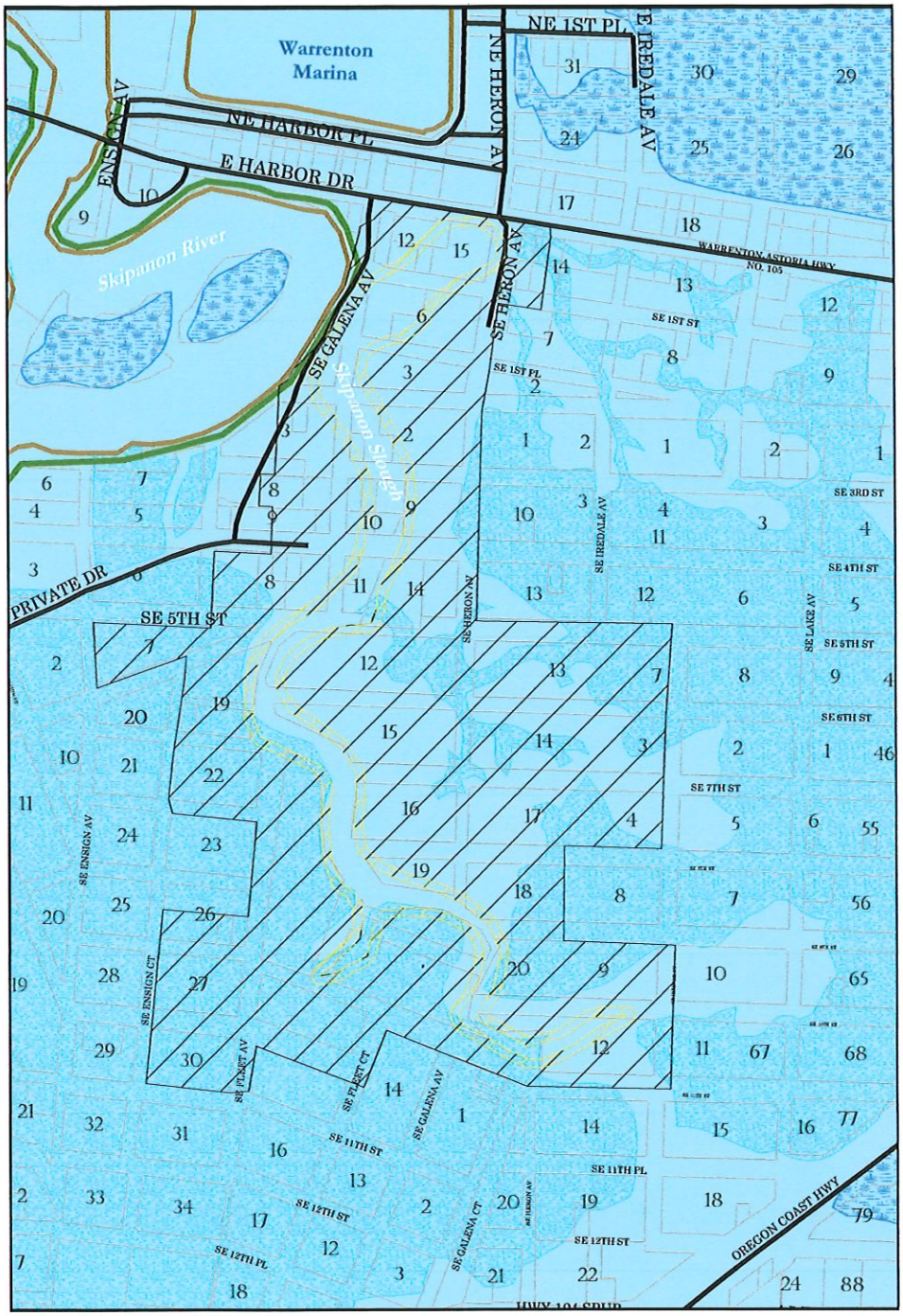
RIPARIAN CORRIDOR UNIT 10
Tansy Creek

50 foot riparian creek



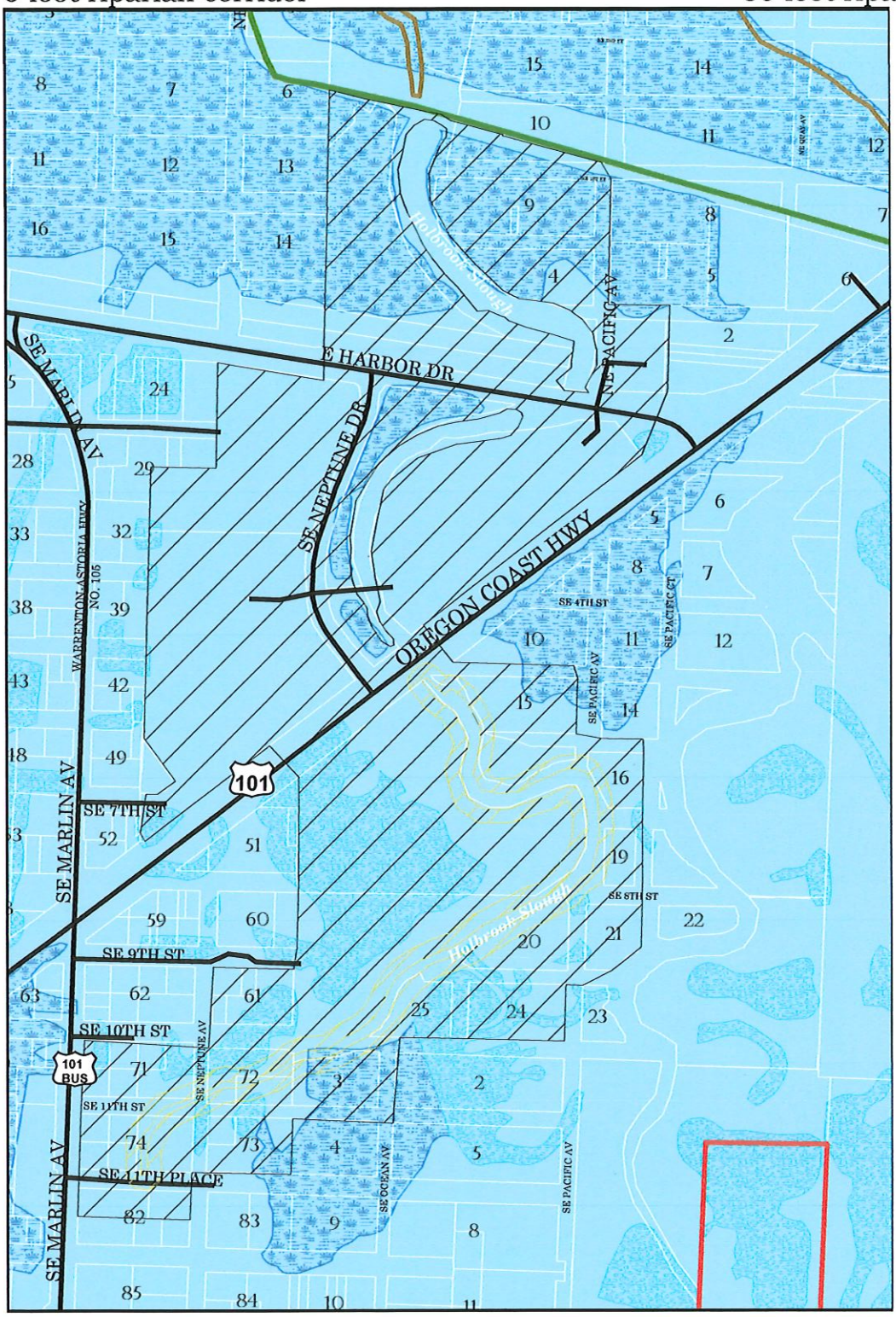
RIPARIAN CORRIDOR UNIT 11
Skipanon Slough

30 foot riparian corridor



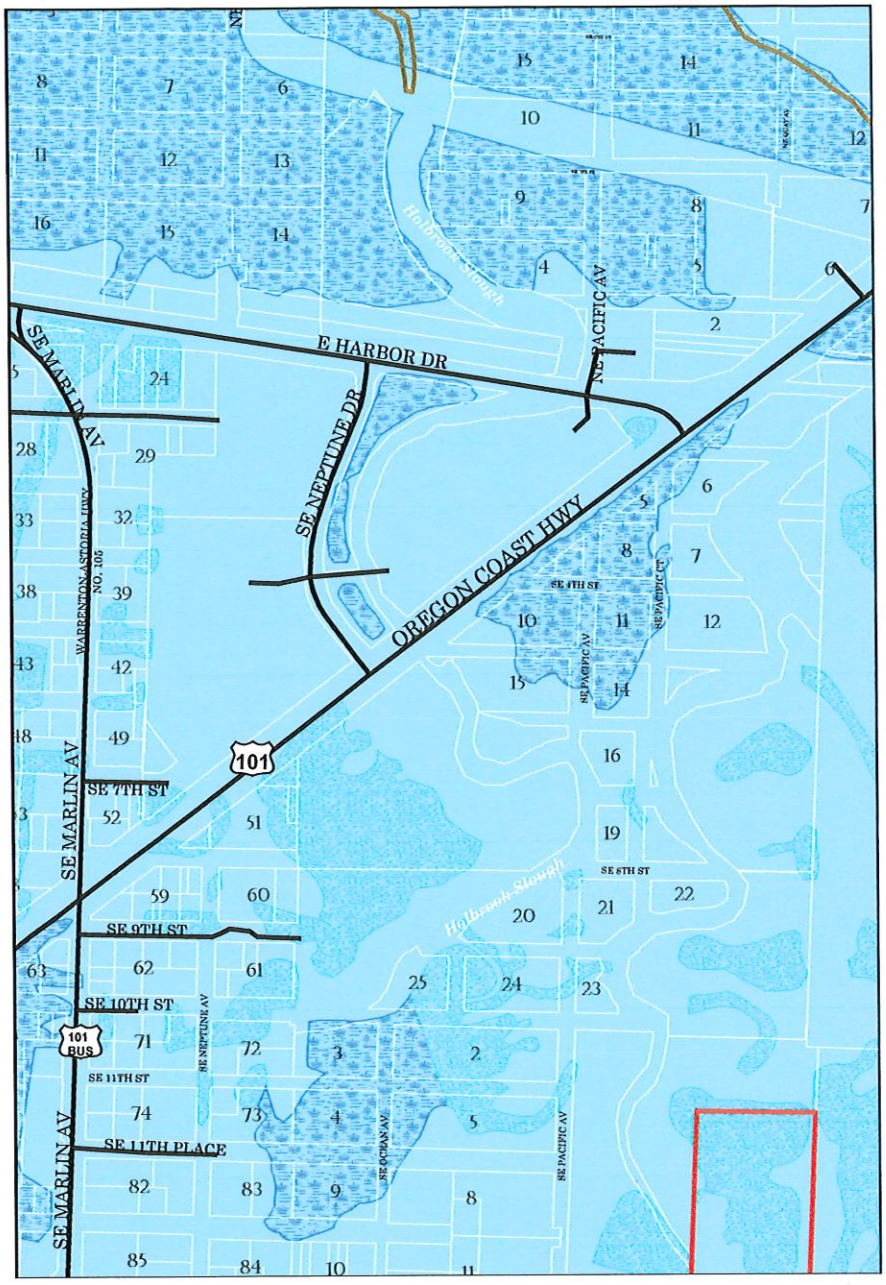
RIPARIAN CORRIDOR UNIT 12
Hollbrook Slough

0 foot riparian corridor 50 foot riparian corridor



Riparian Corridor Unit #12(a)

Shilo Inn and Mulan Restaurant
Holbrook Slough - East and West



This area of Holbrook Slough (see photos) is directly behind Shilo Inn and Mulan Restaurant. There is undeveloped land on the west side of the slough, which contains natural vegetation, as well as having a dike and tidegate immediately north of the access roadway behind the Mulan Restaurant.

Riparian vegetation on both sides of the slough is dominated by invasive and non-invasive vegetation. In addition, a roadway (see photos) lies directly behind the Mulan Restaurant providing ingress and egress to the commercial activities and

uses immediately adjacent to the slough.

A 50'foot riparian setback is imposed on the west side of the slough; however, maintenance and repair of a compensatory wetland mitigation area is allowed. Maintenance and repair of the existing dike and tidegate within the riparian area is allowed.

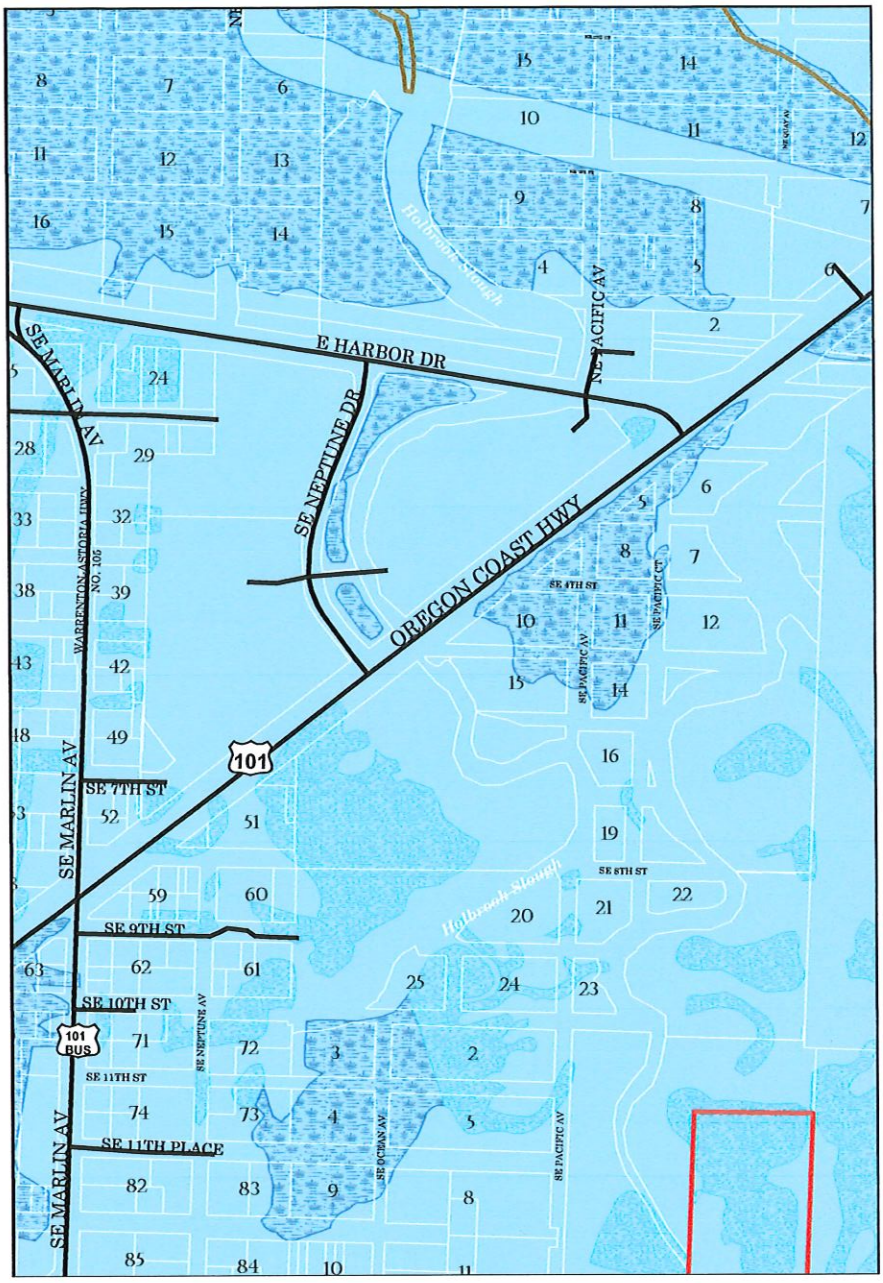
On the east side of the lower section of Holbrook Slough, riparian vegetation within the 50' buffer shall be protected with the following exceptions:

* Maintenance and repair of existing buildings (Shilo Inn and Mulan Restaurant) is not restricted;
* Maintenance and repair of an existing road is not restricted; and
* Expansion and extension of an existing road is not restricted.

Amended by Ordinance 1101-A, November 16, 2006

Riparian Corridor Unit #12(b)

Holbrook Slough - Youngs Bay Plaza



This portion (see photo) of Holbrook Slough is located behind the Youngs Bay Plaza shopping center and by compensatory wetland mitigation sites.

Riparian vegetation on the Youngs Bay Plaza (east side of the slough) side of the slough is in poor condition: dominated by invasive plants, subject to regular mowing, and adjoins a busy commercial area. The east side of the slough has existing riparian vegetation in a strip of varying width between the pavement and the high-water line of Holbrook Slough. On this side of the slough, riparian vegetation should be protected only between the edge of the existing pavement, as

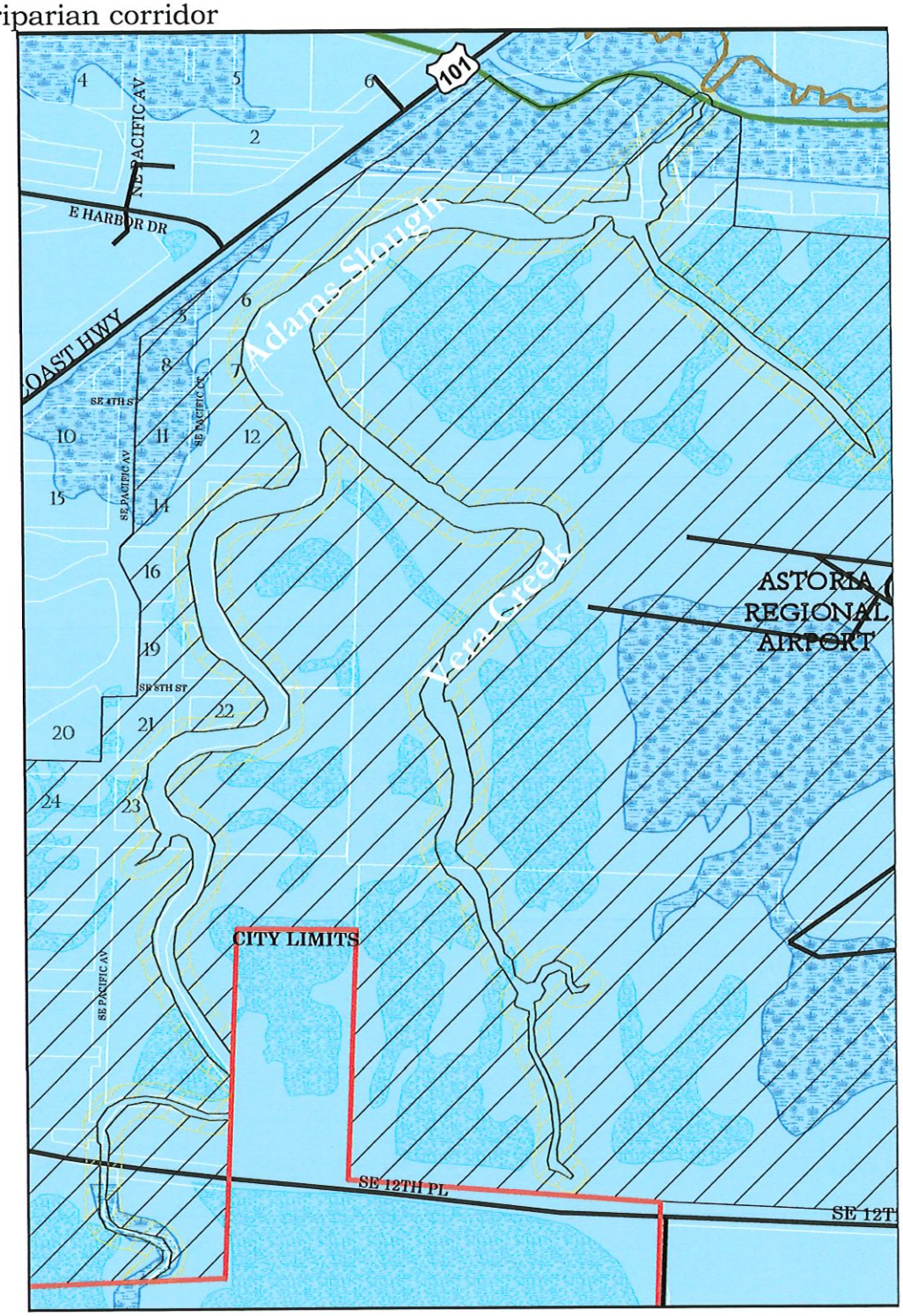
it currently exists (2006), and the slough shoreline for a 50 foot riparian setback to protect the remaining natural vegetation within this corridor.

Riparian vegetation on the west side of the slough exists in various compensatory wetland mitigation sites, stormwater detention ponds, and other undeveloped areas. Riparian vegetation in this section of Holbrook Slough will be protected with a 50 foot riparian corridor setback. Maintenance and repair is allowed for the compensatory wetland mitigation sites and stormwater detention or settling features, which exist within this riparian corridor.

Amended by Ordinance 1101-A, November 16, 2006

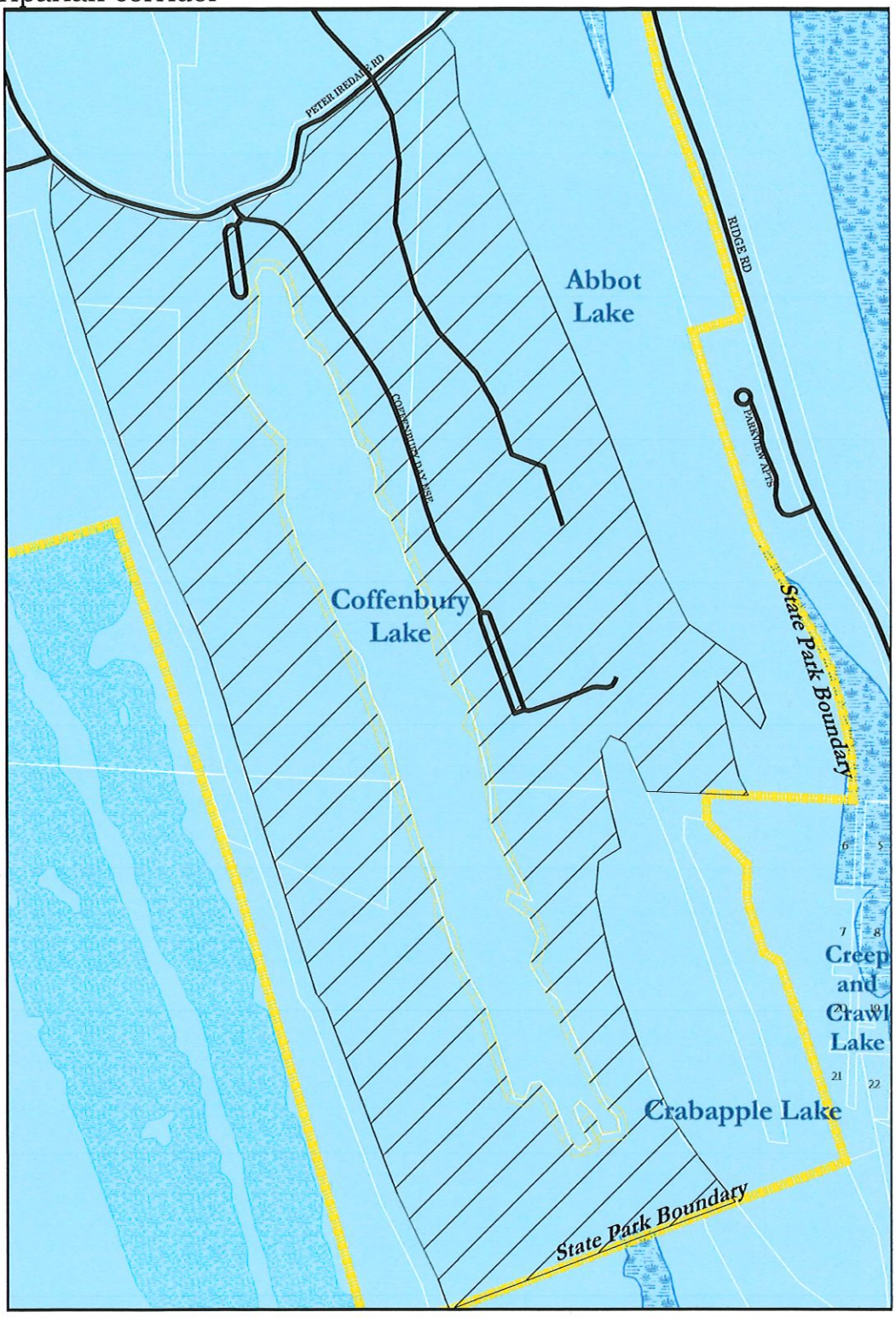
RIPARIAN CORRIDOR UNITS 13 & 14
Adams Slough & Vera Creek

50 foot riparian corridor



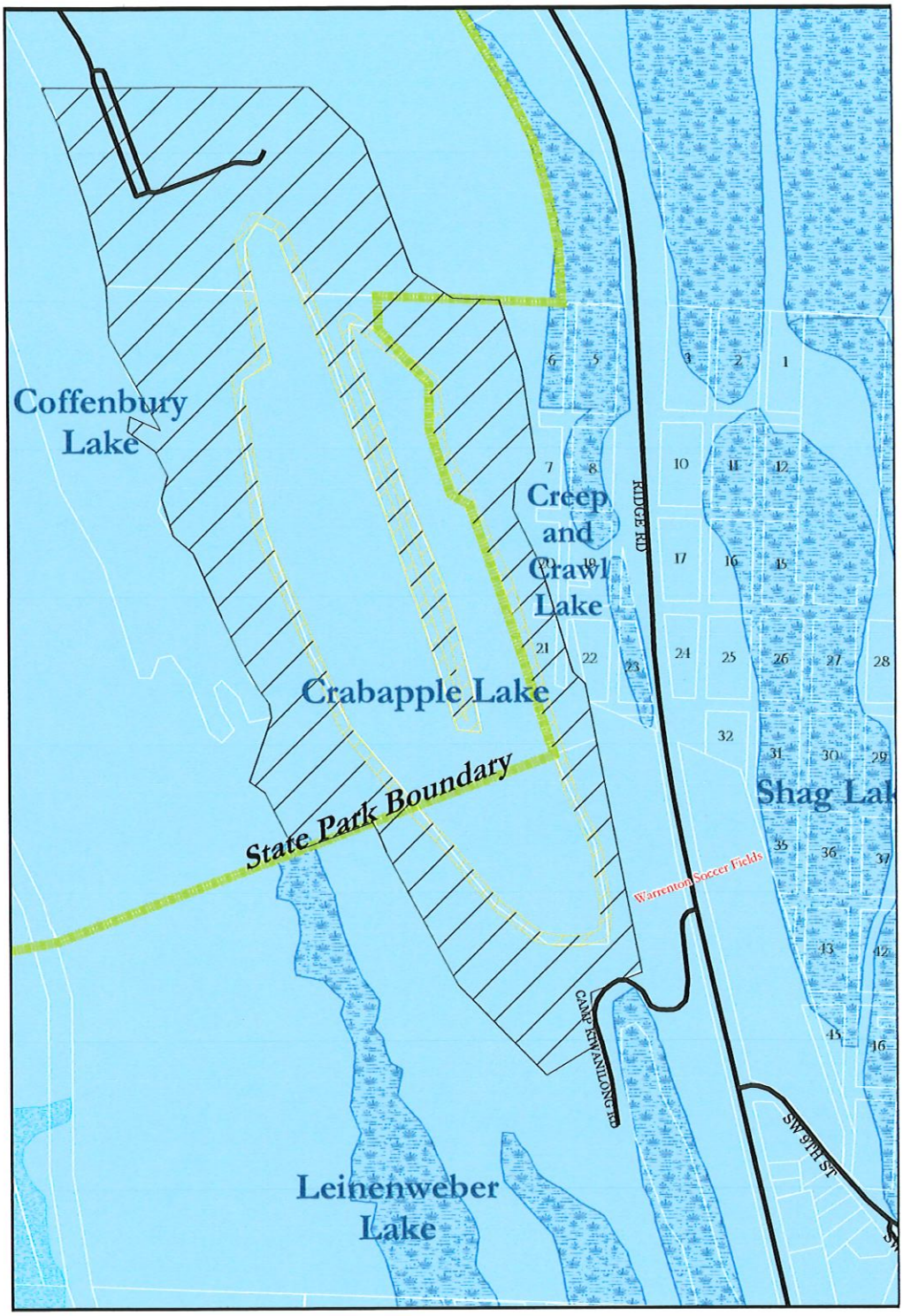
RIPARIAN CORRIDOR UNIT 15
Coffenbury Lake

50 foot riparian corridor



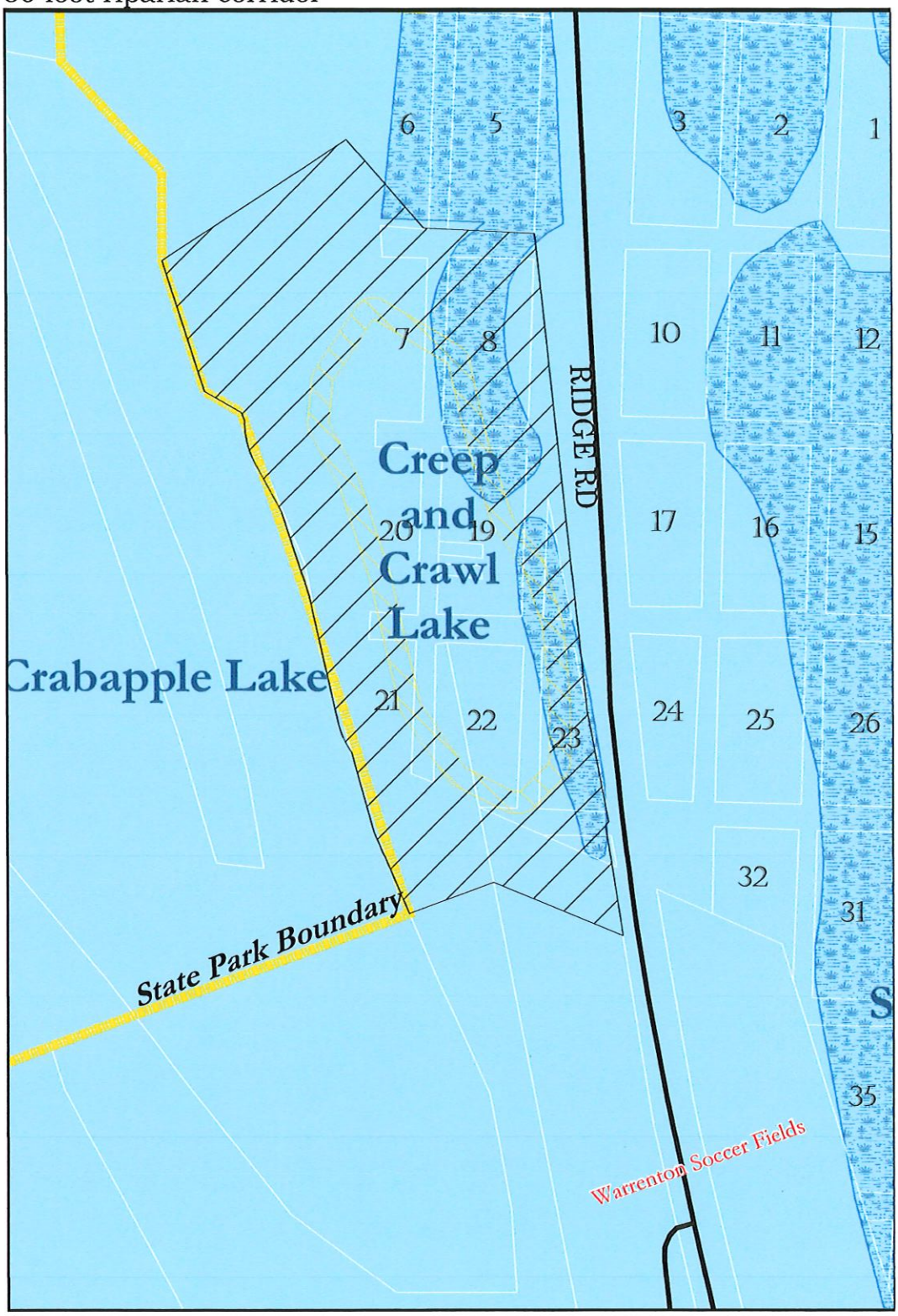
RIPARIAN CORRIDOR UNIT 16
Crabapple Lake

50 foot riparian corridor



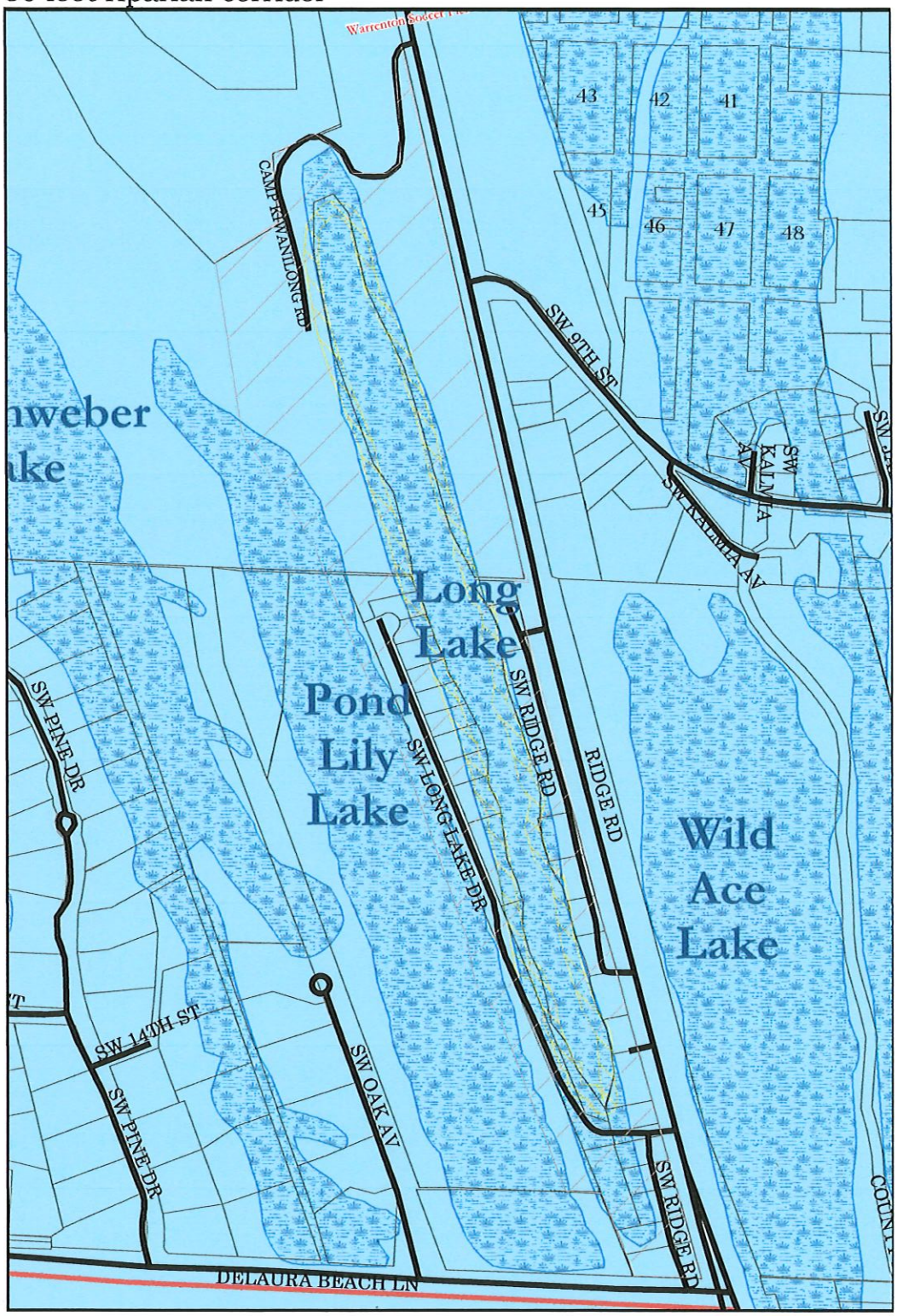
RIPARIAN CORRIDOR UNIT 17
Creep and Crawl Lake

50 foot riparian corridor



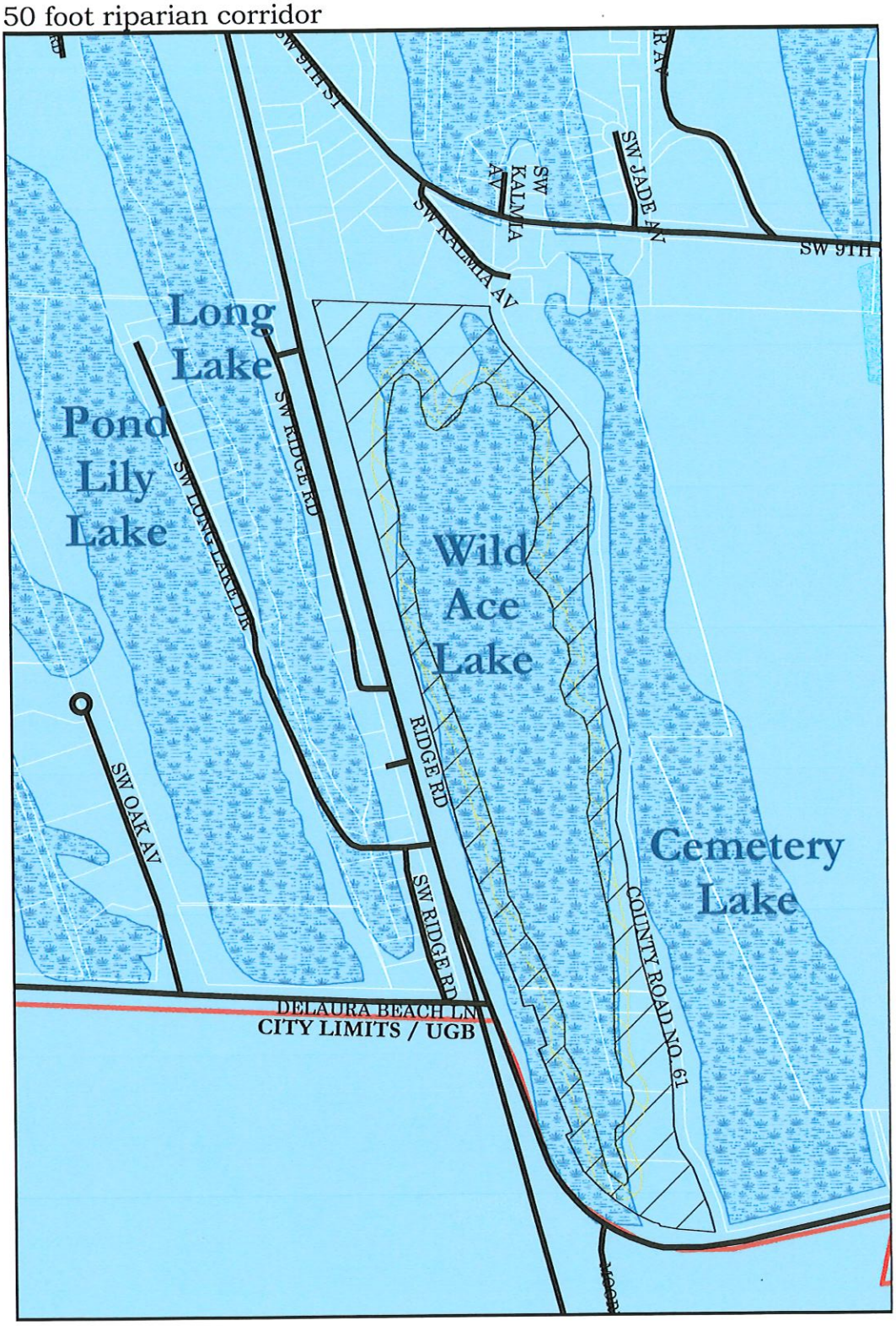
RIPARIAN CORRIDOR UNIT 18
Long Lake

50 foot riparian corridor



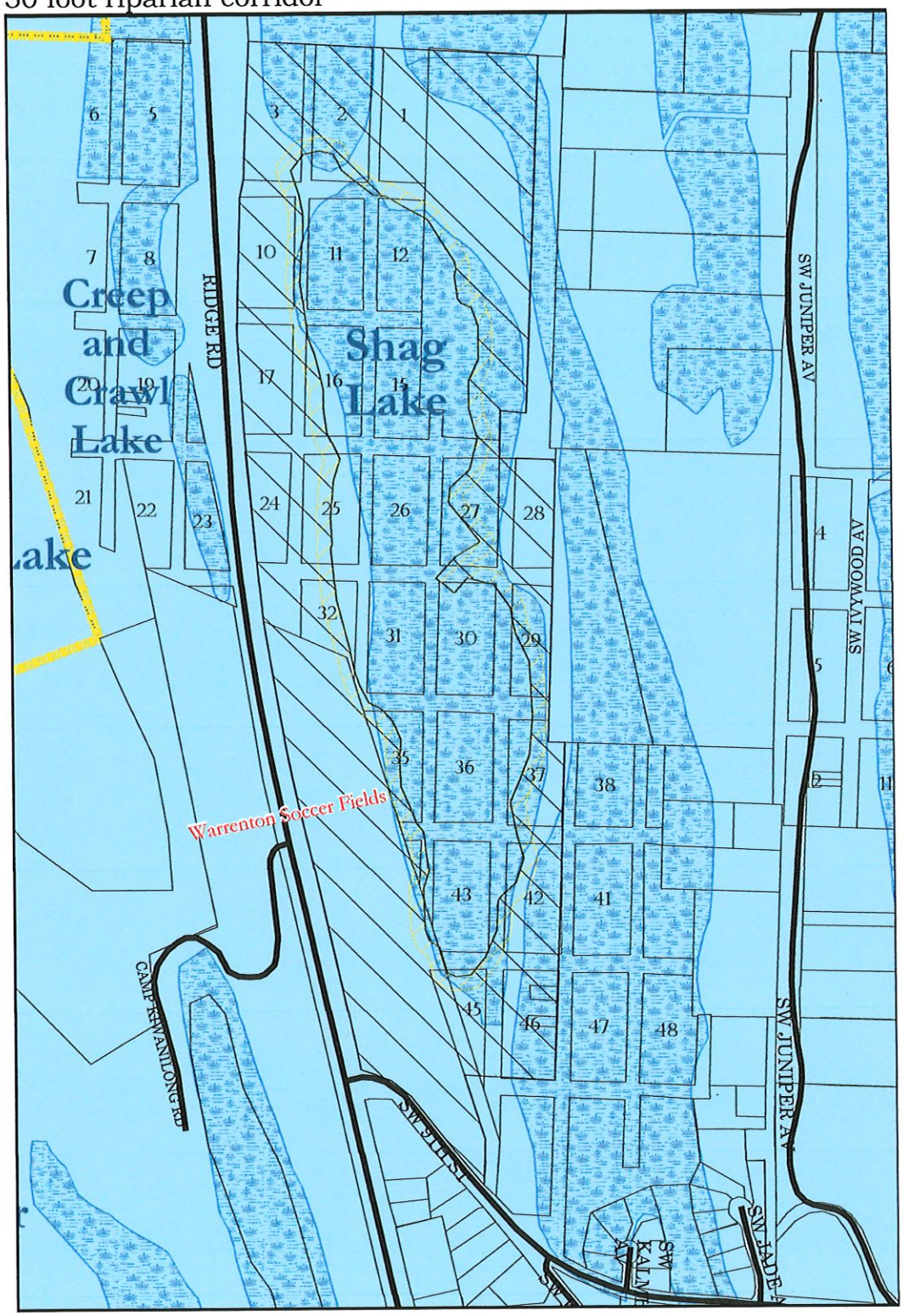
RIPARIAN CORRIDOR UNIT 19
Wild Ace Lake

50 foot riparian corridor



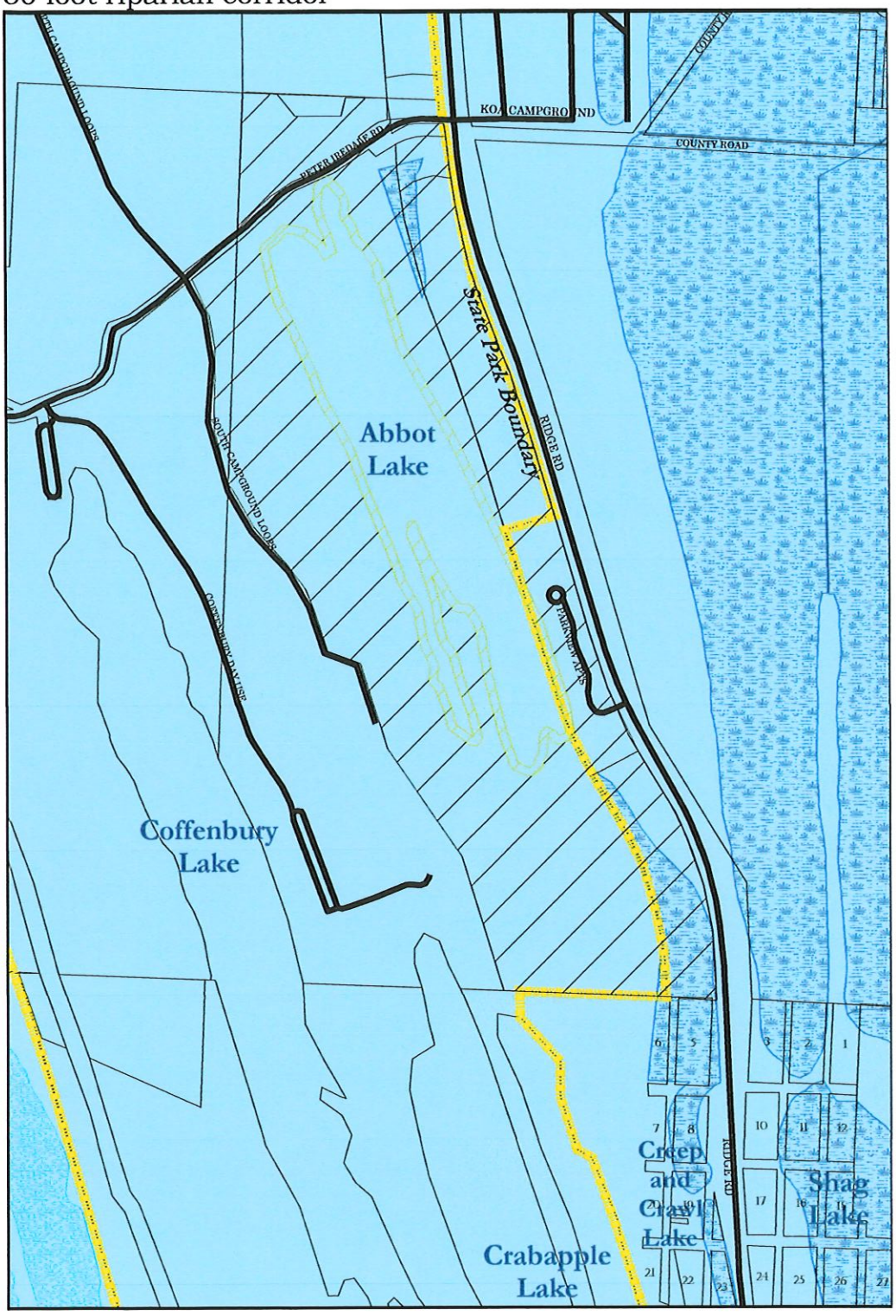
RIPARIAN CORRIDOR UNIT 20
Shag Lake

50 foot riparian corridor



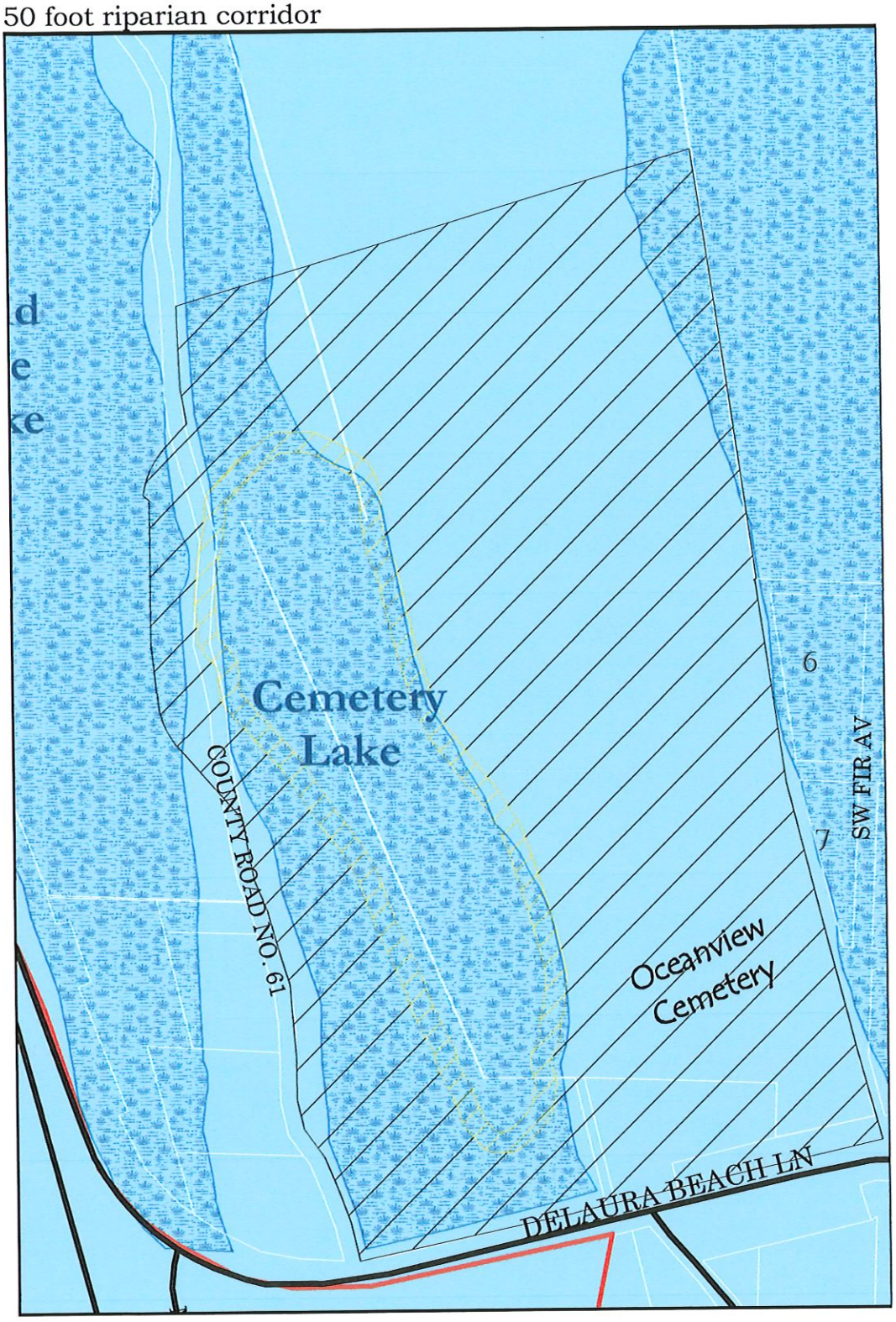
RIPARIAN CORRIDOR UNIT 21
Abbot Lake

50 foot riparian corridor



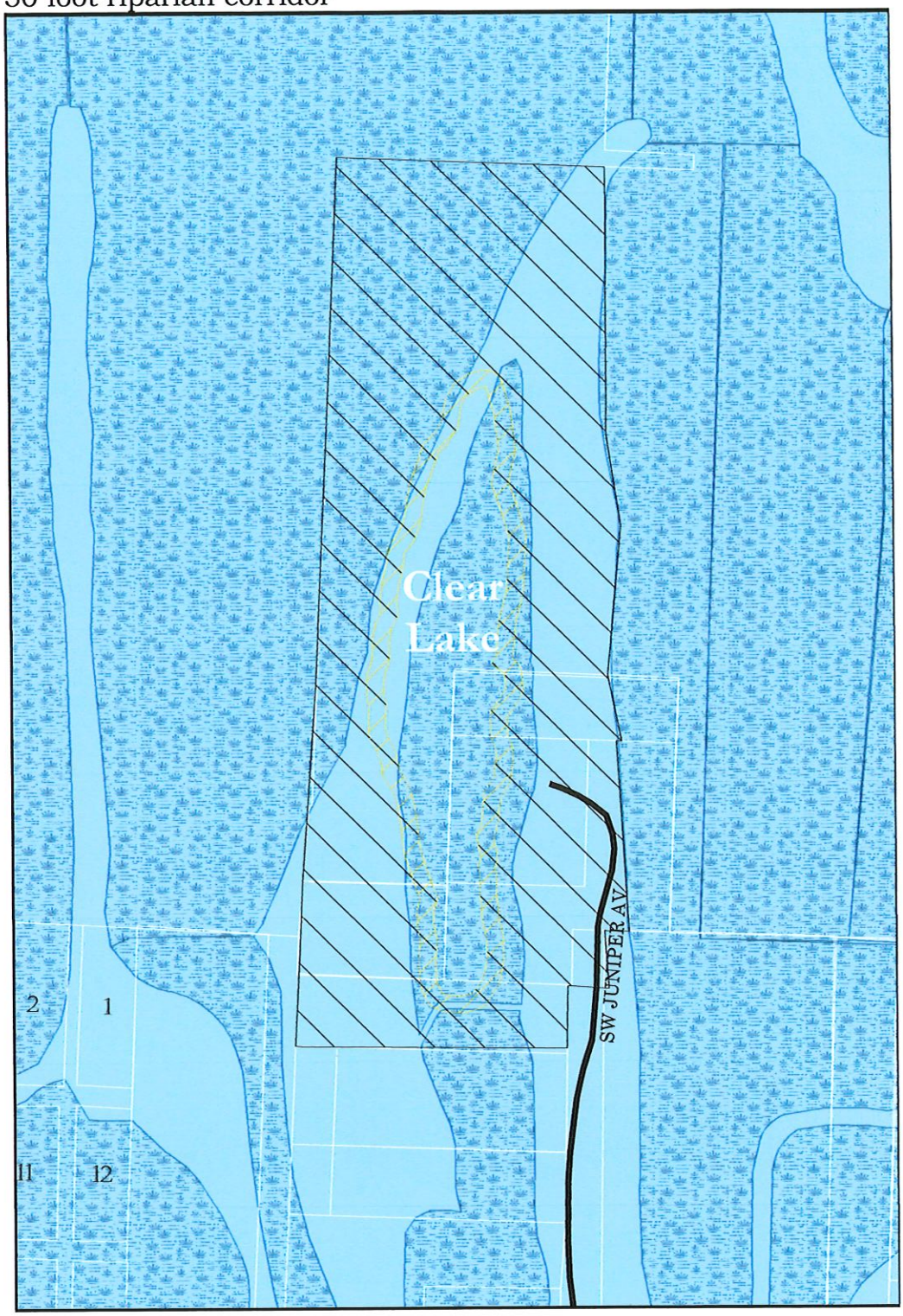
RIPARIAN CORRIDOR UNIT 22
Cemetery Lake

50 foot riparian corridor



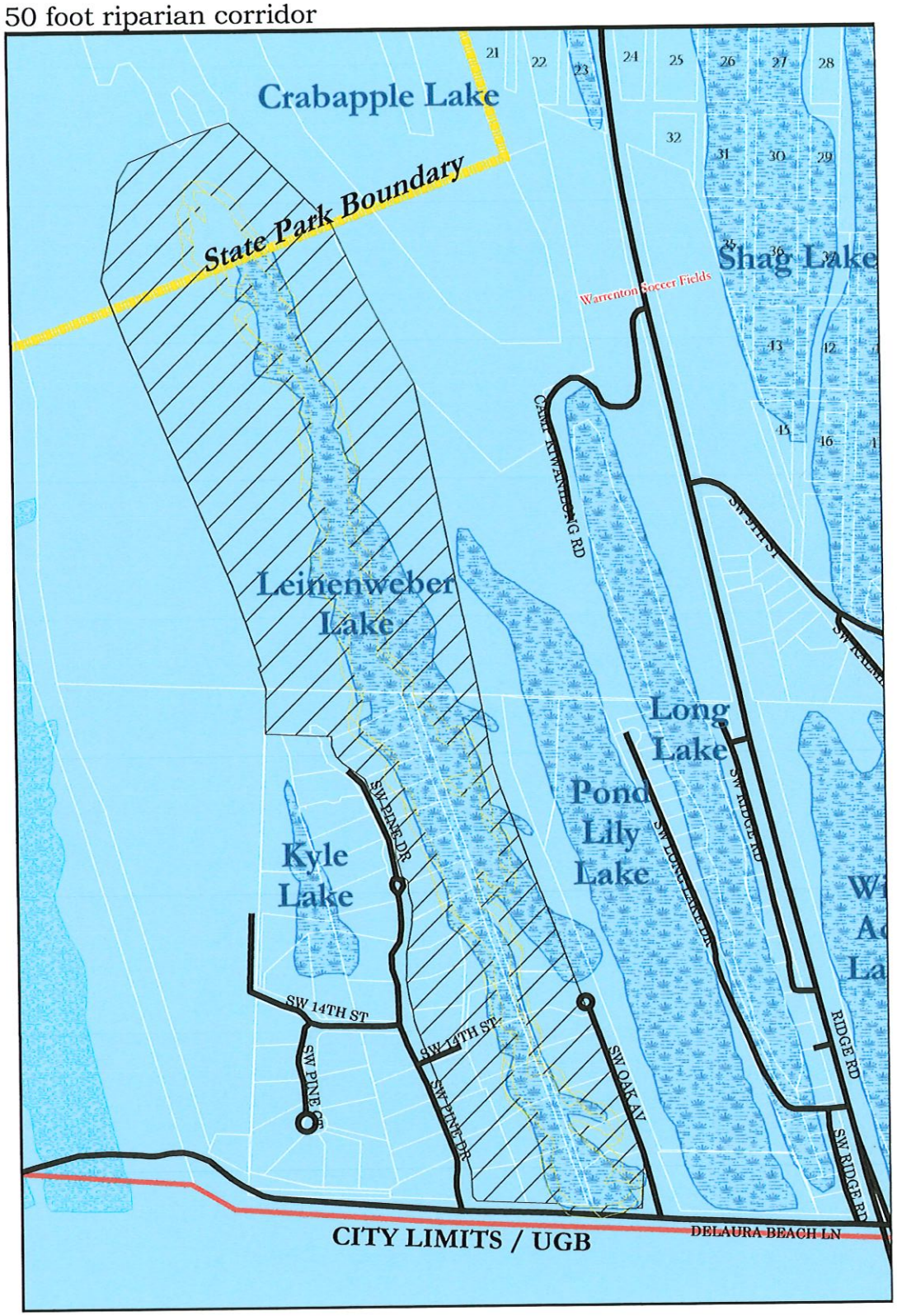
RIPARIAN CORRIDOR UNIT 23
Clear Lake

50 foot riparian corridor



RIPARIAN CORRIDOR UNIT 24
Leinenweber Lake

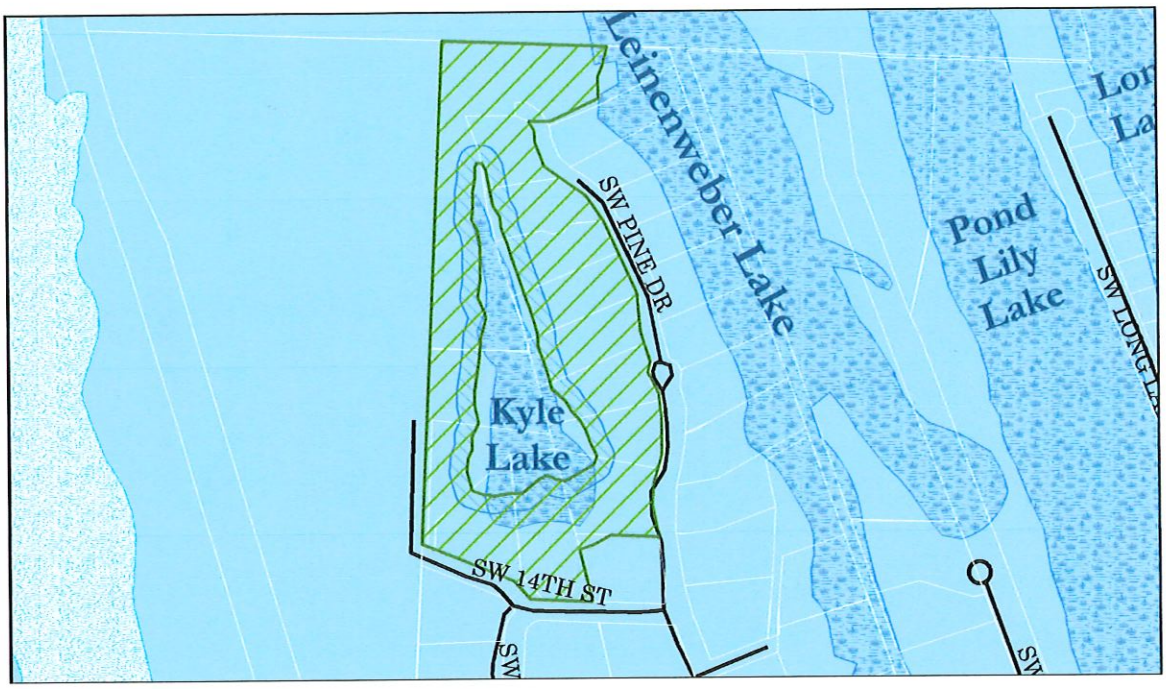
50 foot riparian corridor



Riparian Corridor Unit No. 25:

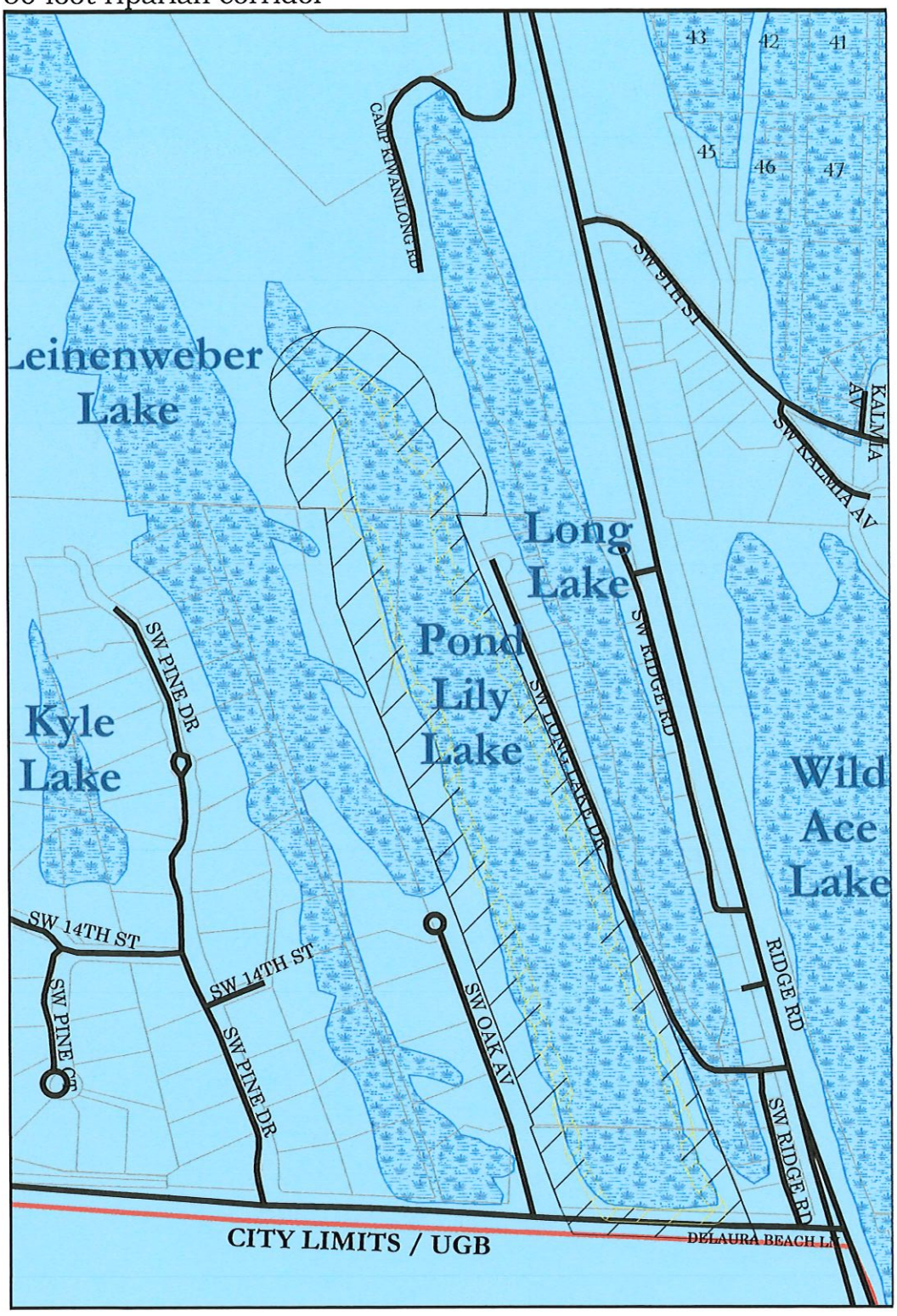
KYLE LAKE

50 foot Riparian Corridor



RIPARIAN CORRIDOR UNIT 26
Pond Lily Lake

50 foot riparian corridor



- The barge moorage area on the East side of Tansy Point.
- The flowlane disposal area south of the main channel (600 feet wide or to the 20-foot bathymetric contour, whichever is narrower).

(b) Conservation Aquatic:

- The area at the southern end of Alder Cove where effluent from the Warrenton sewage ponds is discharged.
- The mouth of Alder Cove from the 3-foot bathymetric contour north to the flowlane disposal area.

(c) Natural Aquatic:

- Remaining aquatic area within Alder Cove.

(d) Water-Dependent Development Shorelands:

- All shoreland areas are designated Water-Dependent Development Shorelands, except for a portion of dredged material disposal site Wa-S-9.4, which is designated Development Shorelands.

(e) The regulatory shoreland boundary is 50 feet from the Columbia River Estuary shoreline, or from the landward toe of dikes and associated toe drains, whichever is greatest, except where it extends further inland to include the following features:

- Shoreland areas designated Water-Dependent Development Shorelands.
- Mitigation site M3 from the *Mitigation and Restoration Plan for the Columbia River Estuary.*
- Dredged material disposal site Wa-S-9.4 from the *Columbia River Estuary Dredged Material Management Plan.*
- A wetland at Tansy Creek identified as significant under Oregon Statewide Planning Goal 17.

Section 5.130 North Warrenton Subarea Findings

(1) General Description - This subarea consists entirely of shorelands. It is bounded by Tansy Creek on the north, the dike adjacent to Alder Cove on the northeast, N.E. Skipanon Drive on the east, and N. W. Warrenton Drive on the south and west. It includes about 260 acres of rural, residential and commercial areas all within the City of Warrenton.

(2) Shoreland Designations

(a) All of the shorelands in this subarea are designated Development Shorelands, except for Alder Creek and Tansy Creek which are designated Conservation Shorelands.

(b) The regulatory shoreland boundary is 50 feet from the Columbia River Estuary shoreline or the landward side of dikes and associated toe drains, whichever is greatest, except where it extends farther inland to include the following features:

- Dredged material disposal site Wa-S-10.1 from the *Columbia River Estuary Dredged Material Management Plan* (1986).

- Significant Oregon Statewide Planning Goal 17 wetlands and surrounding riparian vegetation at Alder and Tansy Creek.

Section 5.140 Middle Skipanon River Subarea Findings

(1) General Description - This subarea includes shorelands on both sides of the Skipanon River, diked lands east of the Skipanon, and aquatic areas between the Harbor Drive Bridge and Highway 101. Although parts of downtown Warrenton and a major shopping center are included, the subarea consists largely of vacant land, residential areas and low density commercial/ light industrial areas. The entire 550 acre subarea lies within the Warrenton City limits.

(2) Aquatic and Shoreland Designations

(a) The marsh islands and fringing marshes in the Skipanon River between the Harbor Drive Bridge and the Eighth Street dam are designated Conservation Aquatic. Remaining aquatic areas between the Harbor Drive Bridge and the Eighth Street dam are designated Development Aquatic.

(b) All of the shorelands of this subarea are designated Development Shorelands, except the river upstream from the Eighth Street dam south to the end of the subarea, which is designated Conservation Shorelands.

(c) The regulatory shoreland boundary is 50 feet from the shoreline or the landward side of dikes and associated toe drains, whichever is greatest, except where it extends farther inland to include the following features:

- Dredged material disposal site Wa-S-10.5 from the *Columbia River Estuary Dredged Material Management Plan* (1986).

- The following wetlands classified as significant under Oregon Statewide Planning Goal 17: Skipanon River above the 8th Street dam and associated wetlands; Skipanon Slough; and Holbrook Slough.

- Significant riparian vegetation around the Skipanon River upstream of the 8th Street dam and around Skipanon Slough.

Section 5.150 Mouth of the Skipanon River Subarea Findings

(1) General Description - This subarea contains filled and diked shorelands north of Harbor Drive and east of Skipanon Drive; the Skipanon River from the Harbor Drive Bridge to its mouth; the East and West Skipanon Peninsulas; and adjacent Columbia River waters out to the navigation channel. Parts of downtown Warrenton are also included.

(2) Aquatic and Shoreland Designations

(a) Development Aquatic:

- The Skipanon waterway between the Harbor Drive Bridge and the main navigation channel.

- Approximately 7.8 acres of tidal marsh and flats on the west side of the West Peninsula.

- The flowlane disposal area south of the main channel (600 feet wide or to the 20-foot bathymetric contour, whichever is narrower).

- The area from the Skipanon Channel to the eastern boundary of the Subarea and from the line of aquatic vegetation on the East Peninsula north to the Columbia River navigation channel.

(b) Conservation Aquatic:

- The aquatic area between the shoreline and the flowlane disposal area west of the Skipanon Channel.

(c) Development Shoreland:

- The area adjacent to the mooring basin east to N.E. Iredale Avenue.

- The area north of Harbor Drive on the east side of the Skipanon waterway.

- An area on the south side of the West Peninsula.

- The area east of Holbrook Slough.

(d) Water-Dependent Development Shorelands:

- All other shorelands are designated Water-Dependent Development.

(e) The regulatory shoreland boundary is 50 feet from the Columbia River Estuary shoreline, or the landward toe of dikes plus associated toe drains, whichever is greatest, except where it extends farther inland to include the following features:

- The East Skipanon Peninsula including:

All shoreland areas on the northern 96 acres of the East Skipanon Peninsula

- The West Skipanon Peninsula, including:

All upland adjacent to Alder Cove and east of N. E. Skipanon Drive, with the exception of the area designated commercial by the City of Warrenton Zoning Ordinance;

Dredged material disposal site Wa-S-10.7 from the *Columbia River Estuary Dredged Material Management Plan*; and

The Holbrook Slough wetland, classified as significant under Oregon Statewide Planning Goal 17.

Section 5.160 Youngs Bay Subarea Findings

(1) General Description - Youngs Bay is one of the more biologically productive parts of the estuary. This subarea extends from the old Highway 101 bridges over the Youngs River and the Lewis and Clark River to the 20-foot bathymetric contour adjacent to the navigation channel of the Columbia River. It includes large fringing marshes, tideflats, open water, and restored wetlands at the Airport Mitigation Bank. The subarea boundary follows the shoreline, except adjacent to the Port of Astoria and the East Peninsula of the Skipanon River. No shorelands are included. Youngs Bay is in Warrenton, Astoria and Clatsop County. About half of the 2,800 acre subarea is in Warrenton.

(2) Aquatic Designations - The authorized navigation channels and an area approximately 110 acres in size bounded on the south by the 20 foot bathymetric contour line, the north by the Columbia River navigation channel and extending between 1800 and 2000 feet to the east of the eastern boundary of the Mouth of the Skipanon Subarea are designated Development Aquatic. The mud flats, tidal flats, and fringing marshes are designated Natural Aquatic, except for areas adjacent to the old PP&L

facility, the site of a former net storage building south of the new Youngs Bay Bridge, and the existing structure at the former Columbia Boatworks, which are designated Conservation Aquatic. All other water areas are designated Conservation Aquatic.

Section 5.170 Airport and Vicinity Subarea Findings

(1) General Description - This subarea consists of diked shorelands that are part of or adjacent to the Port of Astoria Airport. The subarea is bounded by the shoreline on the north and east, Highway 101 to the northwest, and alternate Highway 101 on the south. The subarea lies within the Warrenton city limits and Urban Growth Boundary, except for an area between S.E. 11th and alternate Highway 101, which is outside the Urban Growth Boundary. There are no estuarine aquatic areas in this 1,000 acre subarea.

(2) Shoreland Designations - Shorelands north of the former railroad right-of-way are designated Rural Shorelands. East of Vera Creek, the shoreland within the Warrenton city limits is designated Development Shorelands. Agricultural areas outside the Warrenton city limits are designated Rural Shorelands and a small forested area is Conservation Shorelands. West of Vera Creek to S.E. Pacific Avenue and Holbrook Slough is designated Rural Shorelands. All clear zones at the ends of the airport runways are designated Rural Shorelands. Vera Creek Slough extending 1,000 feet inland from the tidegate is designated Natural Shorelands. The rest of Vera Creek Slough, and other creeks and sloughs in this subarea, are designated Conservation Shorelands. The remainder of the subarea west to Highway 101 is designated Development Shorelands.

The regulatory shoreland boundary in this subarea is 50 feet from the estuary shoreline, or from the landward toe of dikes and associated toe drains, whichever is greatest, except where it extends farther inland to include the following features:

- Vera Creek Slough extending 1,000 feet inland from the tidegate.
- The following dredged material disposal sites from the *Columbia River Estuary Dredged Material Management Plan*: Wa-S-12.6, Wa-S-12.5, Wa-S-12.1, Wa-S-11.9, Wa-S-11.8, and Wa-S-11.7.

Section 5.180 Hammond Subarea

(1) General Description - This subarea includes aquatic and shoreland areas within the former Town of Hammond. The subarea boundaries are the waterward extension of Railroad Drive on the east, Pacific Drive on the east, Pacific Drive on the south, the Urban Growth Boundary on the west, and the 20-foot bathymetric contour on the north. The mooring basin is included in this subarea.

(2) Aquatic Designations - The aquatic area is designated Conservation except for an area between Point Adams Packing and the east subarea boundary, which is designated Development; and the Mooring Basin, which is also designated Development.

The Shoreland area is designated General development Shorelands except for:

• A Water-Dependent Development area between the east subarea boundary and Fleet Street extending between the shoreline and the regulatory shoreland boundary.

• A Water-Dependent Development area south and west of the Mooring Basin designated Recreational Commercial.

• A Conservation area at the northern undeveloped part of the national Marine Fisheries Service research station.

SECTION 5.200 GOALS

(1) Recognize and protect the unique environmental, economic, and social values of the Columbia River Estuary, and its associated wetlands and shorelands.

(2) Protect, maintain, restore where appropriate, and develop where appropriate the long-term environmental, economic and social values, diversity and benefits of the Columbia River Estuary, and its associated wetlands and shorelands.

SECTION 5.300 POLICIES

Section 5.301 Deep-Water Navigation, Port and Industrial Development

These policies apply to port and industrial development occurring in and over Columbia River Estuary waters, and on adjacent shorelands. This section also applies to navigation projects related to deep-draft maritime activities, such as channel, anchorage and turning basin development or expansion.

(1) Shorelands with adjacent deep-water access, adequate rail or road access, and sufficient backup land shall be reserved for water-dependent recreational, commercial, industrial, or port development.

(2) Federally-designated channels, anchorages and turning basins, including necessary side slopes, shall be in Development Aquatic zones.

(3) Development, improvement and expansion of existing port sites is preferred prior to designation of new port sites.

(4) Aides to navigation, including range markers, buoys, channel markers and beacons, shall be protected from development impacts that would render them ineffective. This policy does not preclude development subject to U.S. Coast Guard approved reorientation or relocation of navigation aides.

(5) Evaluation of proposals involving treated or untreated wastewater discharge into the estuary will rely on the point source water pollution control programs administered by the Oregon Department of Environmental Quality and the Washington Department of Ecology.

(6) The following development sites described in the *Economic Evaluation of the Columbia River Estuary* are suitable for development of expansion of marine terminal facilities:

Tansy Point
East Skipanon Peninsula
Port of Astoria
Tongue Point
Driscoll Slough
West Skipanon Peninsula
East Hammond
East Astoria
Bradwood
Wauna.

These sites are in Water-Dependent Development Shorelands, Development Shorelands, and Development Aquatic designations in the *Columbia River Estuary Regional Management Plan.* Development of new marine terminal facilities at any of these sites (except at the Port of Astoria) will trigger a reassessment of whether the remaining undeveloped marine terminal sites are still needed.

Table 1 (below) includes acreage estimates for water-dependent shorelands in Warrenton as required under Statewide Planning Goal 17.

Table 1: Current and Former Water-Dependent Acreage

SITE	CURRENT (acres)	FORMER (acres)	TOTAL (acres)
East Skipanon Peninsula	-	49	49
West Skipanon Peninsula	65	-	65
Warrenton Mooring Basin	18	-	18
Tansy Point	50	-	50
Hammond Mooring Basin	20	-	20
TOTALS	153	49	202

The five sites listed in the table above are described in more detail in the following paragraphs. The column in Table 1 labeled "current" lists the acreage of the site that is currently used for water-dependent uses. This addresses the requirement in OAR 660-37-0050(2a). The column in Table 1 labeled "former" lists the acreage meeting the criteria in OAR 660-37-0050(2b). "Water- Dependent" is defined in OAR 660-37-0040(6) and in the Statewide Planning Goals.

Based on this data, Warrenton needs to protect at least 202 acres as water-dependent development shorelands. Data about these five sites are in the following paragraphs.

~ East Bank of the Skipanon Peninsula: This 172-acres (approximately) site consists of both shoreland and aquatic areas. The northern 96 acres of the site includes approximately 40 acres of shorelands which were added to the inventory of ESWD Shorelands by an amendment adopted in 2005. The remainder of the northern 96 acres is aquatic area that is zoned A-1. The southern 76 acres are designated Other Shorelands and are in the City's Urban Recreation/Resort zone.

~ Warrenton Mooring Basin: This site is immediately southwest of the East Bank site, and consists of water-dependent development shorelands around City of Warrenton Mooring Basin Also included is Warrenton Boat Works and other lands around the mooring basin in the C-2 and RC zones. This site covers about 30.1 acres of shorelands. About 18 acres are currently in water-dependent use.

~ West Bank of the Skipanon Peninsula: The west bank of the Skipanon River is occupied by a saw mill owned by Weyerhaeuser. About 65 acres are committed to water-dependent use according to the 1999 CREST study. The entire site contains about 122 acres of shorelands in a water-dependent shorelands zone (I-2).

~ Tansy Point: Warrenton Wood Fiber, Point Adams Packing, BioProducts, and Carruthers Equipment occupy a portion of the water-dependent site centered around Tansy Point. The entire site consists of about 173 acres of shorelands in a water-dependent development shorelands zone (I-2). According to a 1999 CREST study, Warrenton Wood Fiber occupies about 40 acres. Point Adams Packing covers about four acres. The water-dependent portion of BioProducts covers about six acres. The balance of the site, 123 acres, is either vacant or occupied with non-water-dependent uses.

~ Hammond Mooring Basin: This site consists of land zoned for water-dependent development around the Hammond Marina, in the northwest part of the City. The site consists of about 39.4 acres of shorelands in the RC zone, a water-dependent development shorelands zone. Approximately

20 acres are used for water-dependent purposes, primarily marina parking and dredged material disposal.

Based on this analysis, the Goal 17 administrative rule requires that Warrenton protect at least 202 acres of shorelands for water-dependent use. Under the current zoning, the City protects about 403 acres for water-dependent uses. See Table 2 below.

Table 2: Current Water-Dependent Zoning

SITE	CURRENT (acres)
East Skipanon Peninsula	40
West Skipanon Peninsula	122
Warrenton Mooring Basin	30
Tansy Point	173
Hammond Mooring Basin	39
TOTAL	403

Section 5.303 Diking

These policies apply to the construction, maintenance and repair of flood control dikes in Columbia River Estuary shoreland and aquatic areas. These policies do not apply to dredged material containment dikes.

(1) Dike breaching or removal may be permitted as part of a restoration or mitigation project subject to the applicable Mitigation and Restoration Policies.

(2) New dike alignment or configuration shall not cause an increase in erosion or shoaling in adjacent areas, or an appreciable increase in seasonal water levels behind dikes. Waterway channelization shall be avoided.

(3) New dikes shall be placed on shorelands rather than in aquatic areas unless part of an approved fill project, as a temporary flood protection measure, or subject to an exception to the Statewide Planning Goal 16.

(4) The effects of limited intertidal dredging along fringing marshes for the purposes of dike maintenance are not well-known. A small pilot project to determine these impacts should be undertaken.

Section 5.305 Dredging and Dredged Material Disposal

These policies are applicable to all estuarine dredging and dredged material disposal in the Columbia River Estuary, shall be allowed only:

(1) If, allowed by the applicable zone and required for one or more of the following uses and activities:

(a) Navigation, navigational access, or an approved water-dependent use of aquatic areas or adjacent shorelands requiring an estuarine location; and

(b) A need (ie., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and

(c) No feasible alternative upland locations exist; and

(d) Adverse impacts are minimized, avoided, and mitigated; and

(e) An approved restoration project; and

(f) Excavation necessary for approved bridge crossing support structures, pipeline, cable, or utility crossing; and

(g) Maintenance of existing tidegates and tidegate drainage channels where a Goal 16 exception has been approved; and

(h) Aquaculture facilities.

(2) The appropriate review/permitting process for impacts to an ESA-listed species has been followed and is approved/permitted by the appropriate Fisheries agency; and

(3) The activity abides by all required local, state and federal permits.

(4) Dredging and dredged material disposal shall not disturb more than the minimum area necessary for the project and shall be conducted and timed so as to minimize impacts on wetlands and other estuarine resources. Loss or disruption of fish and wildlife habitat and damage to essential properties of the estuarine resource shall be minimized by careful location, design, and construction of:

(a) Facilities requiring dredging; and

(b) Sites designated to receive dredged material disposal; and

(c) Dredging operation staging areas and equipment marshalling yards.

Dredged materials shall not be placed in intertidal or tidal marsh habitats or in other areas that local, state, or federal regulatory agencies determine to be unsuitable for dredged material disposal. Exceptions to the requirement concerning disposal in an intertidal or tidal marsh area include use of dredged material as a fill associated with an approved fill project or placement of dredged materials in the sandy intertidal area of a designated beach nourishment site. Land disposal shall enhance or be compatible with the final use of the site area.

(5) The effects of both initial and subsequent maintenance dredging, as well as dredging equipment marshalling and staging, shall be considered prior to approval of new projects or expansion of existing projects. Projects shall not be approved unless disposal sites with adequate capacity to meet initial excavation dredging and at least five years of expected maintenance dredging requirements are available.

(6) Dredging subtidal areas to obtain fill material for dike maintenance may be allowed under some circumstances (see the Development Code). Some dikes in the estuary are not accessible by barge-mounted dredges or land-based equipment. Dredging intertidal areas to obtain fill material may be the only option for maintaining these dikes. Approval of intertidal dredging will require an exception to Statewide Planning Goal 16.

(7) Where a dredged material disposal site is vegetated, disposal should occur on the smallest land area consistent with sound disposal methods (e.g., providing for adequate de-watering of dredged sediments, and 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 provided that the dikes surrounding the site are adequate or can be made adequate to contain the dredged materials.

Dredged Material Disposal Site Selection and Location Policies

(8) When identifying land dredged material disposal sites, emphasis shall be placed on sites where (not in priority order):

(a) The local designation is Development provided that the disposal does not preclude future development at the site;

(b) The potential for the site's final 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 properly contained, presenting minimal health and environmental hazards due to leaching or other redistribution of contaminated materials;

(e) Placement of dredged material will help restore degraded habitat; or where

(f) Wetlands would not be impacted.

Important fish and wildlife habitat, or areas with scenic, recreational, archaeological, or historical values that would not benefit from dredged material disposal and sites where the present intensity or type of use is inconsistent with dredged material disposal shall be avoided. The use of agricultural or forest lands for dredged material disposal shall occur only when the project sponsor can demonstrate that the soils can be restored to agricultural or forest productivity after disposal use is completed. In cases where this demonstration cannot be made, an exception to the Oregon Statewide Planning Goal 3 or 4 must be approved prior to the use of the site for dredged material disposal. The use of shoreland water-dependent development sites for dredged material disposal shall occur only when the project sponsor can demonstrate that the dredged material placed on the site will be compatible with current and future water-dependent development. Dredged material disposal shall not occur in major marshes, significant wildlife habitat and exceptional aesthetic resources designated under Oregon Statewide Planning Goal 17.

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

(9) Estuarine in-water disposal sites shall be in Development Aquatic areas identified as low in benthic productivity, unless the disposal is to provide fill material for an approved fill project, and where disposal at the site will not have adverse hydraulic effects. Estuarine in-water disposal sites shall only be designated and used when it is demonstrated that no feasible land or ocean disposal sites with less damaging environmental impacts can be identified and biological and physical impacts are minimal. An in-water disposal site shall not be used if sufficient sediment type and benthic data are not available to characterize the site.

(10) Flowlane disposal sites shall only be allowed in Development Aquatic areas within or adjacent to a channel. The Development Aquatic area adjacent to the channel shall be defined by a line 600 feet from either side of the channel or the 20-foot bathymetric contour, whichever is closer to the channel. Flowlane disposal within this area shall only be allowed where:

(a) Sediments can reasonably be expected to be transported downstream without excessive shoaling,

(b) Interference with recreational and commercial fishing operations, including snag removal from gillnet drifts, will be minimal or can be minimized by applying specific restrictions on timing or disposal techniques,

(c) Adverse hydraulic effects will be minimal,

(d) Adverse effects on estuarine resources will be minimal, and

(e) The disposal site depth is between 20 and 65 feet below MLLW.

(11) Beach nourishment sites shall only be designated on sandy beaches currently experiencing active erosion. Dredged material disposal at beach nourishment sites shall only be used to offset the erosion and not to create new beach or land areas. Beach nourishment sites shall not be designated in areas where placement or subsequent erosion of the dredged materials would adversely impact tidal marshes or productive intertidal or shallow subtidal areas. Designation of new beach nourishment sites shall require an exception to Statewide Planning Goal 16.

(12) Dredged material disposal sites with adequate capacity to accommodate anticipated dredging needs for at least a five year period shall be identified and designated.

(13) In order to ensure the adequacy of identified dredged material disposal site capacities for anticipated five year disposal requirements, an analysis of the dredge material disposal site inventory shall be completed every five years. The analysis shall include:

(a) A determination of the 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 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.

(c) An analysis of the adequacy of the dredged material site inventory shall include notification of updating inventory information to affected property owners and local, state and federal agencies. Of particular importance, is the addition, and/or deletion, of dredged material disposal sites.

(d) The City of Warrenton shall cooperate with other jurisdictions and CREST on the Columbia River Estuary in monitoring of dredged material site availability and in dredged material disposal plan update.

Section 5.307 Estuarine Construction

These policies apply to over-water and in-water structures such as docks, bulkheads, moorages, boat ramps, boat houses, jetties, pile dikes, breakwaters and other structures involving installation of piling or placement of riprap in Columbia River Estuary aquatic areas, and to excavation of shorelands for creation of new water surface area. This section does not apply to structures located entirely on shorelands or uplands, but does apply to structures, such as boat ramps, that are in both aquatic and shoreland designations.

(1) Proper stream-side vegetation management is the preferred method of shoreline stabilization, followed by planting of new vegetation, installation of riprap and installation of a bulkhead.

(2) Navigational structures, such as breakwaters, jetties, groins, and pile dikes are major estuary alterations with long term biological and physical effects. Proposals for new or enlarged navigational structures, or for removal of existing structures, must demonstrate that expected benefits outweigh potential adverse impacts on estuarine productivity.

(3) New non-water-dependent uses in aquatic areas or in shoreland areas zoned Water-Dependent Industrial Shorelands, Marine Commercial Shorelands or, shall not preclude or pose any significant conflicts with existing, proposed or probable future water-dependent uses on the site or in the vicinity.

(4) Piling or dolphin installation, structural shoreline stabilization, and other structures not involving dredge or fill, but which could alter the estuary may be allowed only if all of the following criteria are met:

(a) A substantial public benefit is demonstrated; and

(b) The proposed use does not unreasonably interfere with public trust rights; and

(c) Feasible alternative upland locations do not exist; and

(d) Potential adverse impacts, as identified in the impact assessment, are minimized.

(5) Individual single-purpose docks and piers are discouraged in favor of community moorage facilities common to several uses and interests. The size and shape of a dock or pier shall be limited to that required for the intended use. Alternatives to docks and piers, such as mooring buoys, dryland storage, and launching facilities shall be investigated and considered.

Section 5.309 Fill

These policies apply to the placement of fill material in the tidal wetlands and waters of the Columbia River Estuary. These policies also apply to fill in non-tidal wetlands in shoreland designations that are identified as "significant" non-tidal wetlands.

(1) New non-water-dependent uses in aquatic areas and in areas zoned Marine Commercial Shoreland or, Water-Dependent Industrial Shorelands shall not preclude or pose any significant conflicts with existing, proposed or probable future water-dependent uses on the site or in the vicinity.

(2) Reduction of surface area or volume of aquatic areas and significant non-tidal wetlands in shoreland areas shall be minimized in the location and design of facilities requiring fill.

(3) Construction on piling is preferred over construction on fill.

(4) Mitigation may be required for fills (see Mitigation and Restoration Policies).

(5) Fill in estuarine aquatic areas may be permitted only if all of the following criteria are met:

(a) If required for navigation or for other water-dependent uses requiring an estuarine location, or if specifically allowed under the applicable aquatic zone; and

(b) A substantial public benefit is demonstrated; and

(c) The proposed fill does not unreasonably interfere with public trust rights; and

(d) Feasible upland alternative locations do not exist; and

(e) Adverse impacts, as identified in the impact assessment, are minimized.

Section 5.311 Fish and Wildlife Habitat

These policies apply to uses and activities with potential adverse impacts on fish or wildlife habitat, both in Columbia River estuarine aquatic areas and in estuarine shorelands.

(1) Endangered or threatened species habitat shall be protected from incompatible development.

(2) Measures shall be taken protecting nesting, roosting, feeding and resting areas used by either resident or migratory bird populations.

(3) Major non-tidal marshes, significant wildlife habitat, coastal headlands, and exceptional aesthetic resources within the Estuary Shorelands Boundary shall be protected. New uses in these areas shall be consistent with the protection of natural values, and may include propagation and selective harvest of forest products, grazing, harvesting, wild crops, and low intensity water-dependent recreation.

Section 5.313 Fisheries and Aquaculture

These policies apply to all projects that could conceivably affect fisheries (either commercial or recreational) or aquaculture in the Columbia River Estuary. This subsection is also applicable to the development of aquaculture facilities and to fisheries enhancement projects.

(1) Traditional fishing areas shall be protected when dredging, filling, pile driving or when other potentially disruptive in-water activities occur.

(2) Sufficient space for present and anticipated needs shall be reserved for the following uses:

- Fishing vessel moorage;
- Seafood receiving and processing;
- Boat repair;
- Gear storage;
- Ice making;
- Cold storage;
- Other seafood industry support facilities.

(3) Increased hatchery production and other fish enhancement efforts shall be supported where feasible, and when consistent with other applicable plan provisions.

(4) Aquaculture facility location, design and operation shall minimize adverse impacts on estuarine and shoreland habitat, navigation channels, water quality, and public access points.

(5) Existing aquaculture and hatchery facilities and areas identified as having significant aquaculture potential shall be protected from conflicting uses.

(6) Aquaculture and hatchery structures shall not interfere with commercial or recreational navigation.

(7) The following development sites (described in the *Economic Evaluation of the Columbia River Estuary*, as well as other potential development sites in the Columbia River Estuary, are suitable for development or expansion of facilities related to commercial fishing and seafood processing. Facilities that could be developed at these sites include, but are not limited to commercial fishing vessel moorage; fuel; ice; fish receiving facilities; gear storage; marine hardware sales and repair; seafood processing and storage facilities; boat building and repair; upland boat storage; and related facilities.

Tansy Point
East Hammond
Chinook Boat Basin
AMCCO
Port of Astoria
Warrenton Boat Basin
Ilwaco Boat Basin
Cathlamet Boat Basin
South Astoria
East Astoria

These sites are in Water-Dependent Development Shorelands, Development Shorelands, Development Aquatic and Conservation Aquatic designations in the *Columbia River Estuary Regional Management Plan.* Other sites may also be suitable for commercial fishing and seafood processing facilities.

Section 5.315 Land Transportation System

These policies apply to the maintenance and construction of railroads, roads and bridges in Columbia River estuary shoreland and aquatic areas. Public, as well as private facilities are covered under this subsection. Forest roads, however, are excluded.

(1) New non-water-dependent uses in aquatic areas or in Marine Commercial Shorelands or Water-Dependent Industrial Shorelands shall not preclude or pose any significant conflicts with existing, proposed or probable future water-dependent uses on the site or in the vicinity.

(2) Land transportation systems shall be maintained and improved to support existing urban areas, allow industrial site development and support rural and recreational uses.

(3) New land transportation routes shall not be located in aquatic areas or in significant non-tidal wetlands in shoreland areas except where bridges are needed, and where no feasible alternative route exists.

(4) New land transportation routes shall be located so as not to reduce or downgrade the potential for development of Marine Commercial Shorelands, Water-Dependent Industrial Shorelands, or Development Aquatic areas.

(5) When feasible, new public roads in scenic areas shall provide rest areas, view-points and facilities for safe bicycle and pedestrian travel.

(6) Construction of new land transportation facilities and maintenance of existing land transportation facilities shall be undertaken in a manner that minimizes expected impacts on aquatic and shoreland estuarine resources.

Section 5.317 Log Storage

These policies apply to the establishment of new, and the expansion of existing, log storage and sorting areas in Columbia River Estuary aquatic and shoreland areas.

(1) New or expanded aquatic area log storage facilities shall be designed and located so as to minimize potential adverse impacts on aquatic habitat.

Section 5.319 Mining and Mineral Extraction

These policies are applicable to the extraction of sand, gravel, petroleum products and other minerals from both submerged lands under aquatic areas and from shoreland areas in the Columbia River Estuary. These policies and standards are also applicable to outer continental shelf mineral development support facilities built in the estuary.

(1) Proposals for aquatic and shoreland area mining may be approved subject to protection of adjacent property and fishery resources from potential adverse impacts, including sedimentation and siltation.

(2) Mining operations in aquatic and shoreland areas shall use technology and practices which minimize potential damage to estuarine resources.

(3) Mineral extraction or gravel or sand dredging from the estuary may be permitted only when these resources are not otherwise available at an economically feasible upland location.

(4) Aquatic area mining or mineral extraction projects may be approved only for the least biologically sensitive areas.

(5) Mining and mineral extraction activities shall not be approved in areas of major marshes, significant fish and wildlife habitat, or exceptional aesthetic resources.

(6) Wastewater associated with mining shall be handled in a manner that preserves water quality.

(7) The surface mining regulations administered by the Oregon Department of Geology and Mineral Industries shall be relied upon with respect to surface mining practices.

(8) The following development sites (described in the *Economic Evaluation of the Columbia River Estuary*), as well as other potential development in the Columbia River Estuary, are suitable for development of offshore mineral development support facilities:

Tansy Point	West Skipanon Peninsula
Ilwaco Boat Basin	Port of Astoria
East Astoria	Tongue Point

Several different types of facilities could be associated with offshore mineral development at these sites, and at other sites. The need for sites designated for activities associated with offshore mineral development will be reevaluated after Outer Continental Shelf areas adjacent to the Oregon and Washington coast are leased. These sites are designated Water-Dependent Development Shorelands in the *Columbia River Estuary Regional Management Plan.*

Section 5.321 Mitigation and Restoration

These policies apply to estuarine restoration and mitigation projects on Columbia River Estuary aquatic areas and shorelands.

~ Mitigation Policies for Aquatic Areas and Non-tidal Wetlands

(1) Any fill activities that are permitted in Columbia River Estuary aquatic areas or dredging activities in intertidal and shallow to medium depth subtidal areas shall be mitigated through project design and/or compensatory mitigation (creation, restoration or enhancement) to ensure that the integrity of the estuary ecosystem is maintained. The Comprehensive Plan shall designate and protect specific sites for mitigation which generally correspond to the types and quantity of aquatic area proposed for dredging or filling.

(2) Mitigation for fill in estuarine aquatic areas or dredging in intertidal and shallow to medium depth subtidal areas of the Columbia River Estuary planning area shall be implemented through the following mitigation actions:

~ Project Design Mitigation Actions

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment (e.g., removing wetland fills, rehabilitation of a resource use and/or extraction site when its economic life is terminated);

(d) Reducing or eliminating the impact over time by preservation and maintenance operations;

~ Compensatory Mitigation Actions

(e) Creation, restoration, or enhancement of an estuarine area 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.

Any combination of the above actions may be required to implement mitigation requirements. The compensatory mitigation actions listed in section (e) shall only be implemented after impact avoidance, reduction and rectification techniques have been considered, and unavoidable adverse impacts remain.

(3) The full array of wetland and aquatic area values shall be addressed when making mitigation site decisions and when designing mitigation action requirements. The list includes but is not limited to: fish and wildlife habitat, flood storage and de-synchronization, food chain support, passive recreation, shoreline anchoring and water purification functions.

(4) All mitigation actions shall be required to begin prior to or concurrent with the associated development action.

(5) Developments in low-value diked freshwater non-tidal wetlands can be mitigated by treating estuarine restorations or creations as in-kind mitigation actions. The final decision on the relative value of diked freshwater non-tidal wetland shall be made through a cooperative effort between Warrenton and state and federal regulatory agencies. Values

considered shall include but are not restricted to fish and wildlife habitat, flood storage and de-synchronization, food chain support, passive recreation, shoreline anchoring and water purification functions.

(6) If any of the compensatory mitigation actions are required, Warrenton shall request that the U.S. Fish and Wildlife Service make a Resource Category determination for the site proposed for development. The classification shall be listed on the permit application and review notice. If the area subject to impact is in a Resource Category 2 of lower (4 = lowest), the following sequence of mitigation options shall be considered:

- In-Kind/On-Site
- In-Kind/Off-Site
- Out-of-Kind/On-Site
- Out-of-Kind/Off-Site

(7) If out-of-kind mitigation is found to be the only option, the applicant shall first seek restoration of historically and/or present-day scarce habitat types.

(8) All completed mitigation sites shall be adequately buffered from development and other activities to minimize the potential adverse impacts on the mitigation site. Buffer requirements shall be determined through a cooperative effort between Warrenton and state and federal regulatory agencies.

(9) No mitigation action shall endanger or obstruct adjacent properties. The potential for present or future endangerment or obstruction shall be determined in advance of the mitigation action. Responsibility for rectifying potential damage to adjacent property shall be determined prior to permit approval.

(10) Warrenton will cooperate with CREST and state and federal resource agencies in the periodic review of the region's mitigation plan. Reviews shall occur every four to seven years. The review shall include re-examination of site availability, degree of plan implementation, changed policies and legal requirements and possible new projects that may require mitigation.

(11) Additional mitigation sites shall be designated by local jurisdictions as the need arises. New designations shall be coordinated with CREST, Warrenton, state and federal resource agencies. New sites shall be subject to the same policies and standards as sites presently designated.

(12) All designated mitigation sites shall be protected and shall facilitate mitigation actions through appropriate zoning ordinance measures. For any new site not designated in the plan, but included or partially included in the shoreland base or overlay zone, mitigation shall be implemented through the shoreland base or overlay zone. If the new site is only partially included in the shoreland base or overlay zone, the portion of the site outside the shoreland base or overlay zone shall be treated as though it is inside the zone.

(13) Estuarine alterations in Washington can be mitigated by actions in Oregon and vice versa if local and state authorities from both states and federal authorities with statutory responsibility for administering mitigation requirements approve the mitigation site selected and the mitigation action proposed.

(14) Shorelands that are in a Marine Commercial Shorelands Zone or Water-Dependent Industrial Shorelands Zone, can only be used for mitigation subject to a finding that the use of the site for mitigation will not preclude or conflict with water-dependent uses.

(15) Full consideration shall be given to existing significant Goal 17 resources when designing a mitigation project that may potentially alter, impair or destroy all or any portion of these resources. The minimum consideration will be to discount value from the credit potential of the mitigation action proportional to the existing value of the Goal 17 resource. Significant Goal 17 resource areas (major marshes, significant wildlife habitat and exceptional aesthetic resources) can only be used for mitigation subject to a finding that the use of the site for mitigation will be consistent with the protection of natural values.

(16) Any acquisition strategy for bringing designated mitigation sites (pre- or post-mitigation action) into public ownership or into ownership of a private nonprofit land trust organization is encouraged.

(17) All mitigation sites designated on public lands shall remain in public ownership.

(18) An area in forest production, and considered for mitigation purposes, shall be evaluated for its present use value and compared with its potential value as a wetland before conversion of the site is acceptable.

(19) A developer may create, restore or enhance more wetland area than required for immediate development impacts. Subject to federal, state and local approval, this "surplus mitigation" may be credited against future development. The reserve wetland area shall not be considered a mitigation bank unless it is acquired and managed by the Division of State Lands.

(20) After a mitigation action takes place Warrenton shall amend its plan and implement a zone change for the site to reflect the aquatic character of the site.

~ Mitigation Bank Policies

(21) Any area where a mitigation action has taken place, and mitigation credits are available for future development, and the site is owned and managed by a federal or state land management agency, shall be designated as a mitigation bank. Oregon Division of State Lands shall be responsible for administration of a mitigation bank area throughout the period it serves as a bank.

(22) An agreement between Warrenton and state and federal authorities shall serve as the implementing instrument establishing a mitigation bank and for continuing management of a bank. Such an agreement is necessary to document the initial conditions of a bank's formation, including the means by which a mitigation bank shall be administered. The agreement shall also detail ownership of the site and include an itemized presentation of project costs, a technical plan outlining the habitat mitigation action, and include the number of mitigation credits available in the bank. A plan for monitoring the mitigation site shall be provided, including the goals, costs, and responsibility of the monitoring program. The agreement shall specify the mechanisms by which mitigation "credits" will be transferred from the bank and applied to the activity qualifying for use of the bank. The agreement shall also specify the means by which proportional mitigation bank creation costs will be assessed.

(23) Mitigation credits in mitigation banks shall be reserved for use by small scale development projects (5 acres or less of impacted wetland and/or aquatic area). This does not apply to the Airport Mitigation Bank.

(24) A variety of habitats shall be created in a mitigation bank whenever possible, such that the opportunity of replacement for wetland resources lost to a variety of development activities is possible. The mitigation bank shall be of sufficient capacity to meet the requirements of a number of expected development projects.

(25) Mitigation banks shall be created by written agreement with the Director of Oregon Division of State Lands (DSL) and shall be administered by DSL. Such agreements shall provide the basis for creation and operation of the bank and shall specifically provide for the following:

(a) The exact location of the real property.

(b) Proof of ownership or control, i.e., deed or title report.

(c) The nature and extent of the mitigation action. This analysis shall require information about the site salinity, elevation, wave and current actions, substrate, and other physical and biological characteristics.

(d) How and when the mitigation action shall be performed.

(e) A statement of informed opinion as to what habitat shall result from the action and a statement as to the relative value of each anticipated habitat type.

(f) How the resulting changes shall be monitored and evaluated [OAR 141-85-254 (12, 14)] and what contingencies are planned if goals are not satisfied within a reasonable time period.

(g) How the mitigation bank shall be protected (e.g., dedication, conservation easement, deed transfer).

(h) How funding for necessary construction or alteration work and potential remedial action shall be guaranteed (e.g., bonding).

(i) The price that may be charged for credits from the bank.

(26) Applicants for removal and fill permits requiring mitigation are not obligated, or automatically entitled, to use an existing mitigation bank to meet the mitigation needs of any project. Permit applicants shall negotiate directly with the administrator of the bank, resource agencies, and regulatory agencies to secure the right to use the bank. Agreements between the administrator of the bank and the permit applicant are subject to the City's approval of the number of mitigation credits charged against the bank.

~ Restoration Policies for Aquatic Areas and Non-tidal Wetlands

(27) Restoration of tidal and non-tidal wetlands in the Columbia River Estuary area may be done either as a mitigation action or as an action outside of the context of mitigation.

(28) Restoration outside of the context of mitigation shall be allowed at designated mitigation sites if the site is a middle or low priority site and findings are made that it is no longer needed for mitigation.

(29) All restoration projects shall serve to revitalize, return, replace or otherwise improve the wetland and aquatic ecosystems in the Columbia River Estuary area. Examples include restoration of natural biological productivity, fish and wildlife habitat, aesthetic or historic resources that have been diminished or lost due to past alterations, activities, or catastrophic events. In selecting projects, priority shall be given to those

projects which provide substantial public benefits and which restore those wetland and aquatic habitat types, resources, or amenities which are in shortest supply compared to past abundance.

(30) After a restoration takes place Warrenton shall amend its plan and implement a zone change for the restored area to reflect the aquatic character of the site.

(31) Restoration of economically marginal and unused low-lying diked areas to estuarine wetland shall be encouraged; active restorations to provide potential for diverse habitat (e.g., mudflat and marsh) as well as passive restorations are encouraged. Except through public condemnation procedures, removal of dikes or excavation on private lands shall not occur without consent of the landowner.

(32) Shorelands in a Marine Commercial Shorelands Zone or Water-Dependent Industrial Shorelands Zone can only be used for restoration subject to a finding that the use of the site for restoration will not preclude or conflict with water-dependent uses.

(33) Significant Goal 17 resource areas (major marshes, significant wildlife habitat, and exceptional aesthetic resources) can only be used for restoration subject to a finding that the use of the site for restoration will be consistent with protection of its natural values.

(34) Consideration shall be given to restoring water circulation in historically shoaled areas. Circulation enhancements must outweigh any potential damages to wetlands before they are implemented.

(35) Old piling, navigational structures, and buildings that are a hazard to navigation and contribute to excessive shoaling, or pose a threat to life or property shall be removed. Prior to removal, the costs and benefits associated with removal shall be evaluated. Factors requiring consideration include:

~ Potential erosion or sedimentation problems that may result from removal;

~ The structure's habitat value and probable longevity; and

~ The structure's historic and scenic values.

(36) Restoration of riparian vegetation around wetlands and waterways in the Columbia River Estuary planning area is a high priority. Protection of these areas shall be implemented using various strategies (e.g., zoning, acquisitions, easements, and transfer of development rights).

~ Long Term Mitigation and Restoration Policies

(37) Federal and state resource agencies should be requested to intensify existing programs to identify Resource Categories of wetlands and Section 404 wetlands in the Columbia River Estuary area to give developers greater certainty regarding available development sites and potential mitigation requirements. The net result shall be greater certainty and a more streamlined permit process.

(38) CREST shall make an effort to develop a program to identify and assess the relative values of non-tidal wetlands. This inventory effort shall provide baseline data that can be used to give greater certainty regarding site potential for development and mitigation requirements.

(40) A method of quantifying enhancement credits for estuarine and non-estuarine wetland mitigation should be developed. A method for quantifying non-estuarine wetland values should also be developed and incorporated into local statutes. Ideally, this system should be compatible with the system used in Oregon's Estuarine Mitigation Law. The system would have to be reviewed and accepted by state and federal resource and regulatory agencies.

(41) A system should be devised whereby wetland impacts that are allowed under a regional or nationwide permit, and that do not require any permit procedure, may be reported to the local government so that an accurate record of cumulative wetland impacts can be maintained.

(42) The following framework for restoration implementation is recommended for the Columbia River Estuary:

(a) Develop and provide educational materials for landowners explaining the benefits of natural area protection and various options for restoring land to natural conditions and protecting the restored land.

(b) Establish an incentive system in the Columbia River Estuary area whereby landowners can effectively utilize a variety of options for restoration and protection of their land.

(c) Identify landowners with economically marginal production land (e.g., forest or agricultural production), that was historically wetland, and to inform them of any incentive-oriented restoration systems for restoration and encourage their participation.

(43) The following techniques are suggested as potential methods to establish a wetland restoration and protection incentive system:

(a) Development of effective acquisition power through private non-profit organizations and federal and state grants (acquisition may be through sale, trade or land donations). Public ownership is encouraged.

(b) Protection through restrictions while landowners retain title to the land, (e.g., conservation easements, mutual covenants, deed restrictions and leases).

(c) Provide tax incentives for landowners that allow restoration to take place on their land.

(d) Deed restrictions, wildlife easements or fee acquisition on Farmers Home Administration farm foreclosure inventory lands.

Section 5.323 Public Access

These policies are applicable to uses and activities in Columbia River Estuary shoreland and aquatic areas which directly or indirectly affect public access. "Public access" is used broadly here to include direct physical access to estuary aquatic areas (boat ramps, for example), aesthetic access (viewing opportunities, for example), and other facilities that provide some degree of public access to Columbia River Estuary shorelands and aquatic areas.

(1) Existing public ownerships, right-of-ways, and similar public easements in estuary shorelands which provide access to or along the estuary shall be retained or replaced if sold, exchanged or transferred. Right-of-ways may be vacated to permit redevelopment of shoreland areas provided public access across the affected site is retained.

(2) Public access in urban areas shall be preserved and enhanced through water-front restoration and public facilities construction, and other actions consistent with Warrenton's public access plan.

(3) Proposed major shoreline developments shall not, individually or cumulatively, exclude the public from shoreline access to areas traditionally used for fishing, hunting or other shoreline activities.

(4) Special consideration shall be given toward making the estuary accessible for the physically handicapped or disabled.

(5) Warrenton will develop and implement programs for increasing public access.

(6) The City will cooperate with the State Parks Division on issues concerning Fort Stevens State Park.

(7) The City will consider the recreational and public access value of any public lands proposed to be leased or sold to private interests, or used for public purposes which would reduce needed public access. The City will hold a public hearing to dispose of or lease public property, and will consider public input.

Section 5.325 Recreation and Tourism

These policies are applicable to recreational and tourist-oriented facilities in Columbia River Estuary shoreland and aquatic areas.

(1) New non-water-dependent uses in aquatic areas or in areas zoned Marine Commercial Shorelands or Water-Dependent Industrial Shorelands shall not preclude or pose any significant conflicts with existing, proposed or probable future water-dependent uses on the site or in the vicinity.

(2) Recreation uses in waterfront areas shall take maximum advantage of their proximity to the water by providing water access points, waterfront viewing areas, and structures visually compatible with the waterfront.

(3) The following sites (described in the *Economic Evaluation of the Columbia River Estuary*), as well as other potential development sites in the Columbia River Estuary, are suitable for estuary-related recreational development, including moorage, boat building and repair, charter offices, fuel, boat ramps, and associated facilities;

Warrenton Boat Basin	Hammond Boat Basin
Ilwaco Boat Basin	Chinook Boat Basin
Skamokawa	Cathlamet Boat Basin
South Astoria	Port of Astoria
East Astoria	Bradwood

Development of a new recreational marina at any of these sites, or at another site in the Columbia River Estuary, will trigger reevaluation of the need for remaining vacant sites designated for recreational development.

Section 5.327 Residential, Commercial and Industrial Development

These policies apply to construction or expansion of residential, commercial or industrial facilities in Columbia River Estuary shoreland and aquatic areas. Within the context of this subsection, residential uses include single and multi-family structures, mobile homes, and floating residences (subject to an exception to Oregon Statewide Planning Goal 16). Duck shacks, recreational vehicles, hotels, motels and bed-and-breakfast facilities are not considered residential structures for purposes of this subsection. Commercial structures and uses include all retail or wholesale

storage, service or sales facilities and uses, whether water-dependent, water-related, or non-dependent, non-related. Industrial uses and activities include facilities for fabrication, assembly, storage, and processing, whether water-dependent, water-related or non-dependent non-related.

(1) New non-water-dependent uses in aquatic areas and in Marine Commercial Shorelands or Water-Dependent Industrial Shorelands shall not preclude or pose any significant conflicts with existing, proposed or probable future water-dependent uses on the site or in the vicinity.

(2) Residential, commercial or industrial development requiring new dredging or filling of aquatic areas may be permitted only if all of the following criteria are met:

(a) The proposed use is required for navigation or other water-dependent use requiring an estuarine location, or if specifically allowed in the applicable aquatic zone; and

(b) A substantial public benefit is demonstrated; and

(c) The proposed use does not unreasonably interfere with public trust rights; and

(d) Feasible alternative upland locations do not exist; and

(e) Potential adverse impacts are minimized.

(3) Piling or dolphin installation, structural shoreline stabilization, and other structures not involving dredge or fill, but which could alter the estuary may be allowed only if all of the following criteria are met:

(a) A substantial public benefit is demonstrated; and

(b) The proposed use does not unreasonably interfere with public trust rights; and

(c) Feasible alternative upland locations do not exist; and

(d) Potential adverse impacts are minimized.

Section 5.329 Shallow-Draft Port and Marina Development

These policies apply to development of new marinas and improvement of existing marinas in aquatic areas of the Columbia River Estuary. Also covered are adjacent shoreland support facilities that are in conjunction with or incidental to the marina. Included under this subsection's coverage are both public and private marinas for either recreational, charter or commercial shallow draft vessels.

(1) Proliferation of individual single-purpose docks and moorages is discouraged. Public or commercial multi-vessel moorage is preferred. The size and shape of a dock or pier shall be limited to that required for the intended use. Alternative to docks and piers, such as mooring buoys, dryland storage, and launching facilities, shall be investigated and considered.

(2) Navigational access to the estuary and its tributaries shall be maintained. Peripheral channels, streams and sloughs shall not be closed to navigation. Necessary maintenance dredging for traditional moorage areas shall be allowed, subject to the requirements of the designation, state and federal permits, and local plan and ordinance provisions.

Section 5.331 Significant Areas

These policies are intended to protect certain shoreland and aquatic resources with estuary-wide significance. Significant shoreland resources are identified as such in the area and subarea description. Significant aquatic resources are found in Natural Aquatic areas. This subsection applies only to activities and uses that potentially affect significant shoreland or aquatic resources. Other resources without estuary-wide significance are not covered by this subsection. Only those resources identified as significant under Statewide Planning Goal 17 are covered by these policies and standards.

(1) Significant estuarine aquatic and shoreland resources shall be protected from degradation or destruction by conflicting uses and activities.

(2) Major marshes, significant wildlife habitat, and exceptional aesthetic resources shall be protected. Uses in these areas shall be consistent with the protection of natural values and may include selective harvesting of forest products consistent with the Oregon Forest Practices Act, grazing, harvesting, wild crops, and low-intensity water-dependent recreation.

(3) Significant riparian vegetation shall be protected to the extent identified in local comprehensive plans, except as provided for in Zoning Ordinance Significant Area Standards 1, 2, and 5.

Section 5.333 Water Quality Maintenance

These policies are intended to help protect and enhance the quality of water in the Columbia River Estuary. Impacts on water quality in aquatic areas and in tidegated sloughs in shoreland areas are covered.

(1) Non-point source water pollutants from forest lands, roads, agricultural lands, streambank erosion and urban runoff shall be controlled by state Section 208 water quality programs, the Oregon Forest Practices Act and its Administrative Rules and Soil Conservation Service programs.

(2) New untreated waste discharges into tributary streams, enclosed bays and sloughs shall not be permitted.

(3) 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.

(4) Permits for activities in Warrenton with potential water quality impacts in Washington's waters will be coordinated with both Oregon Department of Environmental Quality and Washington Department of Ecology.

Section 5.335 Water-Dependent Development Areas

These policies are applicable only to those Columbia River Estuary Shorelands that are in the Marine Commercial Shorelands Zone or the Water-Dependent Industrial Shorelands Zone. The purpose of these policies and standards is to assure that adequate sites are available for water-dependent uses.

(1) Shorelands zoned Marine Commercial Shorelands or Water-Dependent Industrial Shorelands shall be protected for water-dependent uses. Temporary uses which involve minimal capital investment and no permanent structures, and uses in conjunction with and incidental to a water-dependent use, may also be permitted in these areas.

(2) Shorelands especially suited for water-dependent recreational, commercial and industrial uses shall be placed in either a Water-Dependent Industrial Shorelands or Marine Commercial Shorelands Zone. Some factors which contribute to this special suitability are:

(a) Deep water close to shore;

(b) Supporting land transport facilities compatible with ship and barge facilities;

(c) Potential for aquaculture;

(d) Protected areas subject to scour which would require little dredging for use as marinas;

(e) Potential for recreational utilization of the estuary or riparian areas.

Section 5.337 Implementation

These policies are intended to assure consistent region-wide implementation of the *Columbia River Estuary Regional Management Plan.*

(1) Pre-permit application meetings and site visits shall be encouraged.

(2) Initial site visit shall be structured such that key issues will be addressed and consensus, to the degree possible, is established on each issue. This will require a structured format listing goals, objectives, and specific activities.

(3) Amendments to the *Columbia River Estuary Regional Management Plan* must be coordinated with the Columbia River Estuary Study Taskforce (CREST).

(4) CREST will provide planning assistance to member agencies, review local comprehensive plans and shoreline management master programs, and make recommendations which will result in coordination and conformance with the *Columbia River Estuary Regional Management Plan.*

(5) CREST will provide technical information and assistance to members and other agencies for *Columbia River Estuary Regional Management Plan* implementation.

(6) CREST members will maintain the coordinated *Columbia River Estuary Regional Management Plan* by mutually adopting Plan amendments during scheduled Plan updates.

(7) Policies and standards that regulate the repair and maintenance of existing structures are not intended to replace or supersede Warrenton's non-conforming use ordinance requirements. Where they contradict, the City's non-conforming use requirements shall be followed.

Section 5.339 Federal Consistency

These policies establish procedures for ensuring that federal actions are consistent with this Comprehensive Plan.

(1) Federally licensed or permitted activities affecting the estuary and shoreland area shall be consistent with the Warrenton Comprehensive Plan. If the activity requires a local permit, the permit review will be used to establish project consistency with the plan. If the activity does not require a local permit, Warrenton may review the activity against the mandatory enforceable policies of the plan for consistency. Warrenton may then forward its findings of the review to the Oregon Department of Land Conservation and Development.

(2) Federal development projects and other activities that directly affect the estuary and shoreland area in the coastal zone shall be consistent to the maximum extent practicable with the mandatory enforceable policies of Warrenton Comprehensive Plan. Federal agencies address the consistency requirements by submitting a written consistency determination to the Oregon Department of Land Conservation and Development. The local government may review the consistency determination against its plan and communicate comments to Department of Land Conservation and Development. Department of Land Conservation and Development has the authority to make a final decision on the consistency determination. The federal agency has the option of applying for a local permit to demonstrate consistency with the Warrenton Comprehensive Plan.

(3) Federal activities in the Columbia River Estuary that are most likely to directly affect the coastal zone and require a determination of consistency with the plan include, but are not limited to, the following:

(a) dredging or dredged material disposal associated with maintenance or construction of federal navigation projects;

(b) maintenance or construction of other federal navigation improvements including jetties, groins, breakwaters and pile dikes;

(c) maintenance or construction of federal flood control projects such as dikes and associated drainageways and structures, and shoreline stabilization projects;

(d) docks and other in-water structures, dredging, and dredged material disposal associated with federal facilities such as Coast Guard bases and naval installations;

(e) federal refuge improvements;

(f) mitigation and restoration actions;

(g) road construction in the coastal watershed;

(h) waste discharge in the coastal watershed; and

(i) land acquisition, disposal, or exchange.

The consistency requirements apply to both planning and implementing these federal activities.

(4) An activity shall generally be considered a federal activity when at least 50% of the project design work and 50% of the construction is funded by federal agencies.

(5) Federal activities on federal lands within the geographic limits of the coastal zone are excluded from the consistency requirements if the federal agency demonstrates that the activity will not directly affect adjacent, non-federal portions of the coastal zone.

(6) The phrase "consistent to the maximum extent practicable" (see Policy 2) shall be interpreted to mean that a federal agency may deviate from full consistency only if:

(a) compliance is prohibited based upon the requirements of existing law applicable to the federal agency's operations, or

(b) when such deviation is justified because of some unforeseen circumstances arising after the approval of the management program which present the federal agency with a substantial obstacle that prevents complete adherence to the approved program.

(7) Warrenton may review Outer Continental Shelf activities for consistency with their Comprehensive Plans and forward their findings to the Oregon Department of Land Conservation and Development.

(8) Warrenton may review federal grant or financial assistance proposals for activities affecting the coastal zone for consistency with their Comprehensive Plan. The review includes grants to state agencies, cities, counties, special purpose districts, and regional bodies. Review findings may be forwarded to the Oregon Department of Land Conservation and Development.

(9) Warrenton may perform consistency reviews administratively or through public hearings.

Section 5.341 Middle Skipanon River Subarea

(1) Development along the east shoreline of the Skipanon River between Harbor Drive and 8th Street shall include a tourist/commercial mixture of water-dependent, water-related and other uses.

(2) The Development Aquatic designation of the Middle Skipanon is provided to accommodate marina development and other water-dependent and water-related uses as the highest priority of use. Non-water-dependent uses are not appropriate in the aquatic portions of this sub-area.

(3) The water quality impacts of development in the Middle Skipanon will be evaluated prior to approval of projects, particularly in the area between the 8th Street dam and the Harbor Drive Bridge. Alterations which have a negative water quality impact or result in a decrease in the flushing rate will not normally be permitted.

(4) The City will consider taking an exception to Oregon Statewide Planning Goal 16 if a marina or other major development proposed for the Middle Skipanon would require major alteration of the islands or fringing marshes.

(5) The City will pursue the possibility of constructing bicycle/walking paths on top of the City dikes along the Columbia River, Youngs Bay and the Skipanon River. The priority order of construction should be:

(a) The west bank of the Skipanon River from Harbor Drive south to SW Third Street.

(b) A trail between downtown and the Youngs Bay Plaza area. This trail could follow the old railroad right-of-way west of the downtown intersection a distance of one mile, and follow the dike for approximately 3,000 feet to its intersection with US 101, near the shopping center.

(c) The Airport loop from US 101 at the Youngs Bay Bridge to the old Youngs River Bridge. The trail could then follow Airport Road back to US 101.

(d) The east bank of the Skipanon River dike from Harbor Drive to SE Eighth Street.

Section 5.343 Tansy Point/Alder Cove Subarea

(1) Portions of this subarea are subject to provisions of the 1981 Mediation Panel Agreement. Development in these areas must be consistent with the relevant portions of the Agreement.

(2) Notwithstanding the fact that residences within the Water-Dependent Development Shorelands of this subarea are a nonconforming use, reconstruction may be allowed in the event of destruction by fire or other disaster in accordance with the nonconforming use regulations of the Warrenton Zoning Ordinance.

(3) The Natural Aquatic tideflats and marshes of Alder Cove shall be protected from alterations. Such protection, however, should not preclude intensive development of the adjacent Water-Dependent Development Shorelands or Development Shorelands nor necessary dike maintenance.

(4) Large-scale fills are not appropriate in the Development Aquatic portions of this subarea. Filling shall be allowed only for bulkheading or quay construction along the present shoreline. No substantial parcels of new land shall be created.

(5) The potential for impacts on tidal and non-tidal wetlands shall be evaluated during development review. Prior to development approval, the Corps of Engineers and Oregon Division of State Lands must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions.

(6) The Tansy Point development site is suitable for the following types of uses:

Marine terminal development;
Commercial fishing and seafood processing facilities;
Forest products processing facilities;
Offshore mineral development support facilities;
Facilities related to estuary recreation; and
Other water-dependent uses.

(7) The City is committed to the construction and maintenance of the Eben Carruthers Memorial Park. Park development will follow the park Master Plan. The park will be a passive recreation area with the primary purpose of providing pedestrian access to the Columbia River. Parking and rest room facilities shall be located close to Fort Stevens Highway.

(8) The City will pursue the possibility of constructing bicycle/walking paths on top of the City dikes along the Columbia River, Youngs Bay and the Skipanon River. The priority order of construction should be:

(a) The west bank of the Skipanon River from Harbor Drive south to SW Third Street.

(b) A trail between downtown and the Youngs Bay Plaza area. This trail could follow the old railroad right-of-way west of the downtown intersection a distance of one mile, and follow the dike for approximately 3,000 feet to its intersection with US 101, near the shipping center.

(c) The Airport loop from US 101 at the Youngs Bay Bridge to the old Youngs River Bridge. The trail could then follow Airport Road back to US 101.

(d) The east bank of the Skipanon River dike from Harbor Drive to SE Eighth Street.

Section 5.345 North Warrenton Subarea

(1) Widening and strengthening of the dike to enable its use by heavy vehicles shall be allowed on the shoreland side of the dike, except along the sewage lagoons. If fill is required on the Alder Cove side of the dike, other than fill or riprap associated with normal dike maintenance, an exception will be required to Oregon Statewide Planning Goal 16's prohibition on fill in aquatic areas for non-water-dependent uses.

Section 5.347 Mouth of the Skipanon River Subarea

(1) The maximum amount of fill that may be allowed within that portion of the described Aquatic Development area in Alder Cove is 7.8 acres. Specific proposals for fill must be justified at the time of permit application.

(2) Any development or use of the Holbrook Slough DMD/Mitigation site shall be consistent with protection of aquatic and riparian habitat at Holbrook Slough.

(3) The approximately 40 acre Holbrook Slough DMD/Mitigation site is reserved for mitigation of development impacts on the East Skipanon peninsula. Offsite mitigation may be considered as part of the required mitigation or in addition to this onsite mitigation. Acreage not used for mitigation would then become available for DMD or development, but not until the site is fully developed.

(4) Development of shorelands and adjacent aquatic areas on the East and West Peninsulas of the Skipanon River shall include provision for vegetative buffers and other means for shielding the developed areas from adjacent marshes and flats.

(5) Existing and new uses which are associated with wood processing and handling shall be allowed in the Water-Dependent Development Shorelands area on the West Peninsula of the Skipanon River.

(6) The Development Aquatic designations along both sides of the Skipanon are provided to accommodate future water-dependent uses. However, the designations do not create the presumption that dredging, filling or other alterations will be permitted automatically.

(7) The City will continue to upgrade the mooring basin/boat ramp area by improving parking and access facilities. The City will attempt to attract private/public partnerships to the mooring basin, including a motel/restaurant/commercial development on public land, when feasible.

(8) The City will pursue the possibility of constructing bicycle/walking paths on top of the City dikes along the Columbia River, Youngs Bay and the Skipanon River. The priority order of construction should be:

(a) The west bank of the Skipanon River from Harbor Drive south to SW Third Street.

(b) A trail between downtown and the Youngs Bay Plaza area. This trail could follow the old railroad right-of-way west of the downtown intersection a distance of one mile, and follow the dike for approximately 3,000 feet to its intersection with US 101, near the shopping center.

(c) The Airport loop from US 101 at the Youngs Bay Bridge to the old Youngs River Bridge. The trail could then follow Airport Road back to US 101.

(d) The east bank of the Skipanon River dike from Harbor Drive to SE Eight Street.

Section 5.349 Youngs Bay Subarea

(1) Proposed developments shall be evaluated for their impact on existing aquaculture operations. Aquatic sites that are especially suitable for aquaculture development shall be reserved for that use whenever possible.

Section 5.351 Airport and Vicinity Subarea

(1) The City will pursue the possibility of constructing bicycle/walking paths on top of the City dikes along the Columbia River, Youngs Bay and the Skipanon River. The priority order of construction should be:

(a) The west bank of the Skipanon River from Harbor Drive south to SW Third Street.

(b) A trail between downtown and the Youngs Bay Plaza area. This trail could follow the old railroad right-of-way west of the downtown intersection a distance of one mile, and follow the dike for approximately 3,000 feet to its intersection with US 101, near the shopping center.

(c) The Airport loop from US 101 at the Youngs Bay Bridge to the old Youngs River Bridge. The trail could then follow Airport Road back to US 101.

(d) The east bank of the Skipanon River dike from Harbor Drive to SE Eighth Street.

(2) A new access road to serve airport uses should be developed. Filling of Holbrook and Vera Creek sloughs and damage to riparian habitat shall be minimized. An exception to Oregon Statewide Planning Goal 17 may be necessary.

(3) New airport uses shall be designed and sited to minimize conflict with residences along the present access road. Potential circulation conflicts shall be evaluated.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 6
BEACH AND DUNE SHORELANDS

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 6 BEACH AND DUNE SHORELANDS

SECTION 6.100 FINDINGS

Beach and dune shorelands include a large part of Warrenton and are characterized by a series of sand ridges roughly parallel to the ocean shoreline which are separated by low-lying (interdune) areas. These shorelands have been formed during the past 4,000 years as a result of Columbia River sediments, off-shore currents, local winds and other factors. Until the 1930s, a significant portion of the shorelands consisted of wind-drifted sand. The dunes were then stabilized with fences and vegetation.

Portions of the beach and dune shorelands West of Ridge Road in (zones 1 and 2 of the Clatsop County Soil and Water Conservation District) are the most sensitive to development and are consequently considered to be critical beach and dune shoreland areas. Construction on dunes in these areas is often hindered by a high wind erosion potential, and moderate or steep slopes. Difficulties range from slight to severe. Another development concern is the beach and foredune erosion caused by ocean waves. While the stable dune areas east and west of Ridge Road can tolerate higher density of development than other dune forms, removal of stabilizing vegetation can cause erosion due to the high sand content in the soil. In the interdune locations, development is likely to be hampered by water problems and in some locations, by the tendency of the soil to compress when subject to structural loads.

The City of Warrenton treats significant wetlands and riparian corridors that are located in the City's Goal 17, Shoreland zone as Goal 5 resources.

This section addresses parts of Statewide Planning Goals 17 and 18.

SECTION 6.200 GOAL

To reduce the hazard to human life and property from natural or human-induced actions associated with beach and dune areas.

SECTION 6.300 POLICIES

(1) Residential development and commercial and industrial building on beaches, on active foredunes, on conditionally stable foredunes subject to ocean undercutting or wave overtopping, and on interdune areas subject to ocean flooding shall be prohibited. Development other than residential, commercial, or industrial buildings in these areas shall be permitted only if it is demonstrated that the proposed development:

> (a) Is adequately protected from any geologic hazards, wind erosion, undercutting, ocean flooding and storm waves; or is of minimal value; and

(b) Is designed to minimize adverse environmental effects; and

(c) The findings required by Beaches and Dunes Policy 2 are made.

(2) The Statewide Beaches and Dunes Planning Goal, Implementation Requirement 1, requires that the following findings be made for all development in beach and dune areas, other than older stabilized dunes:

(a) The type and use proposed and the adverse effects it might have on the site and adjacent area;

(b) Temporary and permanent stabilization programs and planned maintenance of new and existing vegetation;

(c) Methods for protecting the surrounding area from any adverse effects of the development; and

(d) Hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

These findings will be made either by site-specific investigations for areas listed in Beaches and Dunes Policy 3, or by findings adopted as part of the Comprehensive Plan.

(3) Site-specific investigations undertaken by a registered geologist shall be required for future construction in all areas lying within the "A zone" as delineated on the *Flood Insurance Rate Map, City of Warrenton, Oregon, Clatsop County.*

(4) Vegetation removal shall be kept to the minimum required for the placement of structures. Structures shall be designed as much as possible to minimize the removal of existing vegetation.

(5) A detailed description of a dune stabilization program shall be a part of the application for a building permit for any proposed development which potentially will reduce the stability of a dune area and threaten adjacent property. The revegetation program shall be designed to return areas at least to their pre-development levels of stability within a specified period of time. The programs shall be initiated as soon as possible during or following construction. The City may submit site investigations or revegetation programs to the Soil Conservation Service or other agency for review prior to issuance of a building permit.

(6) During construction, adequate measures shall be required (included as permit conditions) to minimize wind erosion, such as the provision of temporary ground cover.

(7) All construction shall be in conformance with the recommendations of the site investigation report and applicable FEMA flood management requirements. A time period for revegetation of open dune sand shall be established.

(8) Beachfront protective structures (rip-rap, seawalls) shall be permitted only if:

(a) Visual impacts are minimized;

(b) Necessary access to the beach is maintained;

(c) Negative impacts on adjacent property are minimized; and

(d) Long-term or recurring costs to the public are avoided.

(9) Breaching of foredunes shall be permitted only for extreme measures, such as fighting fires, or cleaning up oil spills. The dunes shall be restored to their original contours and revegetated after breaching occurs.

(10) Grading or sand removal necessary to maintain views or to prevent sand inundation may be allowed for structures in foredune areas, only if the area is committed to development or is within an acknowledged urban growth boundary; and only as part of an overall plan for managing foredune grading. A foredune grading plan shall include the following elements based on consideration of factors affecting shoreline stability, including sources of sand, ocean flooding, and patterns of accretion and erosion (including wind erosion), and effects of beachfront protective structures and jetties. The plan shall:

(a) Cover an entire beach and foredune area subject to an accretion problem, including adjacent areas potentially affected by changes in flooding, erosion, or accretion as a result of dune grading;

(b) Specify minimum dune height and width requirements to be maintained for protection from flooding and erosion. The minimum height for flood protection is four feet above the 100 year flood elevation;

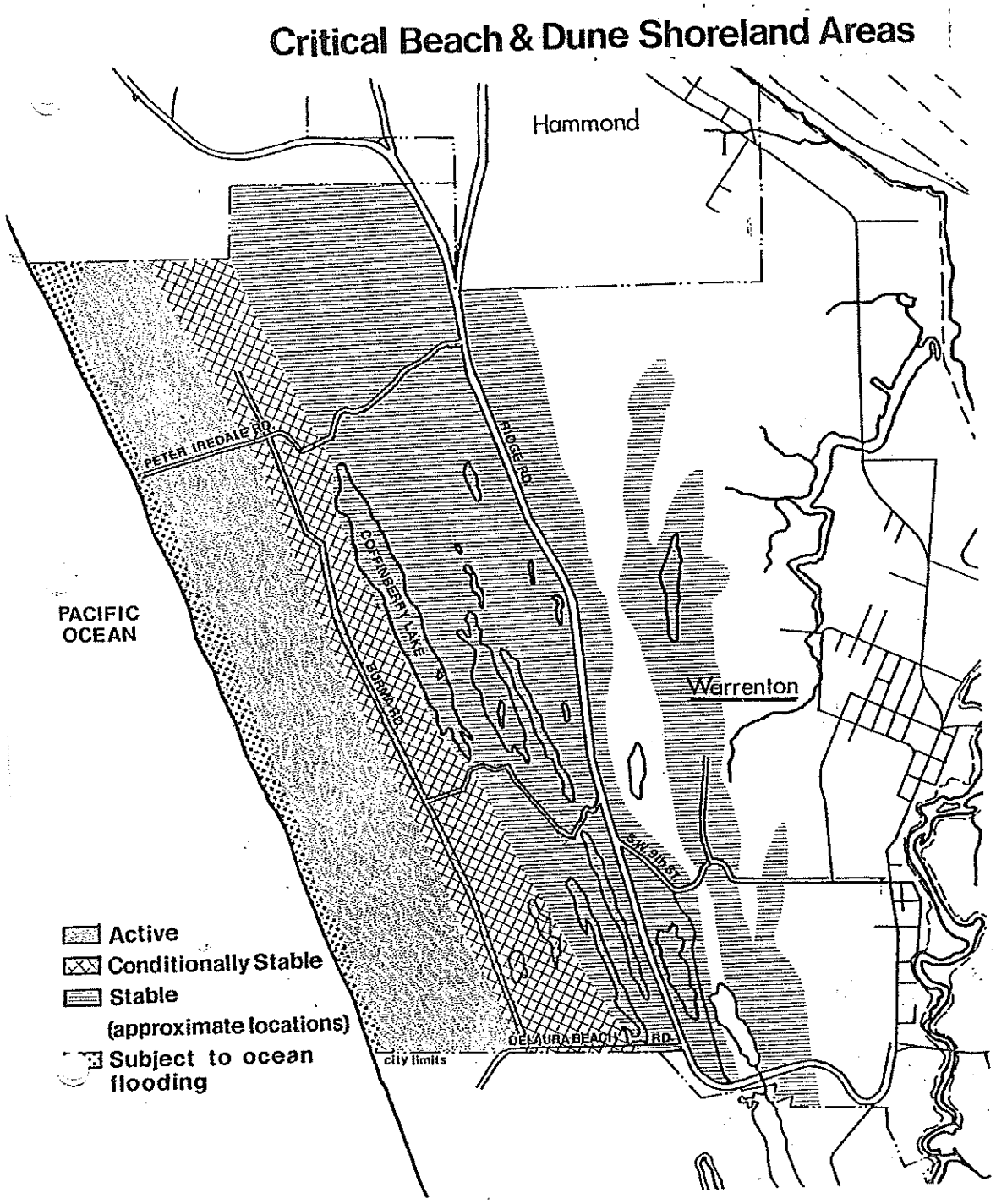
(c) Identify and set priorities for low and narrow dune areas which need to be built up;

(d) Prescribe standards for redistribution of sand and temporary and permanent stabilization measures including the timing of these activities; and

(e) Prohibit removal of sand from beach-foredune system. Before construction can begin, the foredune grading plan must be adopted as an amendment to the Comprehensive Plan.

(11) Warrenton shall protect the groundwater in dune areas from drawdown which could lead to loss of stabilizing vegetation or water supplies, by reviewing all proposed wells to ensure that findings are made to address the above factors. Building permits for single-family dwellings are exempt from this requirement if appropriate findings are provided at the time of subdivision approval.

(12) The City has determined that its entire ocean front was undeveloped, as defined by Beaches and Dunes Implementation Requirement 5 of Statewide Planning Goal 18, on January 1, 1977.


Critical Beach & Dune Shoreland Areas
Hammond
PETER IREDALE RD.
RIDGE RD.
COFFENBERY LAKE RD.
BERNARD
PACIFIC OCEAN
Warrenton
SW 6th ST.
DELAURA BEACH RD.
city limits
Active
Conditionally Stable
Stable
(approximate locations)
Subject to ocean flooding

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 7
COMMUNITY FACILITIES AND SERVICES

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 7 COMMUNITY FACILITIES AND SERVICES

SECTION 7.100 FINDINGS

Warrenton is an appropriate area for future development in Clatsop County, in part, because of the availability of community facilities and services. The capacity of many of these including the water and sewer systems, have been increased to accommodate the substantial amounts of growth.

The *Warrenton Comprehensive Plan Background Report* provides additional information pertaining to public facilities in Warrenton. This section together with the relevant background report sections, address requirements of Statewide Planning Goals 8 and 11.

Section 7.110 Water Service

A water system is operated by the City and supplies water to Warrenton, Fort Stevens State Park, Sunset Beach Water District, Cullaby Lake, Smith Lake, Gearhart and scattered properties in the Clatsop Plains rural area. Except for the Gearhart portion of the system, the City of Warrenton is responsible for servicing all water lines within the system. Water is obtained from the Lewis and Clark River and three of its tributaries. Water collected at these impoundments is piped either directly to the treatment plant or through a 16 million gallon raw water reservoir, located near the treatment plant. This 16 million gallon reservoir was constructed in 1986 for the purpose of storing untreated water that could be utilized during periods in which the turbidity of the impoundments rose above acceptable levels. The treatment plant is locate about eleven miles southeast of Warrenton where water is treated by sedimentation and chlorination and carried by a major pipeline to Warrenton and other locations.

Section 7.120 Wastewater Facilities

In November, 2002 the City of Warrenton completed its Wastewater Facilities Plan with the aide of HLB & Assoc., and HP Esvelt Engineering. In 2005, the City began construction of it's new wastewater treatment plan and it was on-line and operational by the first part of 2007.

The 2002 Wastewater Facilities Plan showed that the wastewater lagoons were seriously overloaded. The BOD and TSS influent loadings to the lagoons were at about two times the recommended loading level for facultative lagoons as recommended by DEQ.

Section 7.121 Wastewater Flow and Load Projections

The wastewater flow and load projections are based on the existing and projected populations of the service area, as well as historical

wastewater flows and loads measured at the treatment plant. The existing (2001) and 20-year (2023) wastewater flows and loads are shown in Table 1.1. These flows and loads include City growth, Clatsop County Corrections Transitional Facility (inside city limits) and the Miles Crossing Sanitary Sewer District (outside the UGB). The analysis used to project the wastewater flows and loads is presented in Section of the facility's report.

TABLE 1.1 EXISTING AND FUTURE WASTEWATER FLOWS AND LOADS

Parameter	Existing (2001)	Future (2023)
Wastewater Flow (mgd)		
Annual Average	0.7	1.1
Maximum Month Wet Weather Avg	1.1	1.6
Maximum Day, Wet Weather	1.5	2.3
Hydraulic, Peak Instantaneous Flow	3.4	4.7
Wastewater Load (lb/day)		
BOD (Bio-chemical Oxygen Demand)		
Annual Avg	1,000	1,720
Maximum Month Avg, Summer	1,500	2,500
TSS (Total Suspended Solids)		
Annual Avg	1,300	2,000
Maximum Month Avg	1,900	2,900
Ammonia, Max Month Avg	150	250

The DEQ estimates that the lagoons are only operating at 50% of design efficiency because of the build-up of bio-solids. Therefore, the combination of the overloaded sewer influent and the build-up of bio-solids results in an effective overloading of approximately four times the design capacity of the sewer lagoons. Additional analysis and information on the wastewater treatment system is presented in Section 7 of the report.

Section 7.122 Collection System

The core infrastructure of this system has exceeded its design life. It continues to perform well, but needs additional upgrades to meet new flows from additional areas of development.

Development in outer areas, away from the core system, and current core system conditions now necessitate upgrades to the gravity system, the pressure system, and the pump station system. These upgrades are described in Section 6.3 of the Facilities Plan.

In the case of the pump station system, several of the Warrenton Pump stations are now obsolete, making in very difficult if not impossible to continue obtaining parts to keep them operating. It is now cost effective to renovate or replace those stations.

Inflow and infiltration (I/I) at the East Warrenton Industrial Park (currently inside City limits) continues to be a problem for the collection system, particularly the five (5) pump stations on the East Warrenton Interceptor. This additional loading is creating wear/maintenance/electrical costs to soar.

Additional areas of development that would add to the collection system are not part of this discussion, but all costs should be borne by the parties that are seeking to develop, such as the areas north of Harbor and east of Highway 101. This also would include outside sources seeking to benefit from the City of Warrenton's wastewater treatment.

Section 7.123 Wastewater Treatment Analysis

The existing sewage treatment system consists of a two (2) cell stabilization lagoon, currently operated in series, followed by disinfection by chlorination. The existing wastewater treatment system is currently overloaded and has experienced permit violations that are expected to increase in frequency if improvements are not made. Some interim improvements have been made to the lagoon system. In March of 2000, construction of the Sewer Lagoon Improvements Project was completed. The improvement consisted of the following:

- Relocate 12" diameter force main into treatment plant
- Construct a new influent Parshall flume (flows frequently exceeded the capacity of the old flume)
- Install influent flume flow monitoring equipment
- Install an influent flume composite sampler
- Transfer pipe modifications with floating inlet to transfer pipe (to transfer flow from Cell #1 to Cell #2)
- Install a floating baffle in Cell #2 to redirect flow throughout all of Cell #2 preventing "short-circuiting" in this cell.

Following the above described improvements, the wastewater treatment system improved the overall quality of the effluent. Those improvements were not designed to completely address all of the sewer system overloads. Additional improvements to the wastewater treatment system are still needed both for the high level of influent loading and to allow for future growth.

The recommendations for possible approaches to upgrading the wastewater treatment system include the following:

(1) Expand the existing lagoons onto the City-owned land to the West of the existing lagoons.

(2) Modify and expand the existing lagoon system, incorporating an aerated lagoon and a constructed free water surface wetlands.

(3) Modify the existing lagoons to construct a Sequencing Batch Reactor (SBR) with sludge holding lagoons and Ultraviolet (UV) disinfection.

Additional analysis and evaluation of the existing wastewater treatment system along with a detailed discussion of each of the above alternatives for upgrading the treatment system is presented in Section 7 of the facilities plan. The final alternative selected by the City for further evaluation was the Sequencing Batch Reactor (SBR) system with sludge holding lagoons and ultraviolet (UV) disinfection. Details of the recommended system, including construction and annual operating costs, can be found in Section 7 and Appendix C of the facilities plan.

Since the preparation of the Draft Plan, a Mixing Zone Study (Appendix B in the facilities plan) has been completed determining that an extended outfall to the Columbia River would be required to meet water quality standards. The estimated construction cost of the recommended treatment alternative including the proposed outfall pipe is as follows:

Sequencing Batch Reactor (SBR)	$5,736,000.00
Core Conveyance System Improvements	$1,123,000.00
Outfall to Columbia River	$1,130,000.00
Total Cost	$7,989,000.00

Section 7.124 Interim Improvements

The Mutual Agreement and Order (MUO) between the City and DEQ states that the City may submit for DEQ approval an Interim Engineering Study for proposed interim improvements to the existing lagoons needed to provide capacity to allow additional waste loads during the term of the MAO. The City has chosen to exercise this option and has therefore had a

report prepared that proposed interim improvements that would accommodate City growth in the interim period along with projected waste loads from the Miles Crossing Sewer District and Fort Clatsop National Park. The details of the interim improvements can be found in Section 7 and Appendix A of the facilities plan.

The City of Warrenton has requested that the Oregon Department of Environment Quality (DEQ) approve an increase in the flows and loadings to the existing wastewater treatment facility on an interim basis. The recommended improvements to the City's lagoon treatment facilities recommended in this report are intended to provide the additional interim treatment capacity needed for treatment of added waste loads from Miles Crossing, Fort Clatsop and City growth, while meeting the interim effluent requirements as agreed to in the Mutual Agreement and Order (MAO), dated December 24, 2001.

The following table summarizes the list of improvements that will be required to complete the interim capacity upgrades. The improvements include pump station upgrades required to convey Miles Crossing effluent from the point of connection to the treatment plant.

Mechanical plant improvements	$555,000.00
Pump station improvements - Airport (e. Warrenton Interceptor Area)	$960,000.00
Marlin Avenue force main replacement *	$200,000.00
Bio-solids removal**	$480,000.00
Total	$2,195,000.00

*The actual costs of pump station upgrades is dependent upon the amount of I&I removal at the airport, and tributary areas.
** Bio-solids must be removed by September, 2003.

It is critical that the inflow and infiltration (I&I) at the airport be reduced prior to implementation of the proposed interim improvements. The design of the pump station improvements at the airport will be based on design flows that will be effected by the percentage of I&I removal.

It is assumed at this time that the City of Warrenton will be receiving sewer flows from the Miles Crossing Sewer District. If this assumption changes, the cost will be less since infrastructure improvements would not be required at the time of the interim improvements.

The MAO defines interim waste discharge limits that are to be in effect until full operation of the facility has been achieved. The limits are as follows:

Interim Limits for the City of Warrenton Wastewater Treatment Facility					
All Year Round					
Outfall Number 001 (Lagoon Discharge)					
	Avg. Effluent Conc.		Average		
Parameters	Monthly	Weekly	Monthly	Weekly	Daily
	mg/L	mg/L	lb/day	lb/day	lb/day
BOD	75	100	469	704	938
TSS	75	120	469	704	938

Section 7.125 Bio-solids Management

The Warrenton treatment facility has been accumulating solids since its original construction in 1969. Bio-solids have accumulated to unacceptable levels contributing to overloading problems primarily due to the resulting reduction of the water column in the lagoons.

A Bio-solids Management Plan, dated January 2002, and a Bio-solids Site Authorization Submittal, dated February 2002, has been prepared by Lee Engineering, Inc. for the City of Warrenton. Both have been submitted to DEQ for review and approval. Both reports are included in Appendix J of the facilities report. The purpose of the Bio-solids Management Plan is to outline how the bio-solids will be removed, transported and land applied in accordance with OAR 340-050-0031 and Federal 503 regulations. The submittal includes a management agreement between the City of Warrenton and the owner of the application site property and details regarding management of the sites.

The Bio-solids Management Plan outlines two (2) methods of bio-solids removal. They are as follows:

(1) complete removal of all bio-solids and land application this year (2002)

(2) construct a dike that divides Cell #1 into two (2) smaller cells; pump to the new storage cell to the east and remove sludge over a longer period of time.

The revised schedule of the bio-solids removal meets the requirements of the recently signed Memorandum of Agreement and Order. The bio-solids removal was originally scheduled for the summer of 2002. This schedule is contingent on the City receiving DEQ approval of the Bio-solids Management Plan and The Bio-solids Site Authorization.

The total estimated cost for bio-solids removal, transportation, and land application is $480,000.00. The removal of bio-solids must occur by September of 2003 to accommodate the proposed interim capacity improvements.

Section 7.126 Recommended Improvements and General Schedule

The City of Warrenton is undertaking an aggressive schedule for implementing the planned wastewater improvements. A general schedule and estimated construction costs of the proposed improvements is shown in the following tables.

RECOMMENDED COLLECTION SYSTEM UPGRADES

Completion Date	Improvement	Estimated Cost
September 2003	Inflow/infiltration reduction work at airport	cost not available
September 2005	Core downtown pump station improvements*	$1,1123,000.00
By 2007	Main Avenue Sewer	$290,000.00
By 2008	Dolphin Road Sewer	$310,000.00
By 2015	Inflow/infiltration reduction work throughout City	$675,000.00
By 2015	Conveyance system upgrades throughout city	$3,800,000.00

*These improvements need to take place at the time of the treatment plant improvements.

RECOMMENDED TREATMENT SYSTEM UPGRADES

Date	Improvement	Estimated Cost
September 2003	Bio-solids removal	$480,000.00
May 2004	Wastewater teatment plant	$5,736,000.00
September 2004	Outfall construction	$1,130,000.00

A detailed break down of the implementation program and finance plan can be found in Section 9.6 of the facilities plan. The tables above summarize the improvements while Section 9.6 in the facilities plan identifies milestones for the submittals to DEQ, report preparation, permitting, construction and ultimately full operation of the proposed treatment plant.

Section 7.127 Financing

The City conducted a one-stop meeting on December 11, 2001 at which time the project was discussed along with available funding options. The meeting was attended by the City of Warrenton staff, United States

Department of Agriculture Rural Development (OECDD) staff, DEQ staff and a representative from the Governor's Community Solutions Office. At this meeting, three sources of funds were identified as follows:

(1) USCA RD has funding available for the project. Due to the high cost of the project, it is anticipated that USDA RD would participate with other funding agencies.

(2) The DEQ may have funds for this project from the Clean Water State Revolving Loan Fund (SRF).

(3) The Oregon Economic and Community Development Department (OECDD) has funds available for this project. The City qualifies for the Water/Wastewater Financing Program. The OECDD, DEQ and state agencies will work with the city in pursuing funding for the project once overall scope and cost of the wastewater system improvements are determined. See Section 9 in the facilities plan for further detail regarding financing for the project.

Since the time of the Draft Wastewater Facilities Plan was submitted, the City has also decided to consider the submission of a General Obligation Bond to the Warrenton Votes in 2003 to pay for construction of the treatment plant.

Section 7.128 Wastewater Rates

The City of Warrenton recently received recommendations for a new rate methodology for both their water and wastewater systems. To prepare the rate methodology study, the City and their consultant have used approximate cost estimates for system improvements developed to date. The City approved the new rates on March 20, 2002.

The City currently charges only a nominal connection fee without any System Development Charge (SDC) for new connections. The City should actively pursue and take all necessary steps to calculate and implement an appropriate SDC for the proposed sanitary sewer system improvements. An SDC for new sewer improvements will be required in order for new connections to pay their "fair share" of the needed improvements to the sanitary sewer system.

Section 7.130 Municipal Support Structures

In 2002 the city built and moved its administrative offices, planning and building department and fire department into its new building. By November, 2003 the western portion of the new building was completed and the police department moved from the city's old offices. Public works department still remains in its original location between SW First and SW 2nd Streets behind Main Street Market, The Iredale and the building which

once housed city hall.

The City's fire department has two (2) paid fire personnel with approximately 30 volunteers. This department provides fire protection to the city and to areas within the Warrenton Rural Fire Protection District. As second fire station is located near the Hammond Mooring Basin.

As the city grows - population and structures - there is a growing need to increase city personnel in every department that provides services to the community of Warrenton and areas outside of its city limits.

Housing the city's administrative offices, planning and building department, police and fire departments under one-roof has provided efficient communication and coordinating between these city departments. This has also provided the community with city services that are easily accessible.

Section 7.140 Other Services

Solid waste is collected in Warrenton, trucked to a transfer station in Astoria and then hauled to a landfill outside of the County. The City, in cooperation with a private contractor and other Clatsop County local governments, is exploring development of a new landfill site in eastern Clatsop County.

Other City facilities and services are provided mainly within Warrenton and include a storm drainage/flood control system; a 24-acre community park northeast of the intersection of SW Cedar Avenue and SW Seventh Street; and two municipally-owned and operated marinas.

Section 7.150 Public Recreation

The City recognizes that Fort Stevens State Park provides a valuable recreation resource for all of the people of the State of Oregon, including Warrenton residents. Over a million people per year visit the Park. Most of the Park is located within the City limits. Warrenton provides water, sewer, garbage, police and fire services directly to the park. Direct City revenues are in the form of park user charges for water, sewer and garbage. There is no revenue paid directly for police and fire service or the impacts that the location of the Park has on other City services. The Park no longer contracts with Clatsop County or the Oregon State Police for law enforcement services.

Camp Kiwanilong is a publicly-owned educational and recreational facility in Warrenton located south of Fort Stevens State Park. The Camp is owned by Clatsop County, and operated by a non-profit organization as a summer camp. The Camp is a valuable asset to Warrenton and to the region.

Section 7.160 Stormwater (See Stormwater Master Plan for more detailed information)

The City of Warrenton contracted with HLB-OTAK, Inc. in 2007 for Phase 2 of their Stormwater Master Plan to study their stormwater management system and develop a stormwater management plan with Capital Improvement projects for the City to implement in anticipation of continued growth.

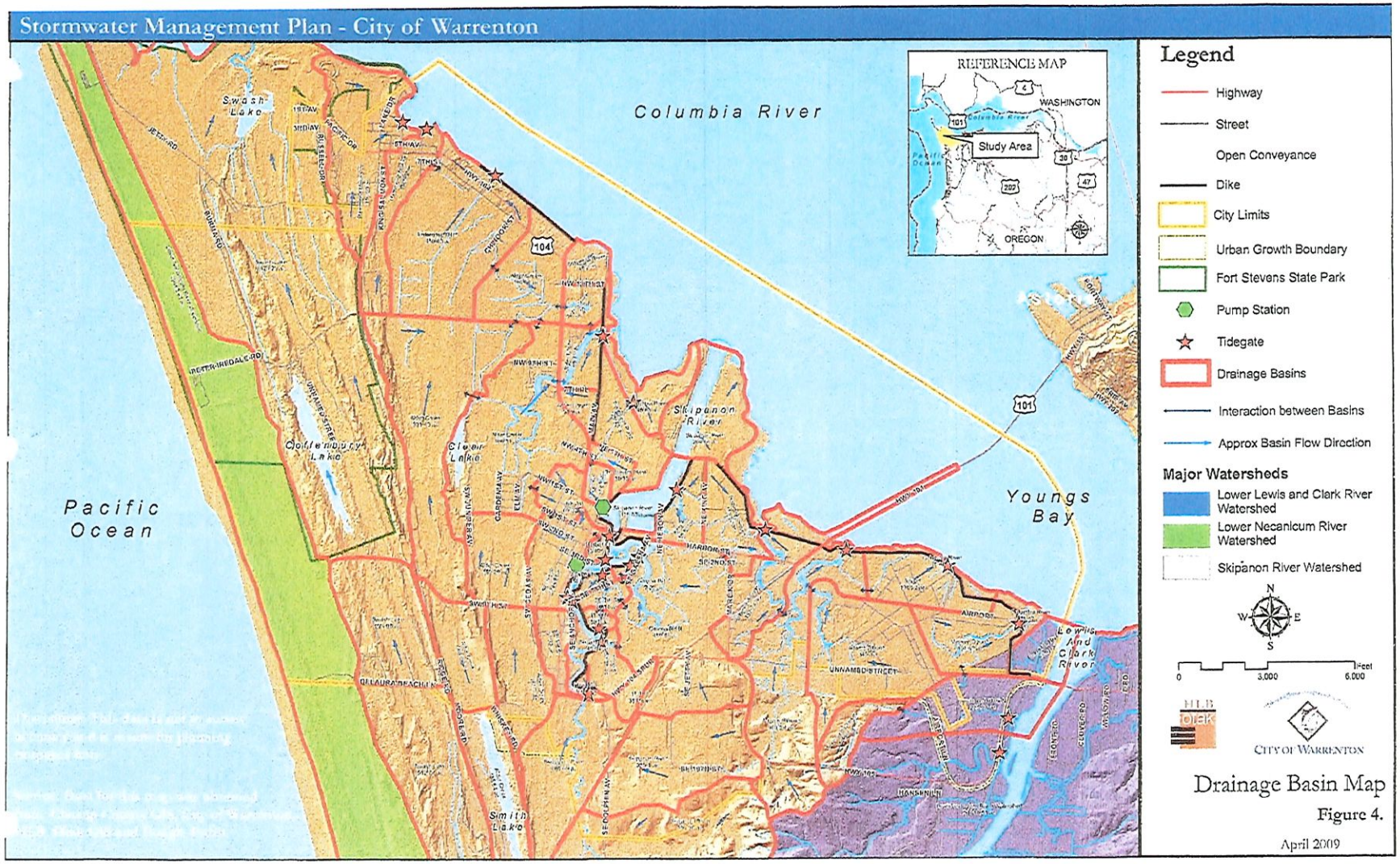
The City previously undertook Phase 1 of the effort, working with CH2M Hill and HLB, Inc. to perform a large data collection effort that included an inventory of the tidegates and topographic survey data on many of the stormwater conveyances in Warrenton.

The scope of work for Phase 2 included Meetings, Public Involvement, Characterization of the City's watersheds, development of a stormwater management strategy, and preparation of a Stormwater Master Plan that includes recommendations for existing facility maintenance and a Capital Improvement Plan. The stormwater management strategy was primarily focused on conveyance and flooding issues.

Section 7.161 Basin Boundaries, Location and Areas

The Study Area was divided into four major basins based on drainage to Alder Creek, Skipanon River, Lewis and Clark River and directly to the Columbia River. Only a small portion of the City drains to the Lewis and Clark, the remainder is divided among the other three basins.

Each basin was divided into subbasins based on topography and locations of levees, roads and existing conveyance features such as pipes and ditches. Information from conversations with City employees and an April 2007 site visit was also factored into the determination of basin boundaries. A total of 38 subbasins were delineated, 30 of which are completely within the Study Area and 8 that are partially within the Study Area but still contribute stormwater runoff. The total contributing area, excluding subbasins that empty to the Columbia or Skipanon River without first passing through a tidegate is approximately 5727 acres. Figure 4 shows the major basin and subbasin boundaries for the Study Area.


Stormwater Management Plan - City of Warrenton
Columbia River
Pacific Ocean
Youngs Bay
Swash Lake
Clear Lake
Smith Lake
Skipanon River
Lewis And Clark River
REFERENCE MAP
WASHINGTON
OREGON
Study Area
Legend
Highway
Street
Open Conveyance
Dike
City Limits
Urban Growth Boundary
Fort Stevens State Park
Pump Station
Tidegate
Drainage Basins
Interaction between Basins
Approx Basin Flow Direction
Major Watersheds
Lower Lewis and Clark River Watershed
Lower Necanicum River Watershed
Skipanon River Watershed
N
W
E
S
0
3,000
6,000
Feet
CITY OF WARRENTON
Drainage Basin Map
Figure 4.
April 2009

The topography of the Study Area, especially within the developed area is fairly flat. As such, the subbasins interact with each other in both directions, not just upstream to downstream. Stormwater flows in and out of the subbasins depending on the tidal conditions and storm magnitude. These interactions create complex drainage patterns which are heavily influenced by factors such as antecedent soil moisture conditions and groundwater. In some cases a defined control, such as a culvert, exists and limits subbasin interactions. In other cases the subbasin interaction covers a broad area. Each subbasin eventually drains to a particular tidegate in the City levee system, with a chain of subbasins contributing to some outfalls and only a single subbasin contributing to others.

Section 7.162 Surface Water Features and Drainage System

The Skipanon River, Alder Creek and other streams in the watershed are derived mostly from groundwater. Changes in the groundwater hydrology will most likely have greater effects on surface water features than changes in land use in the upper elevations of the watershed which represents proportionally less area.

Except during the winter months, fresh water flow in the Skipanon River is low, averaging approximately 50 cubic feet per second (cfs). Columbia River water and ocean water are the main water masses observed below the 8th street dam. The Skipanon River is also fed by the outflow from Cullaby Lake. There is no continuous discharge data available for the Skipanon River or for Alder Creek.

The land between the Skipanon River and the airport is characterized by four large sloughs, named Skipanon, Holbrook, Vera, and Adams. A slough is a shallow, secondary channel off of the main waterway. They typically have stagnant or slow moving water and are flushed regularly by the tide. If healthy, sloughs can be quality habitat for a variety of aquatic species. Warrenton's sloughs drain a large portion of the land east of the Skipanon River. Flow into and out of these sloughs is regulated by a tidegate through the levee system. Skipanon Slough empties into the Skipanon River, and the Holbrook, Vera, and Adams Sloughs drain to the Columbia River. The tidegate at the entrances to each of these water bodies has been categorized as a potential fish barrier. The Columbia River Estuary Study Taskforce (CREST) has recently been conducting tests on a new, "fish friendly" tidegate on Adams Slough. The City has expressed concerns; however, that these fish passage tidegates will create flooding issues in the developed area surrounding the sloughs. Water surface elevations should be monitored on Adams Slough by the City to substantiate or disprove these concerns prior to further installation of additional tidegates.

Drainage facilities consist primarily of roadside ditches with culverts for street crossings. Storm sewer pipe systems are also used in and around the Hammond and Downtown areas. The slope of most of these conveyances are basically flat, leading to sedimentation issues in many of the ditches and pipes in the city, which further reduces capacity. The levee system along the Columbia, Skipanon and Lewis and Clark Rivers prevents high tides from inundating the City. A series of culverts with tidegates connect the City's drainage system to the natural waterways. During high tide, the majority of these tidegates close and do not allow stormwater to drain out of the City. The trapped stormwater is routed to two pumping stations on the west bank of the Skipanon River just north and south of the downtown area. These two stations pump stormwater over the levee system and into the Skipanon River, continuing to drain the City until the tide lowers enough to allow stormwater through the tidegates. Currently only the southern pump station is operational. A 1999 survey of the tidegates by the Skipanon River Council showed that 6 of the 23 tidegates were in need of repair. Many of the current tidegates are old iron doors that no longer work properly or are missing entirely. City maintenance personnel stated these disabled tidegates may allow Columbia River water into the City during high tide, potentially reducing available flood storage. This is especially true of the two tidegates in the Hammond Marina.

Section 7.163 Water Quality and Sediment Sources

In general, water quality is typically managed to protect the most sensitive beneficial use. In Warrenton, managerial responsibility varies depending on the location. The City of Warrenton, the Port of Astoria, Clatsop County, the State of Oregon and federal agencies all manage different parts of the watershed and its array of wetlands, sloughs and stream channels. In the case of the Skipanon River watershed, the most sensitive beneficial use is likely salmonid fish spawning. It is assumed that if the water quality is sufficient to support the most sensitive use, then all other less sensitive uses will also be supported. For the Study Area, temperature and dissolved oxygen are considered to be the areas of greatest concern in regards to water quality. (Skipanon River Watershed Assessment, 2000) The levee tidegate structures along the Skipanon and Columbia Rivers significantly reduce the "flushing effect" of the tidal fluctuations. As a result, waterways behind the levees become stagnant and subject to contamination. Water bodies can become dissolved oxygen deficient or anoxic under certain conditions. Lack of shoreline shade in the majority of the Study Area further exacerbates this problem by increasing water temperatures, especially in the summer months. Water's ability to absorb dissolved oxygen decreases as temperature increases. Salinity intrusion occurs whenever salinity is present in the adjacent Columbia River waters. Despite the low fresh water flow, strong vertical differences in salinity occur during the fall, and bottom waters may also become stagnant. Dissolved oxygen levels well below state and federal standards have been observed (Boley, 1975). Water quality and dissolved oxygen has

been a major concern in the City's many sloughs, particularly during the drier summer months.

In the Skipanon River watershed, slope instability, road instability, and rural road runoff were determined to be the most significant sediment sources based on the location of the watersheds (Oregon Coast Range) and the local land use. (Skipanon River Watershed Assessment, 2000) Streamside landslides and slumps can be major contributors of sediment to streams, and shallow landslides frequently initiate debris flows. Rural roads are a common feature of this watershed. Washouts from rural roads contribute sediment to streams, and sometimes initiate debris flows. The density of rural roads in the upper watershed, especially unpaved gravel and dirt roads, indicates a high potential for sediment contribution to the stream network, which could impact water quality downstream within the study area.

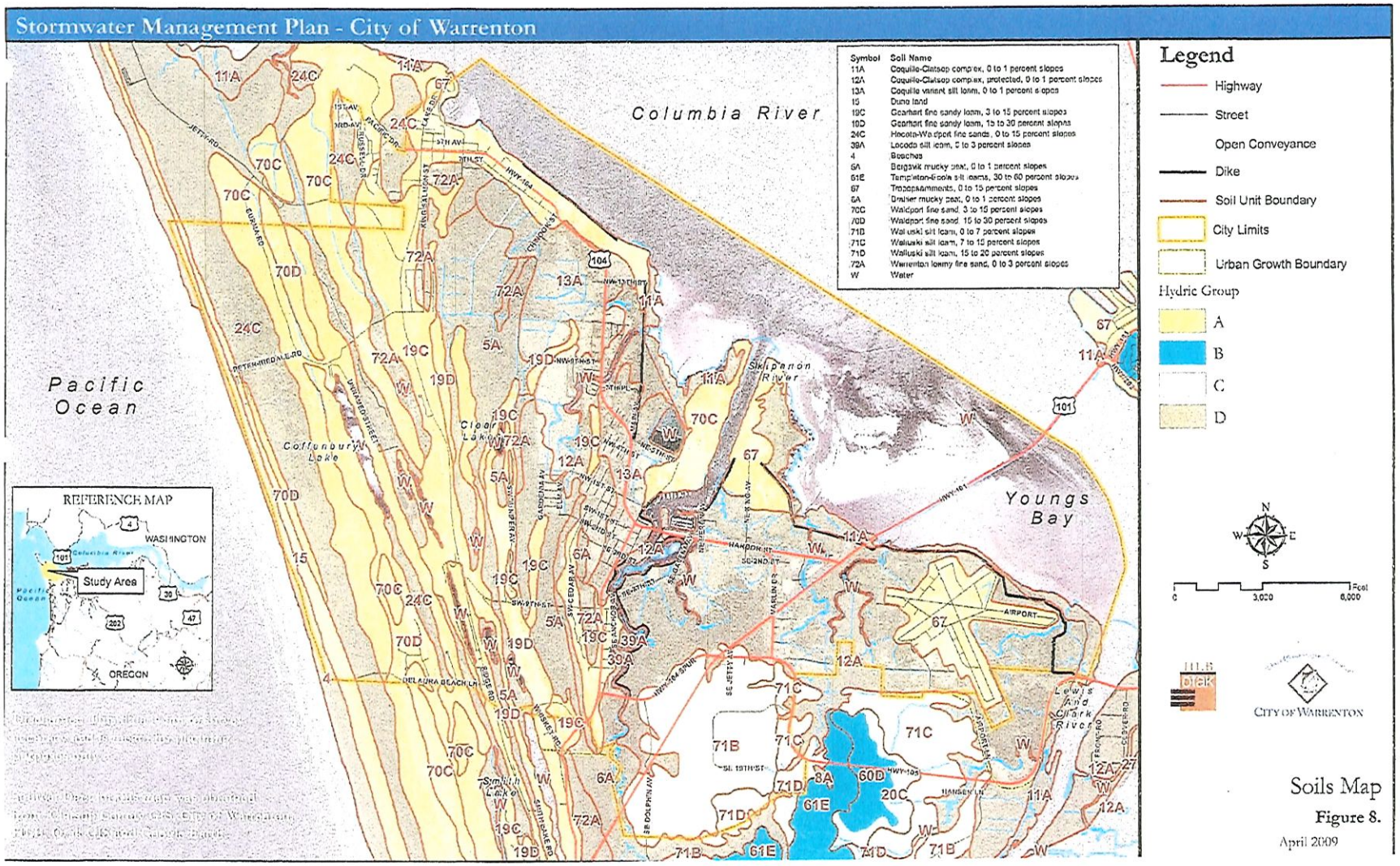
Section 7.164 Soils

Knowledge of local soil conditions and their response to precipitation is essential for evaluating a drainage system. Many disposal paths are possible for precipitation. Precipitation may evaporate, collect in depressions, be intercepted and used by plants or infiltrate into the soil. Stormwater runoff occurs when precipitation exceeds the capacity of these paths. The existing degree of soil saturation and the slope of the drainage basin also affect runoff rates. Runoff potential is based on the soil's capacity to absorb precipitation. Sandy soils have higher infiltration capacity and lower potential than soils with a high percentage of clay.

A portion of the Study Area is made up of the Clatsop Plains, which are comprised of sand dunes, tidal flats and floodplain alluvium. The Clatsop Dunes are a series of sand ridges formed by wind. The source of these dunes is sediment from the Columbia River deposited since Pleistocene time that is constantly reworked by wind, waves and rain. In some parts of the dunes the sand is over 150 feet deep. Floodplain alluvium occurs along the Columbia River and Skipanon River at the Northern End of the Clatsop Plains (Hansen and Harris, 1974).

The primary soils of the Study Area are the Coquille-Clatsop (C-G), Grindbrook-Walluski-Hebo(G-W-H), and Waldport-Gearhart-Brailler (W-G-B). The C-C soils are very deep, very poorly drained silt loam and muck and are located on tidally influenced floodplains. The G-W-H soils are deep to very deep soils, moderately well drained or poorly drained silt loam and silty clay loam found on terraces. The W-G-B soils are very deep, and are either: excessively drained, somewhat excessively drained, or poorly drained fine sand, fine sandy loam, or mucky peat found in dunes and swales (Smith and Shipman, 1988).

The Natural Resource Conservation Service (NRCS) rate soils into four categories based on their infiltration capacity, water transmission rate and runoff potential. Hydrologic Soil Group (HSG) D produces the greatest amount of runoff and HSG A produces the least amount. Within the study area, approximately 53.6 percent is HSG D, 7.5 percent is HSG C, less than 1 percent is HSG B and 34.5 percent is HSG A. The remainder is water. Figure 8 is a map of the soil types for the study area.



Soils Map

Figure 8.

April 2009

Section 7.165 Tidal Influence, Levees, Tide Gates and Pump Stations

Tailwater conditions are an important factor in the performance of any drainage system. A high tailwater can greatly reduce the ability of stormwater runoff to pass through a culvert or storm pipe. Backwater effects due to a high tailwater can significantly lower the capacity of existing drainage ditches and culverts. The City's low elevation and its close proximity to the tidally influenced Columbia River make tailwater conditions a key component of the stormwater puzzle. As Warrenton lies approximately between river miles 5 and 9 of the Columbia River, water elevations in the Columbia River and the Skipanon River are heavily influenced by Pacific Ocean tides. Water elevation can fluctuate 7 feet diurnally, with a mean high water of elevation 8.15 and a mean low water of elevation 1.38 and can differ as much as 15 feet annually, ranging from elevation -2 to elevation 13. Table 3.7 gives some statistics from the Astoria tide station. All reported elevations were converted to NAVD-88. All information was gather from the NOAA website.

TABLE 3.7 ASTORIA TIDE INFORMATION

Statistic	Elevation (ft)
Mean Tidal Level	6.74
Mean High Water	8.82
Mean Low Water	8.15
Mean Higher-High Water	1.38
Mean Lower-Low Water	0.21
Maximum Station Water Level	12.58 (1983)
Minimum Station Water Level	-3.64 (1979)

In lieu of using a constant tailwater condition, a time series was created that varied the tailwater elevation at the outfall over a period of several days. This allowed the stormwater model to reflect the varied tidal effects. Tide data was collected from the published NoAA database for the tide station in Astoria, Oregon (Station ID#9439040). The water surface elevation difference between Astoria and Warrenton is typically only +/- 0.1 feet, so no correction was made in the data for this tudy. Approximately 15 years of data was reviewed for use in the model. Statements made during the April 2007 Citizen Advisory Committee meeting about periods of significant flooding in town allowed particular periods to be isolated. November 11-17, 2001 was chosen as the primary time series to use. Three other events were also tested in the model. The November 2001 storm represents a period of high low tides on the Columbia and a 2-year storm event in Warrenton. Table 3.8 gives summary statistics of several tidal events. The City experiences most of its flooding problems when the

low tide in a tidal cycle is unusually high. The invert elevations of most of the City's tidegates are below elevation 4. When the low tide does not drop below this elevation, a large portion of the City is unable to drain effectively through the gravity fed tidegates for days at a time. Flooding within the City occurs if this high tide cycle coincides with a large rain event in the City. Adjusting the tide time series and the precipitation intensity allowed the model to test a wide variety of scenarios.

TABLE 3.8 TIDE EVENTS

Name	Start Date	End Date	Max El (NAVD-88)	Min El (NAVD-88)	Diff (ft)	Avg. El (NAVD-88)	% of time Over El=4
Tide 1	11/11/01	11/17/01	11.2	-0.97	12.17	5.2	61%
Tide 2	2/17/96	2/24/96	11.95	1.16	10.79	6.7	77%
Tide 3	12/10/99	12/17/99	10.68	1.76	8.92	6.4	84%
Tide 4	12/11/02	12/18/02	11.2	0.25	10.95	6.1	79%

The city's levees range in height from elevation 15 to elevation 17 (NAVD-88). The levees were modeled in conjunction with the City's tidgates. The Columbia and Skipanon Rivers were separated in the model from the City by links representing the tidegates. The levees are effectively modeled by only allowing runoff to drain to the river through the tidegates. The overtopping elevation of the boundary nodes were set at the levee crest elevations. No storm events or tidal conditions were modeled that overtop the levees. LIDAR data was used to estimate available stormwater storage behind the levee in each subbasin at elevation 1 through elevation 11 in 1 foot increments. This allows runoff to fill the available storage area behind the levee and then release to the river as tidegate capacity and tailwater conditions allow. The maximum elevation of the runoff in each storage area for each scenario provides insight into potential flood areas.

The tidegates are critical to the City's stormwater system as the vast majority of the City's stormwater runoff passes through them. The tidegates regulate flow between the City and the rivers, which is dictated by the tidegate culvert's size, material and invert elevation. The majority of Warrenton's tidegate are made of cast iron and hinged at the top. The tidegate itself is attached to a culvert, either wood stave or corrugated metal that runs through the levee. Tidegates on Alder Creek and Adams Slough are rectangular concrete boxes. "As-built" construction drawings of the levees and tidegates provided by the USACOE were used to populate the model with required tidegate dimensional information. Manning's "n" were estimated based on the construction material and the tidegate photos from the Phase 1 site visits. Typically the older tidegates are constructed of wood stave pipe and the newer tidegates are concrete box culverts or corrugated metal pipes. Entrance and exit loss coefficients were applied when applicable. Exit losses were typically increased to simulate the losses

due to the large restorative force associated with cast-iron, top-hinged tidegates. By design, tidegates, when functioning properly, only allow flow in one direction. During high tailwater conditions water pressure and lack of head differential between the inland and riverside of the tidegate closes the tide gate flap. XP-SWMM only has a "tidegate" modeling option for the outfall. The software does however have an option to permit "downhill" flow only in conduits. The option allows the model to simulate any number of tidegates without having to create a large number of outfalls. Altering this option enables the model to simulate a combination of tidgates in the City that are either operational or non-operational. It also makes simulating the tidal effects uniformly throughout the model possible. A table found in Appendix D of the facilities plan, lists the City's tidegates and give some summary information about material, size and condition. A photographic summary is also found in the Appendix D of the facilities plan.

Recognizing the flooding hazard during high tide periods, the City installed two pump stations in the 1970's in the downtown area. The pump stations consist of a grated ditch inlet connected to a wet well. The vertical shaft-driven pump siphons stormwater out of the wet well and pumps the runoff over the levee through ductile iron pipes and into the Skipanon River. Each pump is equipped with a 40 horsepower motor that turns on and shuts off automatically at pre-set water elevations in the wet well. By the mod-1990's the southern pump station's pump motor was no longer operable. The City moved the motor from the northern pump station to the southern pump station, fixing the problem, but leaving the northern pump station out of commission. The southern pump station continues to function as the City's lone stormwater pump, but is susceptible to power outages and periodic mechanical conditions resulting in pro-longer downtime. There is no defined hydraulic connection between the two pump station's subbasins, though several overland routes and small drainage pipes provide an indirect connection during high flows. While these pump stations have the potential of being an integral part of a successful stormwater system, their current condition limits their capabilities and their reliability to function as designed. Figure 3.2 is a schematic of how the current pump stations are configured.

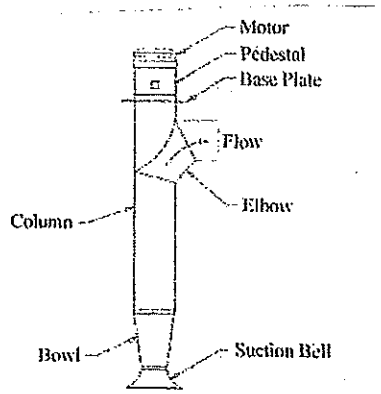


Figure 3.2 – Schematic of existing stormwater pump

The pump stations are modeled in XP-SWMM using the software's pump station feature at their appropriate locations in the stormwater system. They are modeled as "static head pumps" with specific elevations at which the pump turns on and off. The "pump-on" and "pump-off" elevations were taken from as-builts and converted to NAVD-88. Very little information is known about the performance curve of the pump itself, so assumptions were made based on the motor's identification plat. The pump was estimated to have a 50% efficiency rating. The head differential was estimated at 7 feet based on as-built drawings showing water elevations. From this information, the pump's output was calculated to be approximately 20 cfs or 8,750 gpm. The lack of pump performance curve information necessitated the assumption of a constant output flow rate regardless of inlet water elevations (i.e., static head). Upgraded pump stations simulated during the CIP analysis were modeled in XP-SWMM using performance curves provided by a local pump supplies.

Section 7.166 Existing Storm System Evaluation

Warrenton's existing conveyance system was evaluated. It is extremely flat in most places, allowing bi-directional flow depending on tailwater conditions. Only two parts of the city, the downtown area and the Hammond/Brailler Ditch-Enterprise area, have a continuous system of significant pipes and engineered drainage ditches. The rest of the City's system is localized and sporadic. It consists primarily of roadside ditches and drainage canals the capacity of which, are typically reduced by vegetation and debris. Most of these drainage facilities have not been maintained in many years. Many of the piped systems in the outlining areas consist of catch basins and pipes with diameters of 8-inches or less. They are primarily used to drain parking lots and other impervious areas and empty to the nearest ditch or channel. Survey revealed that many of the catch basins and pipes have suffered from sedimentation. Two aspects of the City's system lend themselves to evaluation through stormwater modeling.

The first of these is the City-wide system of levees and tidegates. As stated earlier in this chapter, the modeling effort focused on the tidegates, tidal effects, pump stations and available stormwater storage behind the levees. The peak flow rate passing through each tidegate was compared to the peak flow rate entering each subbasin through rainfall and inter-basin transfer of runoff. Stormwater accumulations in the storage areas were also analyzed. Limitations were identified and addressed in the recommended Capital Improvement Projects (CIP). The area affected behind the tidegate played a large role in determining which tidegates should be upgraded. For instance, much of the land east side of the Skipanon River is either wetland or forest. These areas had a lower priority than tidegates that served a heavily developed area. Table 3.9 shows the performance of tidegates for the 25-year design storm under existing conditions.

TABLE 3.9 - TIDEGATE PERFORMANCE
(Results from 25-year Design Storm)

Tidegate #	Conduit Model Name	Max Computed Flow (cfs)	Max Compute Velocity (ft/s)
1	1.30 in CMP	14.8*	3.1
2	2.30 in CMP	9.8*	2.4
3	EntCon	33.9*	3.6
4	D1-A3+24	1083.0	8.7
5	D1-14+12	99.7	6.2
6	42 in CMP	58.2*	6.1
7	D2-2+16	12.2*	7.1
8	G3+40	0.9	2.0
9	3rd St. TG	92.4	5.8
10	D2-41+90	0.9	1.2
11	8th Street Dam	413.4*	2.5
12	64+85	11.0*	6.5
13	R2+21.2	34.1	7.4
14	111+00	10.5*	6.3
15	37+81	38.3	5.2
16	Galena TG	4.4*	8.0
17	22+00	131.1	6.0
18	177+00	64.2	6.5
19	125+00	102.5	5.5
20	95+28	250.0	5.9
21	59+88	26.3	5.4
22	26+45	117.8*	9.3
23	Link 4	47.6*	4.7

* Indicates max computed flow exceeds design flow- Possible because of head build-up on the upstream end of the culvert.

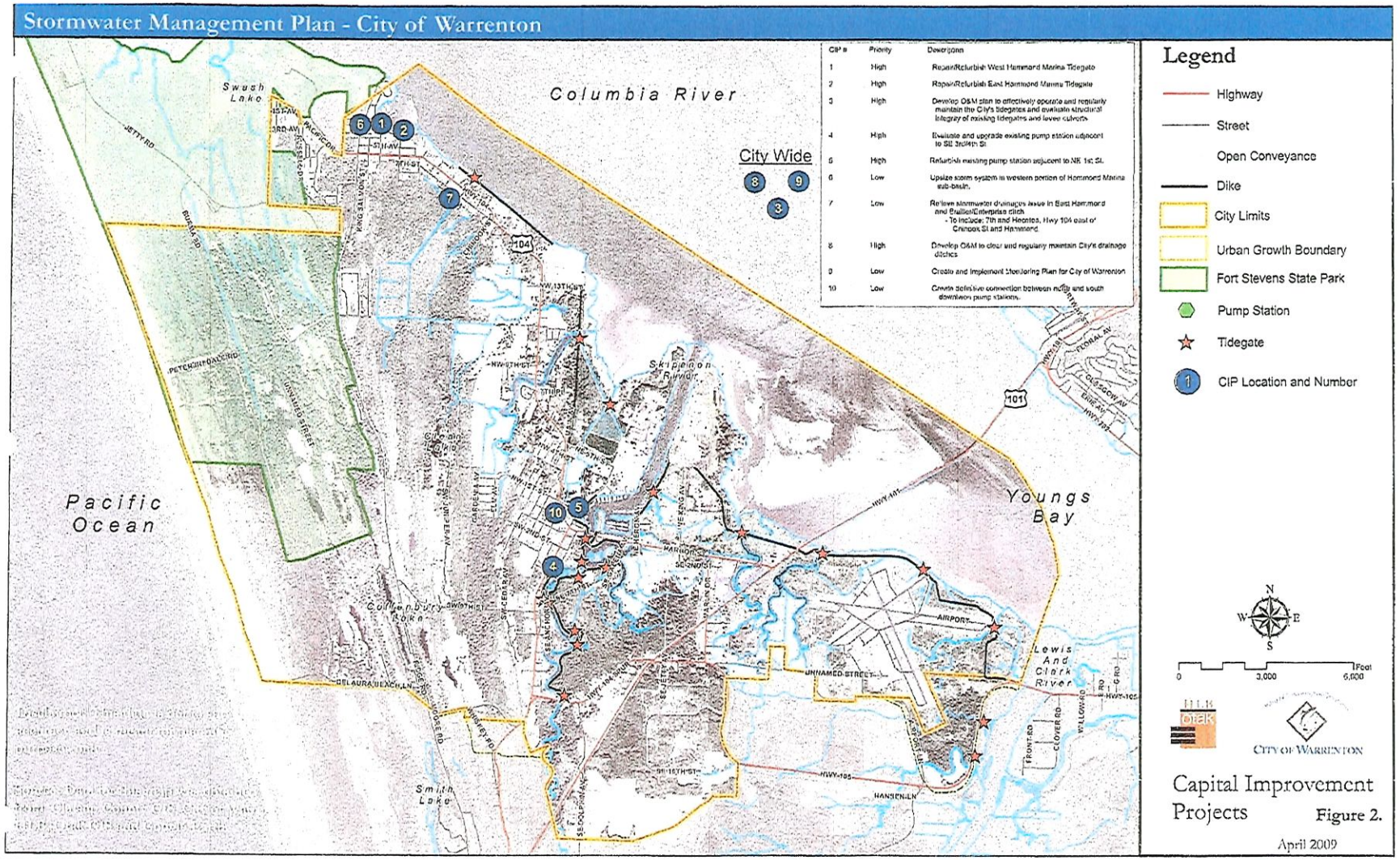
Two portions of the City's existing system were modeled in detail using XP-SWMM. The downtown subbasins and the Hammond/Brailler Ditch-Enterprise area both have a system of continuous pipes and ditches that drain to specific tidegates. These two areas are shown in detail in Figures 10a and 10b. All major existing drainage/conveyance components were included in the evaluation. Three separate XP-SWMM stormwater models were created as part of the CIP evaluation for these two areas. One covered the West Hammond subbasin and tidegate. The second modeled the East Hammond and Brailler Ditch-Enterprise subbasins. The final model covered the two downtown subbasins. See the CIP's in Chapter 5 of

the facilities plan for a discussion of the existing system and recommended improvements.

This section of the Stormwater Management Plan (SWMP) outlines strategies and provides recommendations that will update the City of Warrenton's water quality and natural resource management and regulations guidelines. This information is specifically designed to address the management of stormwater quality in the context of the City's location within the 100-year floodplain of the Columbia River. Accordingly, the need to control the potentially deleterious effects of stormwater runoff as it relates to maintenance and operation of storm and surface water conveyances (ditches, culverts, and tidegates) and the protection of natural resources is discussed.

Section 7.167 Existing Facility Maintenance

A key piece to the City's Stormwater Management Plan is the recommended Existing Facility Maintenance and Capital Improvement Projects (CIP). The CIP's were selected based on their ability to meet the City's stormwater goals. Factors included in the decision were the City's stormwater needs, modeling results, capacity calculations, input from City staff, inputs from the general public, observations during site visits conducted by HLB-OTAK staff, and project costs. Table 5.1 summarizes the 12 CIPs chosen for detailed study. Figure 2 shows the approximate location of each CIP.


Stormwater Management Plan - City of Warrenton
Columbia River
Pacific Ocean
Youngs Bay
Swash Lake
Smith Lake
Coffenbury Lake
Lewis And Clark River
Skipanon River
City Wide
CIP #
Priority
Description
1 High Repair/Refurbish West Hammond Marina Tidegate
2 High Repair/Refurbish East Hammond Marina Tidegate
3 High Develop O&M plan to effectively operate and regularly maintain the City's tidegates and evaluate structural integrity of existing tidegates and levee culverts
4 High Evaluate and upgrade existing pump station adjacent to SE 3rd/4th St
5 High Refurbish existing pump station adjacent to NE 1st St.
6 Low Upsize storm system in western portion of Hammond Marina sub-basin.
7 Low Relieve stormwater drainage issue in East Hammond and Bradley/Enterprise ditch - To include: 7th and Heceta, Hwy 104 east of Crendon St and Hammond
8 High Develop O&M to clear and regularly maintain City's drainage ditches
9 Low Create and implement Monitoring Plan for City of Warrenton
10 Low Create definitive connection between north and south downtown pump stations.
Legend
Highway
Street
Open Conveyance
Dike
City Limits
Urban Growth Boundary
Fort Stevens State Park
Pump Station
Tidegate
CIP Location and Number
N
W
E
S
0
3,000
6,000
Feet
CITY OF WARRENTON
Capital Improvement Projects
Figure 2.
April 2009

The levees and tidegates which protect the City from high tides in the Columbia and Skipanon River, and the conveyance system, consisting of culverts, drainage ditches, storm pipes and other facilities which drain the City and directs stormwater runoff to the tidegates. The tidegates and levees are under a constant barrage of destructive forces, including corrosion from the saltwater, erosion caused by the tidal cycle and waves, runoff flowing through the tidegates, water and wind erosion during storm events, and the erosive effects of vegetation and burrowing creatures. The City's stormwater conveyance is also constantly having its effectiveness and efficiency reduced through a myriad of factors. The flatness of the City's system is a perfect recipe for sedimentation in drainage ditches, storm pipes, inlets and manholes.

The wet, nutrient rich environment encourages rapid and dense vegetation growth in drainage ditches. Individuals, not fully understanding the impacts, place debris, such as dirt and grass clippings, into drainage ditches, blocking the flow path. The City must continue to aggressively maintain its levees, tidegates and conveyance system. Recent interpretations of environmental laws have resulted in regulation of more waterways, including many ditches. This change in regulation requires additional permitting hassles and has discouraged the City from regular maintenance of many ditches.

The USACOE inspects the levee system once a year. Inspection reports for the period 1995-2006 show Warrenton has received an "A" or "B" grade. Typically one or two discrepancies are discovered per inspection and the City's Public Works staff quickly goes out to make the needed repairs. The repairs have included: removing vegetation, replacing tidegates, and repairing slumps and slides.

Many of the tidegates are leaking and most of the tidegate headwalls are eroded or in need of repair. A majority of the City's tidegate culverts are constructed of wood stave pipe and are nearing the end of their service life. Replacement should be based on current condition and the associated flood protection value of areas serviced by a particular tidegate. It also should consider factors such as upstream natural resources to determine fish passage requirements and/or mitigation opportunities. Two of the City's tidegates, the 8th Street Dam and the Adams (Vera) Slough, have already undergone modification to allow for better fish passage, as well as improved water quality due to increased flushing. While these changes have positive effects, there can also be potentially negative results, such as higher water levels upstream of the tidegate, especially during high tide. Understanding the impacts of changes to tidegate construction and operation is critical to maintaining the City's current level of flood protection.

The City's stormwater conveyance system is in need of maintenance, especially its drainage ditches, many of which have reduced capacity due to vegetation and sediments. This results in decreased conveyance and

storage capacity of the system, as well as decreased water quality at the outfall due to stagnant water and lack of flushing between tidal cycles. Not all of these drainage ditches are on City owned property. The City should consider confirming existing right-of-ways and/or easements for critical drainage ditches such as the Brailler-Enterprise ditch and others that are on private land to ensure they are properly maintained. There are concerns about whether permits are required to conduct maintenance within the existing drainage ditches, primarily due to the high density of wetlands within the City boundaries. This issue must be resolved before a ditch maintenance plan can begin in earnest. If and where permits would ultimately be required for the maintenance of some or all of such facilities, a programmatic maintenance permit is recommended as a CIP. This would allow the City to perform routine maintenance of all drainage ditches where conditions dictated in the permit are met. A programmatic maintenance permit, or Nationwide Permit, can be approved for a five or ten year period. Conversations with the USACOE and NOAA revealed that the approving regulatory agencies are extremely open to the idea. The CIP has been given a high priority. Once a permit is in place, the City should set aside an annual budget to maintain all of the drainage ditches, culverts and related drainage facilities, first focusing its effort on those drainage ditches which impact the City's stormwater system the most. Many of these key drainage ditches are identified in the drainage system improvement CIP's for the downtown, Brailler-Enterprise Ditch, and Hammond area.

Section 7.168 Capital Improvement Projects (CIP)

Table 5.1 lists the recommended CIP's, provides a priority, and estimated implementation costs. A City map with CIP locations is shown in Figure 2. There are two basic categories of Capital Improvement Projects; those that deal with the regulatory and planning aspects of stormwater management, and those that involve the improvements of structures and facilities in the City's stormwater drainage system. It is recommended that the regulatory related CIP's be addressed and, where permitting is required, implemented before physical upgrades to the system are accomplished. This will allow the City to be in full compliance with regulatory requirements, and fully aware of what can and cannot be done within the City's tidegates, drainage ditches and wetlands. Implementing the O&M plans for the existing tidegates and drainage ditches will ensure the City's complete inventory has been studied and the most critical conveyance system components are maintained and/or modified first. When considering system upgrades, it is recommended that downstream projects such as tidegate repair and pump station upgrades be implemented first. Increasing the capacity at the downstream end of the drainage system will ensure that any later maintenance, modifications, or additions to the upstream drainage ditches and pipes will result in real changes to the water surface elevations in town during flood events. If pipes and drainage ditches are maintained or, in some cases, modified through enlargement before the downstream outlets are improved, backwater effects from a

broken tidegate or for example neutralize any intended flood reduction.

All of the CIP's that recommend maintenance or upgrade improvements to the drainage system can be done in phases, as time and finances allow. For this study, the cost estimates were determined for complete maintenance or upgrade improvements of each drainage system. It is entirely feasible to split these sub-basin wide projects into pieces and maintain or upgrade specific drainage ditches and pipes as needed. Unit costs were based on bid tabulations from recent projects on the north Oregon coast from ODOT Region 2 data. These prices reflect the cost for a contractor to be hired to do the work. Significant cost savings could be realized for any portion of a CIP, which could be constructed in-house by Public Works staff. Many of these recommended maintenance and improvement tasks are within City Streets, especially in the downtown area.

The CIP implementation of recommended improvements could occur in conjunction with street improvements, such as resurfacing or upgrades to other utilities like water and sewer. Such combined projects would reduce engineering and construction fees for the stormwater piece of the improvements. It is also feasible to place new storm pipes and drainage ditches in a parallel street, if a street improvement project is planned for that particular street. A good example of this would be 8th Avenue in Hammond. A key drainage ditch that connects the East Hammond subbasin to the Brailler-Enterprise Ditch subbasin runs along the north side of 8th Avenue. A CIP recommends this ditch to be maintained through cleaning out sediment. It would be conceivable to place a storm pipe or ditch on 7th Avenue instead if this street was scheduled to be improved.

For several of the main drainage ditches, especially in the Hammond/Brailler-Enterprise Ditch area, the City needs to confirm its rights-of-way associated with these facilities. It is recommended that formal easements are acquired for these facilities. This will ensure the City continued access for maintenance and upkeep.

TABLE 5.1: CIP SUMMARY

CIP #	Priority	Description	Estimated Cost (2007 Dollars)
1	High	Repair/Refurbish West Hammond Marina Tidegate	$344,190
2	High	Repair/Refurbish East Hammond Marina Tidegate	$349,033
3	High	Tidegate Repair & Replacement Plan	$115,050
4	High	Evaluate and upgrade existing pump station adjacent to SE 3rd/4th Streets	$721,762
5	High	Refurbish existing pump station adjacent to NE 1st St.	$721,762
6	Low	Upsize storm system in west portion of Hammond Marina subbasin	$135,879
7	High	Relieve stormwater drainage issue in the East Hammond/Brailler-Enterprise Ditch Area	$494,086 - Sys $1,944,854 - PS
8	High	Address whether need exist for programmatic permit to allow O&M routine maintenance of some or all of the City drainage ditches and obtain such permits if necessary	$52,000
9	Low	Create and Implement Monitoring Plan for City of Warrenton	$87,029
10	Low	Upgrade downtown conveyance system and create definitive connection between north and south downtown pump stations	$861,794
11	High	Sanitary Sewer Inflow/Infiltration Study	$96,466
12	High	Stormwater Rate Study	$15,000 - $20,000

Section 7.170 Marinas

Section 7.171 Hammond Marina

The Hammond Marina (basin) is located at the NW corner of the City of Warrenton in what was once the town of Hammond (now within the City of Warrenton), with a total city population of approximately +/- 4600. The basin is within Clatsop County on the

south shore of the Columbia River in the NW corner of Oregon. The small embayment and adjacent lands are leased for recreational and commercial development to the City by the US Army Corp of Engineers. The marina improvements are owned and operated by the City of Warrenton.

The purpose of the master plan is to provide a plan for improvements to the marina based on current information. An original plan dated June 1991, was prepared by Leslie Simons & Hanforth, Larson & Barrett, Inc. In September 2005, the original master plan was updated by HLB/OTAK. It is the intent of this document to: (1) pursue funding for marina improvements, (2) compile a plan that summarizes the current community vision of the future of the marina, and (3) identify the priorities for improvements that will revitalize the marina property to its full potential for the economic and recreational benefit of both the community and all of its visitors.

A. Existing Utilities - serviced with water, sewer, electricity, cable, telephone, and high speed internet (DSL). Natural gas exists to Jetty Street and Fourth Avenue. A high pressure water main for fire protection extends to Third Avenue on Lake Drive, but this service does not adequately serve fire flow to the basin. Dockside services include water and except for Dock C, electricity; cable is available on Dock A.

B. Boat Trailer Parking - Heavy congestion problems occur periodically between 3 and 10 days a year within a three week period ending with Labor Day.

The existing multi-directional access to the ramp allows the boat trailers to line up on Lake Drive while waiting to launch. Parking and access from both sides severely hampers the ramp's efficiency often extending the duration of each launch. This situation produces a gridlock condition which creates problems for local traffic and makes access to private property difficult on the affected streets.

C. Existing Fuel Dock - is inadequate for the proposed marina improvements. It is able to handle only 1 or 2 vessels at a time and is not suited to bundling (spillage control) for marina safety.

D. Access Channel - This 100' channel may need to be realigned as it impedes on the optimum layout of the marina docks.

Section 7.171.1 Recommended Improvements

The full development master plan (September, 2005) proposes to separate uses. The major components of the plan are (for full descriptions see the Master Plan):

A. Charter Craft/Rental Basin
B. Boat Trailer circulation & parking
C. Holding docks
D. Private moorage
E. Access channel adjustment
F. Dry storage yard
G. Basin configuration & Edging
H. Mitigation of Wetlands
I. Fuel Dock and Bunkering facilities
J. Marina signage
K. Multi-purpose building
L. Utilities

Section 7.171.2 Financing & Sources of Funding

All estimated costs are approximated for planning purposes and will need to be refined or developed at the time the particular project is considered for funding. Some enhancement will require additional studies to confirm scope and cost. The enhancements will occur as funding becomes available. The City will consider several funding sources for the development of the marina. Examples include: federal and state grants and loans; services in lieu of funding such as National Guard or Reserve; private foundation grants; private development funds (public-private partnership); and long term debt.

Section 7.172 Warrenton Marina

The Warrenton Marina is located on the north side of Harbor Drive in the city limits of Warrenton. This marina is the home to many commercial fishing boats as well as recreational fishing boats. The existing facilities at the Warrenton Marina are a manager's shack, 370 commercial and recreational boat slips, 1 boat ramp (2 lane), 2 hoists, 1 dry storage area, and restroom and showers (these facilities are dilapidated and need replacement as well as expansion).

A master plan for the Warrenton Marina has never been compiled; the city is currently in the process of creating a master plan for this marina.

SECTION 7.200 GOAL

Develop a timely, orderly and efficient arrangement of public facilities and services which will serve as a framework for development and, to the extent practical, meet the needs of local citizens and others dependent on these facilities and services.

SECTION 7.300 POLICIES

Section 7.310 Community Facilities and Services

(1) It is the City's policy to help meet community needs by establishing a capital improvements program, using appropriate site acquisition methods, carefully selecting service activities and undertaking other desirable actions.

(2) The City will continue to make necessary improvements to its community facilities and services as the need for such improvements dictate, and to the extent funding sources or mechanism are available.

(3) Prior to offering new types of public services, the City should consider:

(a) the coverage and adequacy of any existing services of this kind which are being provided,

(b) relative need for this type of service compared to other kinds which could be offered, and

(c) financial capability of the City to pay or help pay the necessary costs.

(4) Efforts shall be undertaken to:

(a) promote construction of needed educational facilities,

(b) support greater use of the community schools concept,

(c) help establish a county-wide library system which would offer some services in Warrenton,

(d) install appropriate improvements for handicapped people in new and existing City community facilities,

(e) support effective operation of hospitals, clinics and other medical facilities in Clatsop County,

(f) encourage more doctors to maintain offices in Warrenton,

(g) aide sound programs for senior citizens, and

(h) allow churches and other semi-public uses in desirable locations when suitable standards and conditions are satisfied.

(5) The City will cooperate with the school district in providing needed educational facilities by providing the district with updated population projections and coordinating with school district officials. City approval of major developments, which would cause a substantial increase in population. While the school district has presently reserved two sites for expanding facilities, the City will consider making suitable City-owned land available for a school site if a future need arises.

(6) The actual cost of providing municipal services to Fort Stevens State Park users should not be borne solely by the City of Warrenton with its limited resources but should be shared. The City shall determine actual costs and dollar impact of Fort Stevens State Park on the operations of the City of Warrenton. The City's goal is to not be burdened with a greater share of the costs of the location of the Park than is equitable in the circumstances.

Section 7.320 Water, Sewer and Storm Drainage/Flood Control

(1) Support desired growth by using sound evaluation, construction financing, scheduling and other techniques to upgrade the water, sewer, stormwater drainage, and flood control systems.

(2) Efforts will be made to evaluate means of expanding the capacity of the water and sewer systems to accommodate future growth in the City and other areas.

(3) The City will continue to upgrade its sanitary sewer system in order to provide the necessary level of service to residential, commercial and industrial uses. The following projects have the highest priority:

(a) Upgrading the sewage treatment plant through expansion of the lagoon treatment system;

(b) Upgrading sewer pump stations;

(c) Correcting infiltration/inflow problems, particularly in the East Warrenton and Port of Astoria Airport area;

(d) Providing service to presently unserved commercially zoned property along Highway 101, Marlin Avenue and East Harbor Drive; and

(e) Providing service to presently unserved industrially zoned property at the east bank of the Skipanon River and at Tansy Point.

(4) The City will continue to upgrade its water system to provide the necessary level of service to residential, commercial and industrial uses. The following projects have the highest priority:

(a) Construction of a water filtration plant was constructed in 2005.

(b) Water system improvements to serve commercially zoned property in the commercially zoned property along Highway 101, Marlin Avenue and East Harbor Drive.

(c) Water system improvements to provide greater fire flow capability in the area west of the Skipanon River.

(d) Water system improvements to serve industrially zoned property such as the east bank of the Skipanon River and the General Industrial area at SE Dolphin Road.

(5) The City will continue its efforts to upgrade and maintain a system of dikes and tidegates which help prevent flooding in Warrenton.

(6) The City will continue working with the U.S. Army Corps of Engineers to implement the reconstruction of Dike #1. The City will also cooperate with the U.S. Army Corps of Engineers in future studies to evaluate the requirements for improvements to Dike #2 and #3.

(7) The City will assess the impact of proposed subdivisions and large-scale commercial developments on the capacity of the community's water, sewer and storm water runoff facilities. Such developments will only be allowed if sufficient capacity exists or suitable evidence indicates it will exist prior to completion of development construction. In deciding the sufficiency of capacity, consideration will be given to possible increases in flows resulting from activities of existing system users and facilities which are likely to be built due to the proposed use but which are not a part of the development.

(8) Proposed subdivisions, new large-scale commercial developments in Warrenton will not be allowed unless satisfactory provisions are made for water supply, sewage disposal and storm water runoff facilities. Satisfactory provisions, in part, mean that the size of any water, and sewer lines and drainage ways will be sufficient to meet the needs of the development and, where desirable, be able to accommodate growth in other areas. Suitable arrangements, including dedication of land or use of easements, shall be made so that the City will be able to maintain appropriate water, sewer and drainage facilities. The construction of

lengthy pressure-forced sewer lines to the site, which by-pass undeveloped properties, will be discouraged.

(9) Persons developing property will generally be responsible for the cost of any water, sewer or storm drainage facilities which are required to meet the needs of the site being developed. Extra costs resulting from the need to construct facilities which will also accommodate future growth in other locations will often initially be the responsibility of the City and eventually be paid for by the people who develop these locations. In some instances, use of assessment districts may be appropriate for paying a portion of the costs for system extensions. Assessments of property for extensions should be levied only where there is a significant benefit to the property being assessed. Efforts usually will be made to obtain federal and state grants to help pay for major system improvements which are eligible for funding.

(10) Water and sewer rates will be increased as needed in order to provide the necessary funds for maintaining and upgrading the systems. Consideration shall be given to changing the present water rate structure so there is more encouragement for water conservation; and requiring a meter for each existing connection without a meter and for each new connection. The costs of connecting to the water and sewer systems (hook-up charges) shall be revised periodically to reflect the cost of making the connection. Hook-up charges will not be used to recover general capital costs of the system since other methods exist which are more equitable and less expensive to the user.

(11) Sewer service will be made available only in Warrenton and incorporated portions of Fort Stevens State Park. Water service will continue to be provided to a much larger area. No major water system expansions outside the City limits will be permitted unless sufficient system capacity has been reserved for existing and future Warrenton uses and the projected revenues resulting from the project will be enough to pay for anticipated operation costs. Preference will be given to major water system expansions within urban growth boundaries and county-designated rural service area. Sizes of new water lines shall be in conformance with the appropriate jurisdiction's comprehensive plan.

(12) Planned capital improvements to the City's water system, wastewater treatment system, stormwater drainage system and dikes are described in each facility's master plan.

Section 7.330 Fire, Police, Recreation and Solid Waste Management

(1) It is the City's policy to upgrade fire protection, provide sound police protection, increase recreational opportunities and improve solid waste disposal activities through effective public and private actions.

(2) The City will work to upgrade fire protection in Warrenton. This shall include:

(a) trying to achieve a fire insurance rating of 5 or lower;

(b) evaluating the City's waterfront fire protection capability;

(c) adequately scheduling and financing needed improvements; and

(d) requiring proposed subdivisions and large-scale commercial developments to have satisfactory hydrant and other water facilities.

(3) Consideration will be given to:

(a) enlarging the existing fire station;

(b) eventually building another station or substation, east side of Hwy 101 in Warrenton and providing sufficient equipment for the facility; and

(c) supporting the installation of needed facilities at Fort Stevens State Park.

(4) Sound police protection will be provided by:

(a) adding more personnel when necessary to accommodate local growth or other increases in staff responsibilities;

(b) expanding the amount of police department office space when funding becomes available;

(c) periodically reviewing equipment needs and purchasing appropriate items;

(d) working closely with other law enforcement agencies; and

(e) encouraging public cooperation in crime prevention.

(5) Increased recreational opportunities will be made available to local residents, in part by:

(a) helping to expand the recreational programs currently being provided in the area;

(b) adding more facilities to the City's approximately 24-acre community park, when financially feasible;

(c) expanding and improving the City's two boat basins as funding is available; and

(d) working closely with the Warrenton-Hammond school district to allow additional use of school recreational areas by the general public.

(6) Thought will be given to requiring new residential subdivisions to dedicate land for parks, pay fees in lieu of giving land or establishing privately owned and maintained recreational facilities.

(7) Existing public ownerships, right-of-ways, and similar public easements which provide access to estuarine or coastal beach areas shall be retained or replaced if sold, exchanged or transferred. Right-of-ways may be vacated to permit redevelopment of shoreland areas provided public access across the affected site is retained.

(8) Efforts will be made to work with other governmental bodies to find a satisfactory site for recycling and disposing of solid wastes from Warrenton and other parts of the county. Until a large-scale recycling operation begins, encouragement will be given to activities, perhaps sponsored by businesses or local non-profit groups, which focus on recycling only a few types of materials. Garbage collection rates, personnel needs and equipment requirements shall be periodically reviewed and appropriate actions will be undertaken.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 8
TRANSPORTATION

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 8 TRANSPORTATION

SECTION 8.050 INTRODUCTION

The City of Warrenton, in conjunction with the Oregon Department of Transportation (ODOT), initiated a study of the City's transportation system in 2002. The study resulted in the creation of the 2003 Warrenton Transportation System Plan (TSP). The TSP has been adopted as an addendum to this Plan and is referenced throughout this Article. This work was completed as part of periodic review as required by state law. If any goals or policies of this Plan are found to be contradictory or otherwise inconsistent with the TSP, standards of the TSP shall prevail.

The 2003 Warrenton TSP addresses ways to improve the transportation system to support anticipated growth in the City and associated traffic volumes in a way that will emphasize the local street network and protect the function of US 101 as a statewide highway. The TSP establishes a system of transportation facilities and services adequate to meet the City's transportation needs to the planning horizon year of 2022. The TSP plans for a transportation system that includes all modes of travel (that is, rail, pedestrian, bicycle, auto, marine, and public transportation), serves the entire urban area, and is well coordinated with the State, regional, and County transportation network.

The Warrenton TSP identifies planned transportation facilities and services needed to support planned land uses as identified in the Warrenton Comprehensive Plan in a manner consistent with the TPR (OAR 660-012) and the Oregon Transportation Plan (OTP). Preparation and adoption of a TSP for the City provides the following benefits:

- Assure adequate planned transportation facilities to support planned land uses during the next 20 years
- Provide certainty and predictability for the siting of new streets, roads, highway improvements and other planned transportation improvements
- Provide predictability for land development
- Help reduce the cost and maximize the efficiency of public spending on transportation facilities and services by coordinating land use and transportation decisions

The TSP will guide the management and development of appropriate transportation facilities in Warrenton, incorporating the community's vision, while remaining consistent with State, regional, and other local plans.

The Warrenton TSP addresses ways to improve the transportation system to support anticipated growth throughout the City. The TSP considered future traffic volumes and circulation patterns in a way that emphasizes the City and County street network and protects the function of the primary state highway corridor serving Warrenton; US 101. The TSP pays particular attention to the tourist and recreational aspects of the area and the transportation conditions created by the

unique traffic characteristics. The TSP establishes a system of transportation facilities and services adequate to meet Warrenton's transportation needs to the planning horizon year of 2022. The TSP includes plans for a transportation system that incorporates all modes of travel (that is, rail, pedestrian, bicycle, auto, marine, and public transportation), serves the urban area, and is coordinated with the State, regional, and County transportation network.

Specific elements of the Warrenton TSP include:

- A street network with connections and extensions to provide for local circulation and access off of US 101
- Street standards that comply with the TPR
- Appropriate improvements along the primary City, County and State highway corridors that serve Warrenton to support planned land uses and measures to protect the long-term functionality of US 101
- Pedestrian and vehicle circulation improvements to reduce the need for short car trips on State highways and improve pedestrian safety throughout the planning area.
- Trails - existing and proposed trails to link the scenic areas of Warrenton with Fort Stevens, the beach and Fort Clatsop. Development of proposed trails, with maintenance of existing and new trails.
- Amendments to the City's Development Code and other land use-related ordinances; the comprehensive plan; and any relevant financing plans, such as a capital improvement plan or other similar documents

The contents of the Warrenton TSP are guided by Oregon Revised Statute (ORS) 197.712 and the Department of Land Conservation and Development (DLCD) administrative rule known as the Transportation Planning Rule (TPR). These laws and rules require that jurisdictions develop the following:

- A road plan for a network of arterial and collector streets
- A public transit plan
- A bicycle and pedestrian plan
- An air, rail, water, and pipeline plan
- A transportation financing plan
- Policies and ordinances for implementing the transportation system plan

The TPR requires that alternative travel modes be given equal consideration with the automobile, and that reasonable effort be applied to the development and enhancement of the alternative modes in providing the future transportation system. In addition, the TPR requires that local jurisdictions adopt land use and subdivision ordinance amendments to implement the provisions of the TSP. Finally, local communities must coordinate their respective plans with the applicable County, regional, and State transportation plans. This coordination occurred throughout the preparation of the Warrenton TSP.

Preparation of the Warrenton TSP also was guided by an Intergovernmental Agreement (IGA) entered into by Warrenton and ODOT to address capacity and access issues on US 101. An IGA was signed in January 2001 and provided direction regarding access and traffic signalization on US 101. The principles of the IGA have been incorporated into the Warrenton TSP.

In 2008, ODOT and the City of Warrenton signed a Cooperative Improvement Agreement for Dolphin Lane at Hwy 101 and Hwy 104 Spur. This agreement has two (2) conditions for the construction of "Ensign Lane", which is between Hwy 101 and Hwy 104 Spur:

(1) As part of the approval to construct Ensign Lane, SE Dolphin Ave's access off of Hwy 101 will be removed; and

(2) if a rezone proposal is submitted to the city for any of the tax lots on the south side of SE Dolphin Ave (between Hwy 104 Spur and Hwy 101), the property owner(s)/developer(s) shall submit a Traffic Impact Analysis (TIA). The TIA shall be scoped by ODOT and shall recommend any needed highway improvements at the Hwy 104 Spur connection. In addition, the analysis shall evaluate if reasonable alternative access exists to adequately serve the current residential uses on SE Dolphin Avenue. If reasonable alternate access is found to not exist, then the SE Dolphin Avenue connection to Hwy 104 Spur shall be realigned to meet current spacing standards in accordance with OAR 734-051-0135; however, if reasonable alternate access is determined to exists, then SE Dolphin Avenue to connection to Hwy 104 Spur shall be closed.

Because of this agreement, Ensign Lane will be constructed serving Lum's Auto, Home Depot and other commercial development on the west side of Hwy 101; Ensign Lane is proposed to cross Hwy 101 and serve the proposed relocation of Costco and other commercial development on the east side of Hwy 101.

SECTION 8.100 FINDINGS

Warrenton is served by a transportation system that utilizes a wide range of travel modes and allows movement by land, water and air. Street right-of-ways are the focus of this system. They provide the major routes for the movement of people and goods between communities and are the principle means of access to activity centers and other property. The most important streets are US Highway 101, East Harbor Drive, Main Avenue and NW Warrenton Drive. Although most public streets are maintained by the City, upkeep of some of the major ones is the responsibility of the State or County. Streets and other local land transportation facilities provide mobility by making use of automobiles, trucks, buses, bicycles and other travel modes. Considerable additions and improvements to these facilities will be needed during the next twenty years.

Transportation by water occurs on the Skipanon River, Columbia River, Lewis and Clark River, and Young's Bay. Much of this transportation activity is generated by marinas that provide berths for commercial fishing boats, charter fishing boats and pleasure boats. Some activity is also directly associated with waterfront industrial uses in the City. A potential exists for marina expansion and more of port-related industrial activities.

Transportation by air is available from the Astoria Regional Airport, which is owned and operated by the Port of Astoria. The airport is used by the US Coast Guard, general aviation aircraft and, at times, commercial air carriers.

There are several existing and proposed trails in various locations in the City of Warrenton. The trail system provides recreation, transportation, and economic growth to and in our community.

This section addresses the requirements of Statewide Planning Goal 12.

SECTION 8.200 GOAL

Encourage and help provide a safe, convenient, well-maintained and economic transportation system that recognizes the relationship of the system to other land uses and takes into account the value of various modes of transportation.

SECTION 8.300 POLICIES

Section 8.310 Street Classification

(1) The City will work to improve the local circulation system by appropriately classifying each public street according to its transportation function as an arterial, collector, or local street and by using this classification to determine transportation characteristics of the right-of-way.

(2) Each public street in Warrenton has been classified according to its transportation function. Figure 5-2 of the Warrenton Transportation System Plan (TSP) provides the functional classification for each roadway in the City. This classification is related to the circulation requirements of the City and surrounding areas, and to the present and future land use of adjacent property. The street classification helps determine future right-of-way widths, pavement widths, access points, permissibility of on- street parking and other street design standards.

(3) One of the following classifications has been selected for roadway in the City (see also Figure 5-2 of the TSP):

(a) ARTERIAL - The primary function of an arterial roadway is to provide mobility. Therefore, arterials typically carry higher traffic volumes and allow higher travel speeds while providing limited access to adjacent properties. Within Warrenton, US Hwy 101 is the only designated arterial roadway.

(b) COLLECTOR - The function of a collector roadway is to collect traffic from local streets and provide connections to arterial roadways. Generally, collectors operate within moderate speeds and provide more access in comparison to arterials. Within Warrenton, ODOT has designated Ridge Road and DeLaura Beach Lane as rural major collectors and Fort Stevens Hwy 104, Fort Stevens Hwy 104 Spur, East Harbor Drive, and Warrenton-Astoria Hwy 105 are designated as urban collectors. The City has designated NE Skipanon Drive, NE 5th Street, SE 12th Place, SW 9th Street, SW 2nd Street, NW 1st Street, SE Neptune Drive, Seventh Ave. (in Hammond), Lake Drive (in Hammond), Pacific Drive (in Hammond), and SE 19th Street (North Coast Business Park Road) as collectors.

(c) LOCAL - The primary function of a local street is to provide access to local traffic and route users to collector roadways. Generally, local roadways operate with low speeds, provide limited mobility, and carry low traffic volumes in comparison to other roadway classifications. Within Warrenton, all roadways not mentioned above are designated as local streets.

(4) Public streets have been classified as indicated on the Functional Classification Map (Figure 5-2) of the Warrenton TSP. If the exact location of a proposed public street shown on the map has not been determined, the precise location of the street or relevant portion of the street will be established when property in the area is developed and/or during the process of approving construction of the street. New public streets not shown on the map will be classified by the City during the process of approving the street for development or the process of accepting a street into the City's street system.

Section 8.320 Street Design

(1) New or relocated streets will be designed in a manner which meets circulation needs, promotes safety, minimizes damage to the environment, eliminates unnecessary development and maintenance costs, and achieves other objectives of the Warrenton Comprehensive Plan and Transportation System Plan.

(2) Layouts for new or relocated streets will be required to conform to the standards of the TSP in a manner which:

(a) relate to the natural contours of the site insofar as is practical;

(b) minimize grading quantities;

(c) when reasonable, avoid excess runoff concentrations and the need for storm sewers; and

(d) achieve other design standards which reduce damage to the environment and development or maintenance costs. In residential areas, encouragement will be given to street layouts that discourage high travel speeds by using curving streets, where possible.

(3) A review of the appropriate use of undeveloped public right-of-ways in Warrenton will be undertaken by the City to determine whether these should be vacated or the area in which they are located should be re-platted in order to improve the street layout or achieve other objectives of the Comprehensive Plan. Consideration will be given to the desirability of using undeveloped right-of-ways for bikeways, trails, and access to private lots, public property and waterfront areas.

(4) New intersections shall be designed so that, whenever feasible:

(a) the intersecting streets meet at right angles;

(b) turning lanes are provided at heavily-traveled intersections;

(c) they are not located on curves, just below or at the crest of a hill; and

(d) other intersections are not too close.

(5) New or relocated streets will be developed in a manner consistent with the TSP which avoids overly steep grades, reverse curves too close together and sharp curves. Standards related to these characteristics shall vary with the type of street. Pavement designs will be appropriate for the traffic load, sub-grade soil, surface drainage, ground water and climate conditions existing at the pavement's location. Pavement edge treatments other than curb and gutter may be used only where there will still be adequate drainage and the roadway and sidewalk base will not be adversely affected.

Section 8.330 Street Width, Access And Parking Design

(1) The City will establish street width, right-of-way width and access standards consistent with street classifications and other relevant factors and utilize parking standards suitable for the use being served, the location and the size of the facility.

(2) Right-of-way widths allowed for new or relocated streets shall conform to the Cross Section drawings for local streets, collector roadways, and arterial roadways illustrated in Figures 5-3, 5-4, and 5-5, respectively, of the TSP.

(3) Greater widths may be required where higher than normal traffic volumes for the type of street are expected; or where additional area is needed for turning lanes or a turn-around. Narrower widths may be permitted when desirable due to topography, poor soils or other natural characteristics. Right-of-ways for most streets may also be smaller when satisfactory provisions are made for pedestrian ways, bike paths or utilities outside the street right-of-way. In addition, minor street pavement and right-of-way widths may be less when access will be provided to only several lots or suitable arrangements are made for more than the normal amount of off-street parking.

(4) The right to purchase access control along state highways rests with the Oregon Department of Transportation. The Department issues road approach permits subject to the approval of City, County or other governmental agencies having either joint supervision over the section of highway or authority to regulate land use by means of zoning and/or building regulations. It shall be the permit applicants' responsibility to determine the necessity of and obtain any such approval required.

(5) Where access to an arterial or collector is permitted, appropriate techniques will be used to preserve roadway capacity and safety. Techniques may include: use of joint access points, marginal access roads, minimum distances between driveways and intersections, acceleration or deceleration lanes, other special turning lanes, minimum driveway widths, adequate sight distances, one-way driveways, and other access control methods.

(6) Controls on access to local streets will generally be minimal. However, access to local streets from moderate- or high-intensity land uses will not be allowed unless the street is a marginal access street or other street primarily providing access to moderate- or high-intensity land uses, no desirable option exists, or the use currently has access to the street.

(7) Every new land use shall have an adequate amount of off-street parking to serve the use. Most types of uses, however, will not be required to have this parking on the same property if the parking is provided within a reasonable distance from the structure reacquiring the spaces. Considerable parking areas will be encouraged in the central commercial district, waterfront areas and in other appropriate locations. Surfacing,

landscaping, access points, on-site circulation patterns and other parking-related characteristics will be suitable for the use being served, the location and size of the facility. Parking areas with a large number of spaces may have a limited number of smaller-than-normal spaces for compact cars.

Section 8.340 Street and Parking Financing and Improvement (See also TSP Section 6, Transportation Funding Plan)

(1) The City will help achieve the street system needed by equitably distributing improvement costs, establishing improvement priorities, and partially satisfy the demand for parking by constructing and suitably financing City parking lots in appropriate locations.

(2) Street construction and maintenance projects in which the City is financially involved will be included in the capital improvements program for community facilities. All costs associated with construction of collector and local streets shall be the responsibility of the developers. Dedicated streets, not maintained by the State or County, will be maintained by the City upon their formal acceptance. Street widening project costs will be paid by abutting property owners, large-scale development interests benefiting from the improvements and/or by the City when improvements will benefit the general public.

(3) The City, with the assistance of others involved in financing the work, will establish priorities for street improvements. Emphasis should be place on upgrading arterials and collectors which do not meet City standards. Types of projects that ought to be given special consideration include continuing regular street maintenance, street widening and intersection improvements. As funding becomes available, the City will pay the cost of work for which it is responsible. Encouragement will be given to the State and County to correct deficiencies in streets which they maintain, as soon as feasible.

(4) Consideration will be given to constructing City-financed or partially City-financed parking lots in the downtown area and other appropriate locations. Some of the spaces could be rented to establishments which need the spaces to satisfy off-street parking requirements. Several of the potential funding sources include business tax fees, revenue bonds and special assessments.

Section 8.350 Multi-Mode Transportation

(1) Transportation options for individuals and organizations will be promoted in a variety of ways in order to stimulate the economy, conserve energy, increase personal convenience and attain other objectives.

(2) Increased use of the Astoria Regional Airport shall be encouraged and efforts by the Port of Astoria to make needed improvements in the airport will be supported. Emphasis on the airport area as a multi-purpose facility for commercial passenger service, air cargo, US Coast Guard operations, general aviation aircraft, industrial activities and other suitable purposes will be promoted. In addition, the City will appropriately regulate nearby development, primarily through the use of height limitations. See also the Air System Inventory located in Section 2 of the TSP.

(3) Efforts will be made to protect the airport from incompatible land uses. This will involve trying to avoid hazards resulting form the height of structures, smoke, glare from buildings, lights which shine upward, radio interference from transmission lines and similar uses in the approach zones. Residential uses will be excluded from locations where aviation noise and the potential for aviation accidents is a serious threat to safety or livability. The Oregon Department of Transportation and the Port of Astoria will be allowed to review building permits for construction within the Airport Hazard Overlay Zone.

(4) Expansion of local boating and shipping activities is advocated by the City. This should be supported by proper management and maintenance of local waterways — such as increasing channel depths where desirable, undertaking periodic dredging to maintain appropriate channel depths, prohibiting reduction of channel areas and setting and enforcing speed limits for the Skipanon Channel. Locations suitable for waterfront development activities include the Skipanon River from the mouth to the Eighth Street dam, a portion of the aquatic areas along the shoreline between Tansy Point and the historic Hammond town limits, along the shoreline of the Hammond Marina, and some relatively small areas in Young's Bay and Alder Cove that are near the peninsulas adjacent to the Skipanon River. Potential water quality and other environmental hazards must be minimized to the extent feasible. See also the Water System Inventory of Section 2 of the TSP.

(5) Deep-draft facilities which can make use of the draft depth of the Skipanon should be encouraged to develop along both east and west banks, near the River's mouth.

(6) It is the City's position that the Skipanon channel and turning basin should be maintained from the bridge to the Columbia River Channel at a depth of 20 feet until greater depths are needed to accommodate local shipping activities. The Warrenton and Hammond Mooring Basins should be maintained at a depth of 16 feet. The City shall continue to serve as a sponsor for maintenance dredging authorized by the Corps of Engineers in the Skipanon Channel and in the Hammond Basin and will procure and maintain adequate dredged material disposal sites for this maintenance project.

(7) The City will work to expand, as needed, the commercial boat moorage available at the Warrenton Boat Basin and to further develop the Hammond Marina to eventually support inclusion of commercial boat moorage at this facility. Improvements will include additional moorage, parking lot and access improvements, service docks, and other support facilities. In addition, consideration will be given to making the necessary upgrades to city infrastructure at these sites to provide increased opportunities for the development of desired water-dependant and water-related commercial, recreational, and industrial activities.

(8) North Coast regional transit provided by the Sunset Empire Transit District and inter-city bus service provided by Greyhound Bus Lines will be supported.

(9) Pedestrian walkways, often in the form of sidewalks located in street right-of-ways, will be required in all high, medium, and intermediate density residential developments, unless the criteria for the Alternative Local Road Standard (TSP Figure 5-3) can be met. Pedestrian walkways will be required in the Warrenton and Hammond city center commercial districts, many waterfront areas, and in various other locations as depicted in the Pedestrian System Plan of the TSP (see Figure 5-7). Adequate safeguards for protecting pedestrians from vehicles will be encouraged. Ramps that comply with the American with Disabilities Act standards will be required at new crosswalks. Priority consideration will be given to repairing and/or replacing sidewalks in the downtown area.

(10) A local bikeway system will continue to be developed in accordance with the Bicycle System Plan of the TSP (see Figure 5-8) as funding becomes available. Bike/emergency parking lanes may be required along new arterials and collectors. State highway funds allocated to Warrenton for bikeways and monies obtained from other sources will be used to help finance the system. Efforts will be coordinated with activities of the Clatsop County Bike Route committee and Oregon Department of Transportation, including those involving the Oregon Coast Trail. Consideration will be given to the construction of bicycle paths.

(11) Desirable trucking and pipeline operations will be promoted by the City in accordance with the policies of the TSP (see Figures 5-6 and 2-12, respectively). Efforts will be made to encourage truck access to Warrenton's industrial and waterfront areas while minimizing disruptions to downtown areas. A high priority is improvement of the intersection of Main Avenue, East Harbor Drive and NE Skipanon Drive.

(12) The City supports the continued development of new and expanded transportation facility improvements which includes the Warrenton Trails Master Plan (March, 2008).

Section 8.400 Trails

The Warrenton Trails Master Plan aims to develop a comprehensive network of trails that link destinations, natural features, historic landmarks, public facilities, and business districts. The trail system provides recreation, transportation, and economic growth. The trail system provides connections for residents to travel to work, to shop and to recreate. It provides connections to regional trails, adjacent communities, and State and Federal parks.

The trails link the residential neighborhoods, community facilities like the library and city hall, parks, schools, historic areas, the downtown, as well as other commercial and retail activity centers in Warrenton.

Section 8.410 Economic Benefits

Trails are associated with increased real estate values and special events, and other users, and the quality of life can make an area more attractive for business relocations and in-migration.

According to the National Association of Homebuilders, the most desired amenity of prospective buyers is trails, over swimming pools and exercise rooms. The group surveyed people nationwide and found that trails were preferred 57 percent of the time (source: ocregister.com, 11-12-06).

Trails can generate income from tourists. Trails connecting to parks generate economic benefits. Annual visitation to Fort Stevens State Park overall is about 1.4 million, including about 10,000 to the fort site; 350,000 to the campgrounds; and 900,000 to other day use areas in the park. Some of the campers are counted more than once as they also visit the fort and other day use areas.

Section 8.420 Linkage to Natural Areas

Warrenton's trail system is designed to provide access along the City's waterways: the Pacific Ocean, the Columbia River, the Skipanon River, Young's Bay, Shag Lake, Long Lake, Wild Ace Lake, Cemetery Lake and its parks (Fort Stevens State Park, Skipanon Park, and Eben Carruthers Park). Warrenton is comprised largely of diked wetlands intermixed with dune ridges and other uplands. It is bordered on three sides by major water bodies: the Pacific Ocean shore to the west; the Columbia River and the Lewis and Clark River on the east. Bisecting the City north to south is the Skipanon River waterway, a tributary of the Columbia River.

Section 8.430 Cultural and Historical Attractions

The trail system creates a physical connection to the historical and cultural sites in and around Warrenton including the State and Federal Parks, which the city borders. Some of the important historical sites in and around Warrenton include: Tansy Point, Warren Mansion, Peter Iredale wreck, Lewis & Clark National Park, Camp Rilea, Neacoxie Creek, the Columbia River and the Pacific Ocean.

Section 8.440 Existing Trails

The existing network of Warrenton Trails are described below:

A. Warrenton Waterfront Trail (length 4.5 miles) - begins at the Skipanon River Park at 3rd Street Park trailhead, from this point the trail route proceeds along the Skipanon River Dike under the East Harbor Drive Bridge and along Harbor Drive, past the Lighthouse Park to NE 1st Street where it then picks up the old railroad bed traveling northwest along the old railroad right-of-way under a canopy of trees emerging at the Alder Creek outlet with a stunning view of the Columbia River. Proceeding northwest the trail reaches Tansy Point, at the northwest end of NW 13th Street. The trail then follows 13th Street southwest and connects to Hwy 104/NW Warrenton Drive, following Warrenton Drive for a short distance north then cuts back toward the waterfront through Eben H. Carruthers Park and trailhead. From the Lewis and Clark interpretive center at the park waterfront, the trail proceeds north along the old railroad right-of-way until Enterprise or Gray Street where it continues to Pacific Drive. At Heceta Street, it jogs right and then left onto Pacific Drive to Heceta Place where it turns right and continues to Hammond Marina. The trail follows Iredale Street through the Hammond Marina to Seafarers Park where it connects onto the Fort Stevens State Park trail system

B. Lagoon Trail Spur (.5 miles) - at the Alder Creek crossing there is a spur off the Warrenton Waterfront Trail which follows the City's dike southeast toward NE 5th Street.

C.1. Skipanon River Loop Trail (2 miles) - begins at the 3rd Street Skipanon Park trailhead. From this point the trail proceeds along the Skipanon River dike under the Harbor Drive Bridge. The trail then turns onto the Harbor Drive Bridge and follows Harbor Drive to the Warrenton Marina parking lot, continuing through the parking lot, then north to the Skipanon River dike, following the dike back under the Harbor Drive Bridge and along the east river bank of the Skipanon River. At the 8th Street Dam the trail crosses the Skipanon River and continues on the west river bank following the dike to 3rd Street and back to the Skipanon River Park trailhead.

C.2. East Skipanon River Spur (same map as C.1. above) (1 mile from 8th Street Dam) A spur of the Skipanon River Loop Trail continues past the 8th Street Dam along the east river bank dike. This trail connects to the Skipanon Peninsula Trail at the Warrenton Marina. The south end of the trail connects to Alternate Highway 101 near Warrenton High School.

D. DeLaura Beach Trail (1 miles) - follows the south shoulders of DeLaura Beach Lane from Clatsop County's Burma Road trail and beach access trail east to Ridge Road. This trail starts near the dunes and the ocean, crosses the southern tip of Long Lake, and then traverses a short distance uphill to Ridge Road. It is a favorite trail for equestrians.

E. Airport Dike Trail (2 miles) - starts at a small, makeshift trailhead along Business Hwy 101 at the foot of the Lewis and Clark Bridge. The trail follows the Airport Dike from this point along the waterfront of Young's Bay. The Airport Dike ends at the foot of the Young's Bay Bridge and the trail turns west to follow Hwy 101 to the Harbor Drive crosswalk and ends at the Warrenton Shopping area. From this point the trail connects to the Port of Astoria's Skipanon Peninsula Trail and Spurs.

F. Grade School Trail (.5 miles) - follows the abandoned railroad bed from the Warrenton Elementary School to downtown Warrenton (2nd and Alder Street) and the Warrenton City Park.

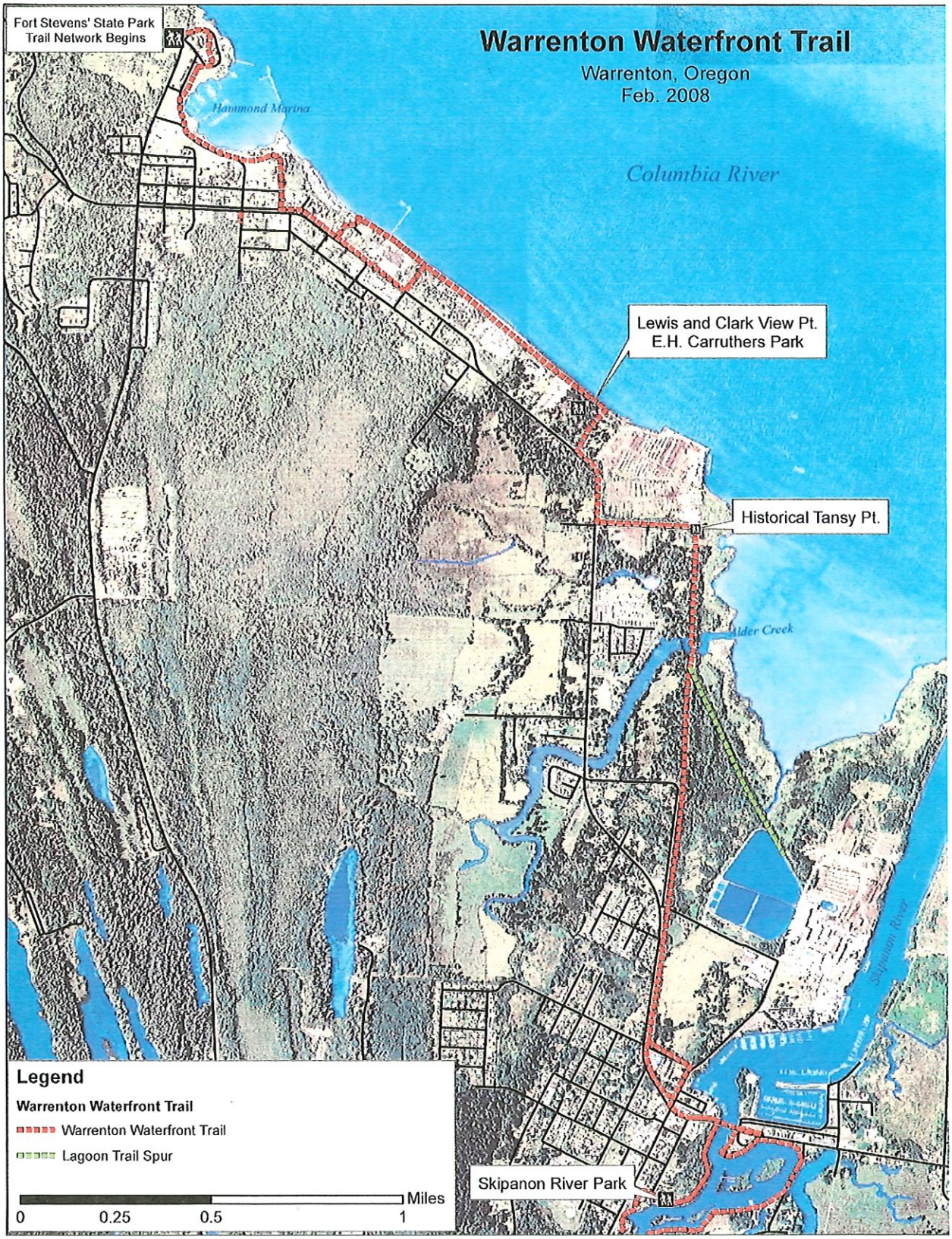
G. Hammond Post Office Trail (.5 miles) - begins at the Hammond Post Office on the corner of Pacific Drive and Iredale Street. The trail follows Iredale Street south and continues onto the undeveloped platted Iredale Street turning west onto the undeveloped platted 9th Street and continuing on 9th Street to Ridge Road.

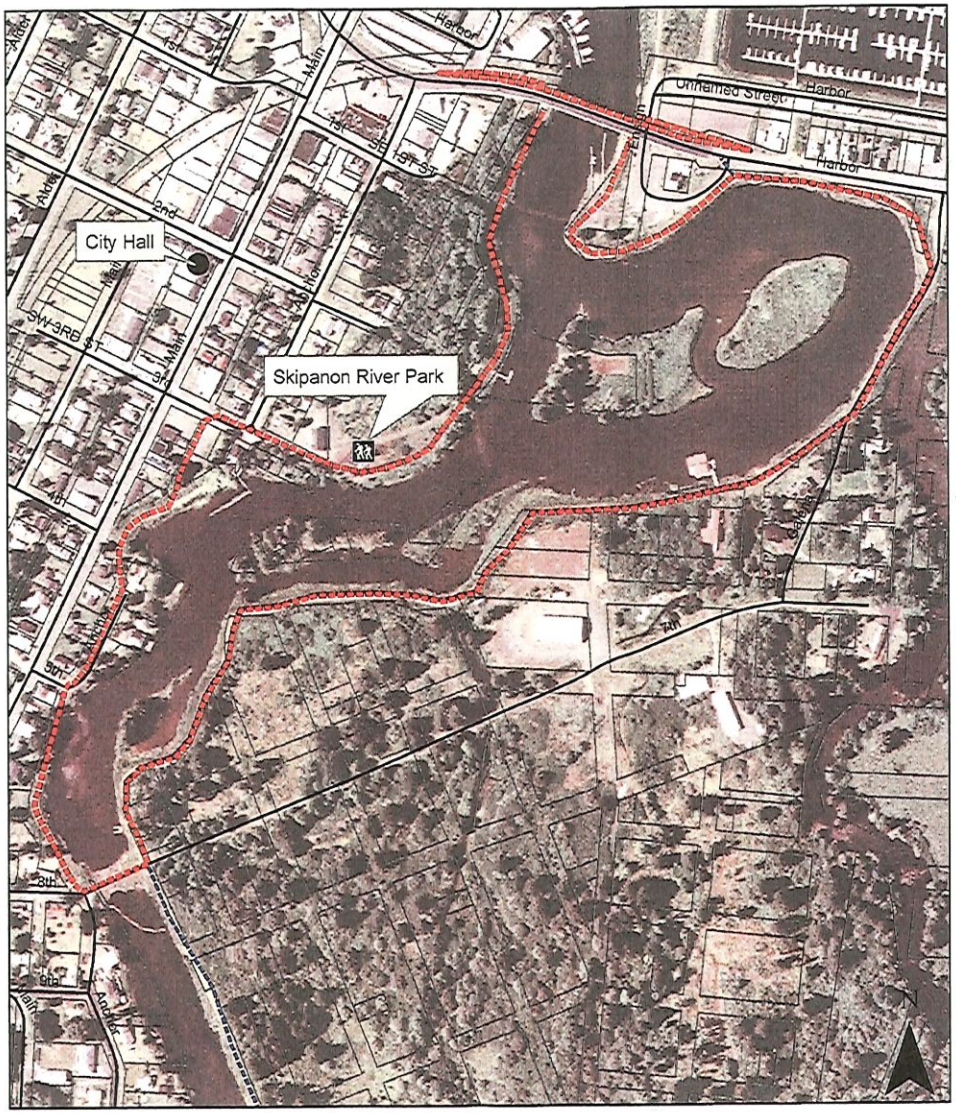
H. Spirit Loop Trail - (1.5 miles) - begins at an unofficial trailhead along 9th Street just east of Juniper Street. From this point the trail meanders south onto an old logging road which spurs off to the east and west, both spurs lead to the Oceanview Cemetery. The trail follows the west spur to the northern end of the cemetery and then goes south along the Cemetery Lake to DeLaura Beach Lane and then loops around the east side of the cemetery north back to the old logging road.

I. Skipanon Peninsula Trail and Spurs (4-5 miles) - runs along the Skipanon Peninsula Dike from the toe of Young's Bay Bridge following the Young's Bay waterfront to the Skipanon River and along the east bank of the Skipanon River to the Warrenton Marina. This trail has spurs at several places through the undeveloped wetlands of

the peninsula, including a spur running along platted King Street to Harbor Drive. The Skipanon Peninsula Trail connects to the Skipanon Loop trail through the Warrenton Marina.

J. Skipanon River Water Trail - The Skipanon River, from the 2nd Street small craft launch ramp features flat navigable waters that flow through residential and natural landscapes with a portage required over the 8th Street Dam to travel upstream. From the 2nd Street dock one can also paddle downstream to the commercial and recreational Harbor area with vistas of boat yards, the Warren Mansion and ocean going vessels. With planning, the tides can facilitate an upstream or downstream paddle trip past islands, commercial fish processing plants, old growth Sitka Spruce and connect to a proposed landing at the Fort to Sea Trail Bridge over the Skipanon. Traveling upstream from the 8th Street Dam the Skipanon takes lazy turns through town passing under old Hwy 101, past the Warrenton High School Fish Hatchery and then through old growth Sitka forested shores and wetlands. The Skipanon River Water Trail is suitable for inclusion in the bi-state 146 mile lower Columbia River Water Trail network.


Warrenton Waterfront Trail
Warrenton, Oregon
Feb. 2008
Fort Stevens' State Park
Trail Network Begins
Hammond Marina
Columbia River
Lewis and Clark View Pt.
E.H. Carruthers Park
Historical Tansy Pt.
Alder Creek
Skipanon River
Skipanon River Park
Legend
Warrenton Waterfront Trail
Warrenton Waterfront Trail
Lagoon Trail Spur
Miles
0
0.25
0.5
1



Skipanon River Loop Trail

Warrenton, Oregon
Feb. 2008

Legend

Skipanon River Loop Trail

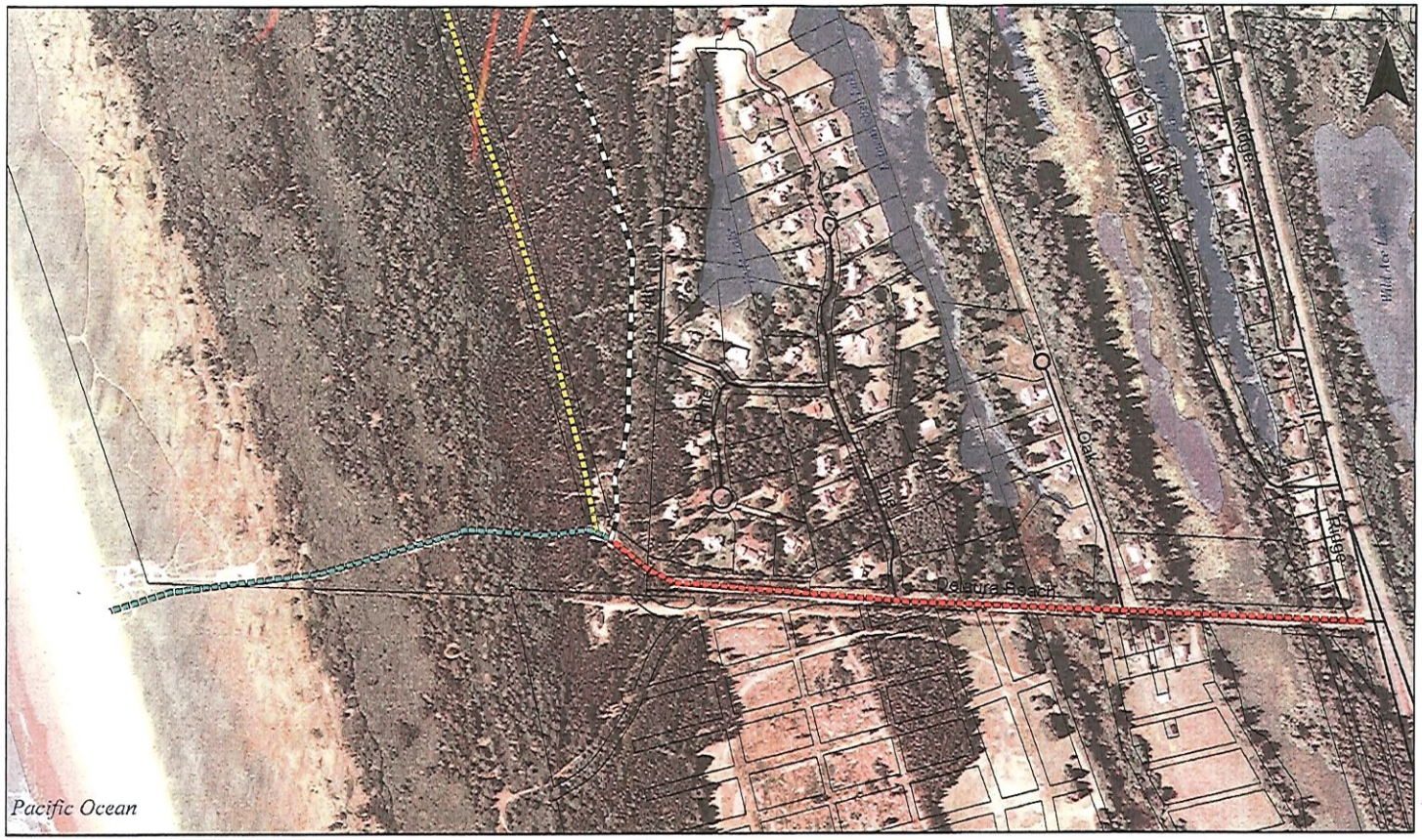
Skipanon River Loop Trail

Skipanon River Trail Eastern Spur

Miles

0 0.125 0.25

CITY OF WARRENTON



Legend

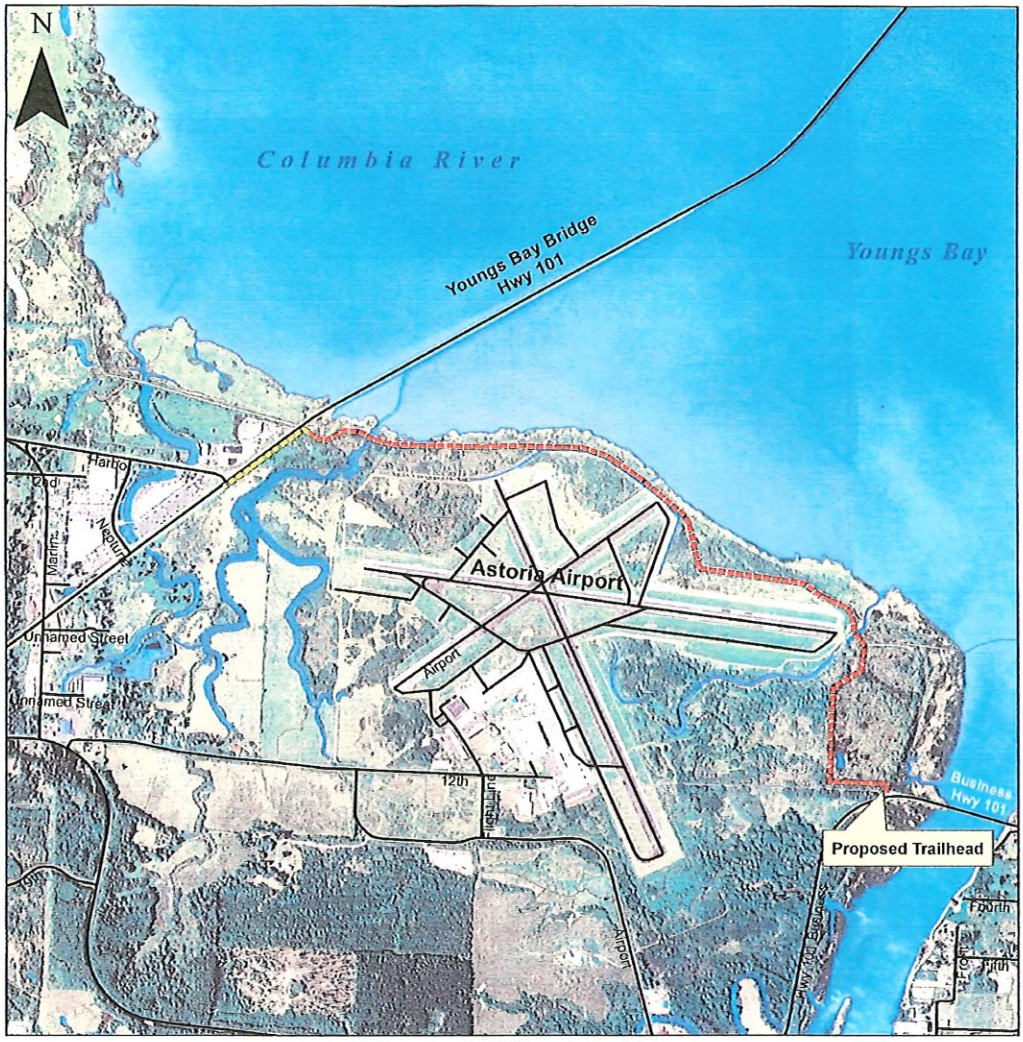
Deluara Beach Trail

- Delaura Beach Lane Trail
- Deluara Trail to Beach
- Platted Burma Road Trail
- Current Burma Road Trail

Delaura Beach Trail

Warrenton, Oregon
Feb. 2008

CITY OF WARRENTON



Airport Dike Trail

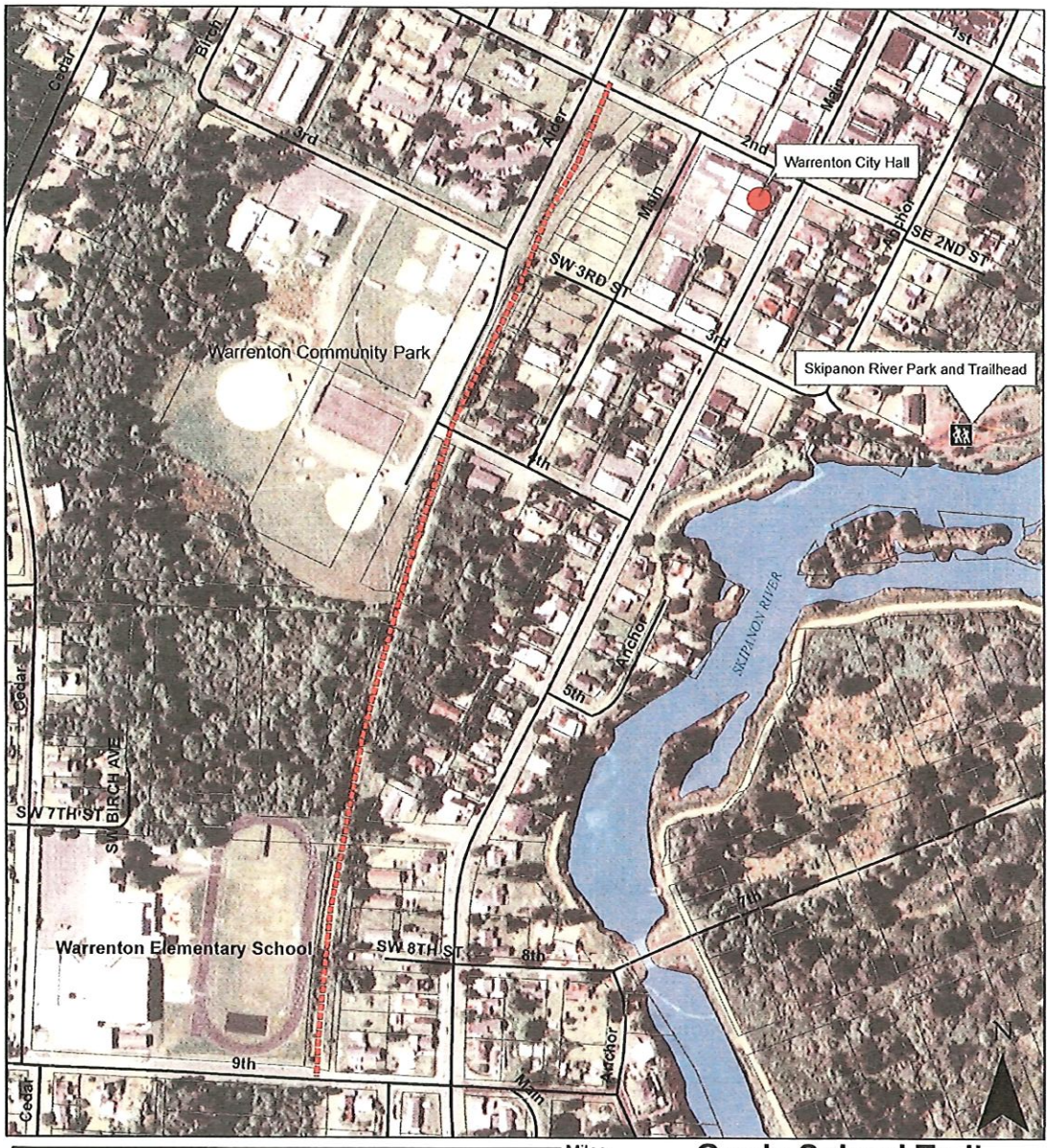
Warrenton, Oregon
Feb. 2008

Legend

- Airport Dike Trail
- Proposed Path in ODOT Right of Way

0 0.25 0.5 1 Miles

CITY OF WARRENTON



0 0.125 0.25 Miles

Grade School Trail

Warrenton, Oregon
Feb. 2008

Legend

Warrenton Grade School Trail

CITY OF WARRENTON

Hammond Post Office Trail

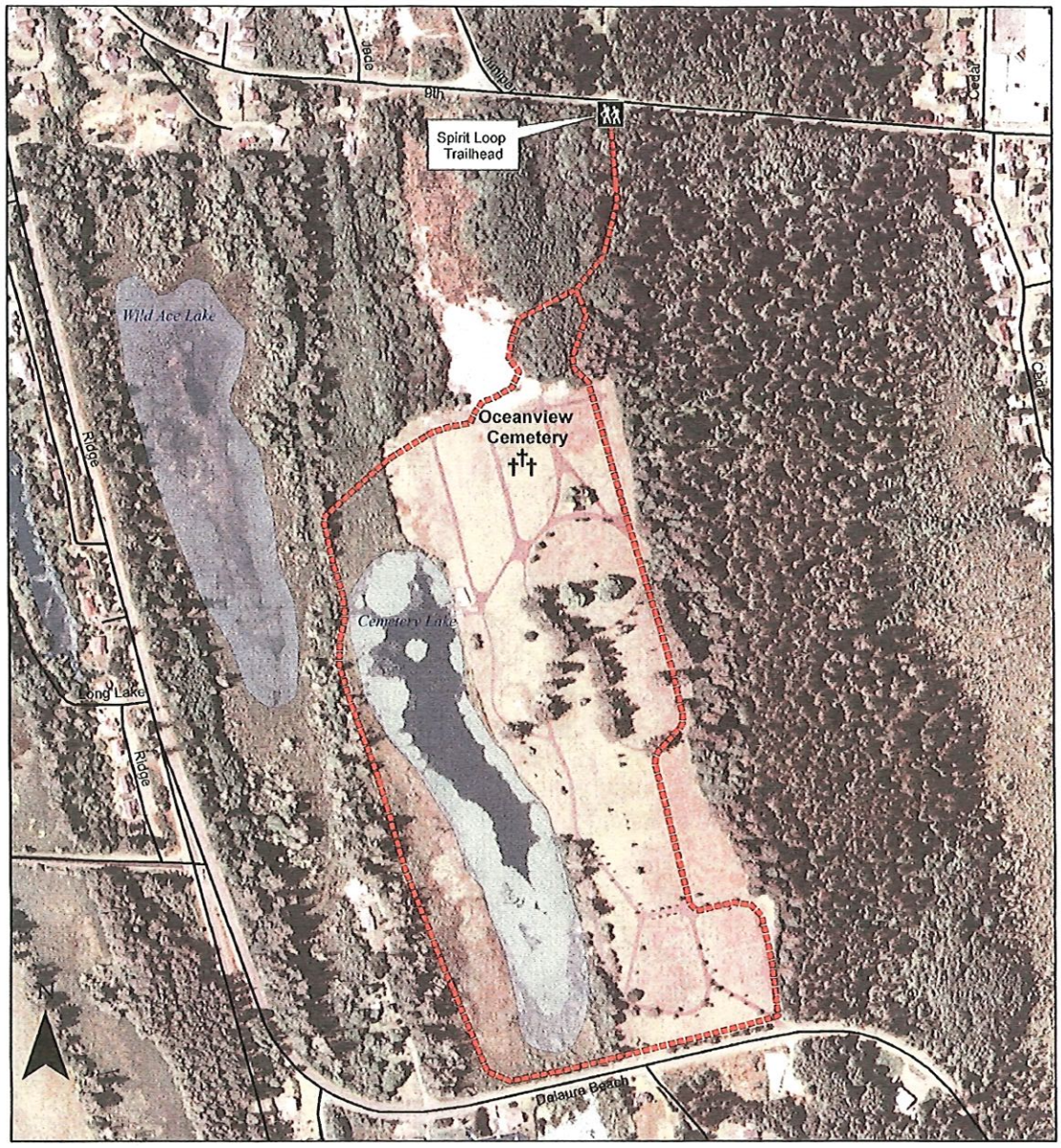
Warrenton, Oregon
2008

Legend

Hammond Post Office Trail

** The Hammond Post Office Trail follows the City platted Iredale and 9th Streets

CITY OF WARRENTON



Spirit Loop Trail

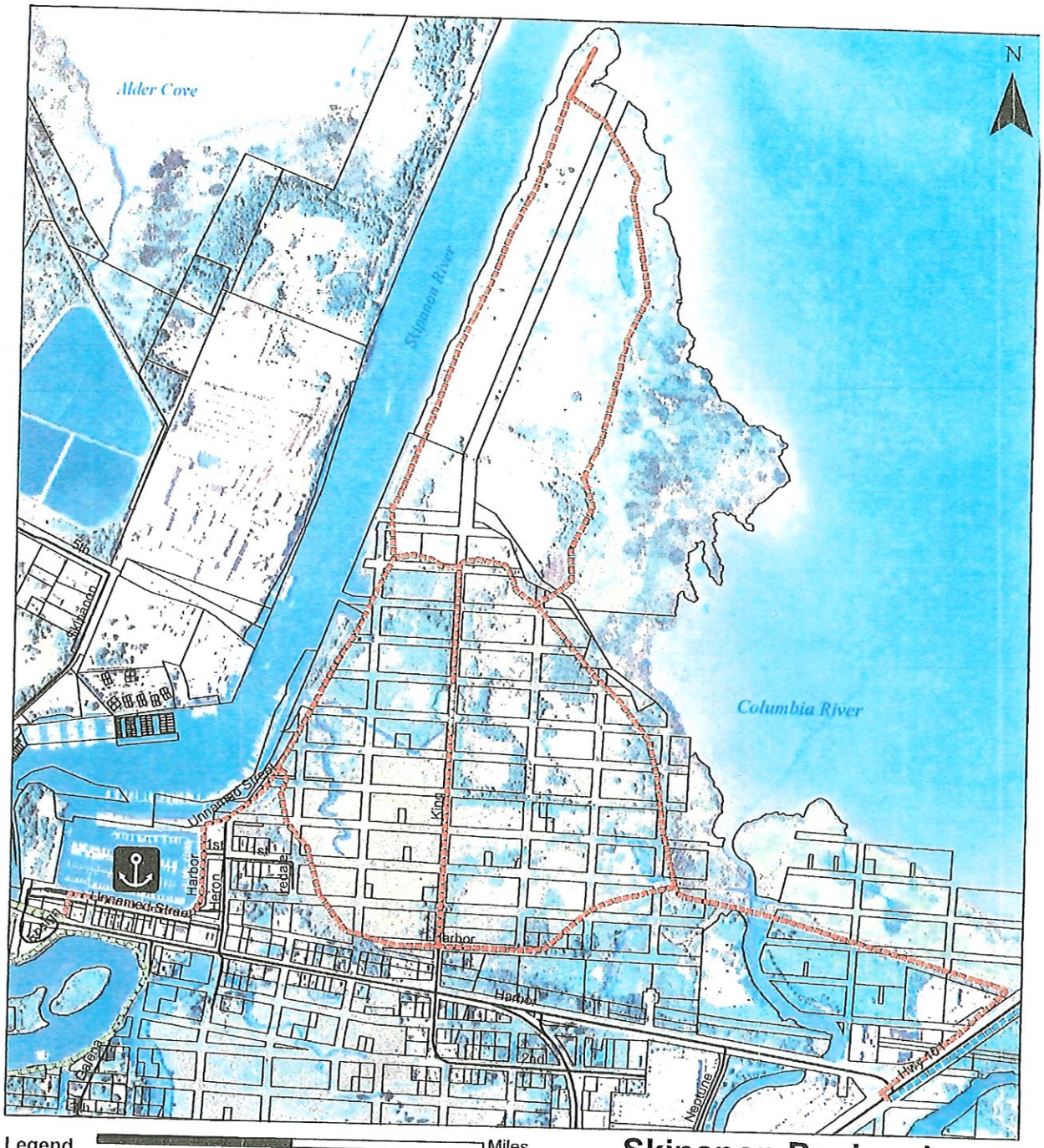
Warrenton, Oregon
Feb. 2008

Legend

Spirit Loop Trail

Miles
0 0.125 0.25

CITY OF WARRENTO



Legend

0 0.25 0.5 Miles

Skipanon Peninsula and Connecting Trails

- Skipanon Peninsula Trail
- Airport Dike Trail/Hwy 101
- Skipanon River Loop Trail
- Warrenton Marina

Skipanon Peninsula Proposed Trail Network

Warrenton, Oregon
Feb. 2008


N
Alder Creek
Columbia River
Skipanon River
Marina
Skipanon River Park
8th Street Dam
Unnamed Street
NE HARBOR PL
Harbor
Hwy 101
Hwy 104 Spur
Hwy 104
Delaura Beach
Airport
SE 10TH
SE 11TH
Warrenton Parks & Trails
Warrenton Water Trails
Warrenton, Oregon
2008
Skipanon River Water Trail
Alder Creek Water Trail
Possible Smallboat (non-motorized) Launch Points
Miles
0
0.5
1

Section 8.450 Proposed Trails

The City has published the Warrenton Tsunami Evacuation Map showing evacuation routes from various parts of the City. If streets become impassible, the establishment of these proposed local trails could provide alternative routes for people to travel.

A. Beaver Trail (approximately 2.8 miles) - begins at the Hammond Post Office at the corner of Pacific Drive and Iredale Street. The trail follows Iredale Street south and continues onto the undeveloped platted Iredale Street. Then the trail meanders south following the remnants of an old logging road through to the platted 11th Street and the KOA Kampgrounds. From this point, the trail is proposed to continue south to the Warrenton Soccer Fields.

B. Creekside Trail (approximately 2.2 miles):

1. Northern Section - follows existing road shoulders and begins at the intersection of King Street and Harbor Drive and follows the shoulders of Harbor Drive and follows the shoulders of Harbor Drive southeast to Marlin Avenue, the route then goes south along Marlin Avenue. At the intersection of Marlin Ave and Hwy 101 the route turns southwest on the shoulders of Hwy 101 then crossing Hwy 101 at the Business Hwy 101 intersection. The route then follows Business Hwy 101 east to Southeast Jetty Ave turning south onto Southeast Jetty Ave. The route follows Southeast Jetty Ave to Southeast 14th Street running east on 14th Street. Following Southeast 14th Street as it turns into a dirt road heading south. This dirt road leads to the North Coast Business Park near the Clatsop County Animal Shelter.

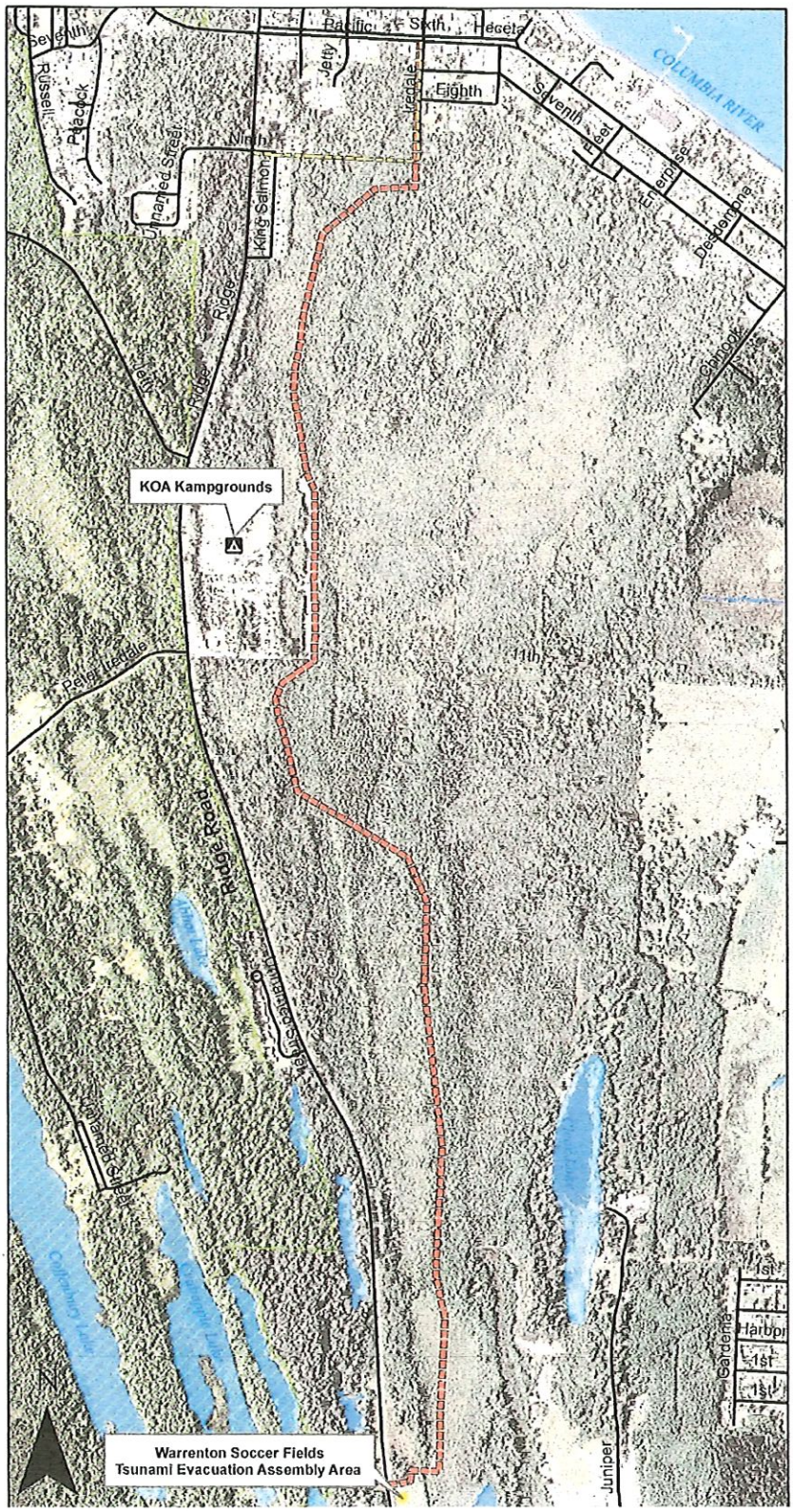
2. Eastern Section - connects with the Eastern Skipanon River Trail 'Spur at the intersection of this trail and Hwy 104 Spur. From this point, the trail would follow Hwy 104 Spur northeast to Ensign Lane. The trail would turn southeast onto Ensign Lane along the shoulders of this street southeast, across Hwy 101 ending at the North Coast Business Park near the Clatsop County Animal Shelter.

3. Southern Section - continues south of the North Coast Business Park, meandering along scenic waterways and old logging roads found in this area. This proposed trail does not have a defined route but would ideally connect with residents and communities located south of the North Coast Business Park. Significant development and re-routing of streets with business and housing are currently planned for this area.

C. Shag Lake Trail (approximately 1 mile) - begins at the west end of 2nd Street and continues along platted 2nd Street turning south along Juniper Street and then meandering westward toward Shag Lake. From the lake the trail follows an existing (unofficial) trail southwest to the Warrenton Soccer Fields.

D. Platted 11th Avenue - this trail follows platted and undeveloped 11th Avenue. This proposed trail traverses farms, fences, gates, wetlands and the KOA properties at the west end of this trail are significant considerations and challenges to maintaining an open trail.

E. PreMarq Center to North Coast Industrial Park - this area is very populous during business hours and signage indicating a roadway shoulder trail to the North Coast Industrial Business Park is needed. This proposed trail would currently direct people to Marlin Avenue and then to Hwy 105 (old 101) and the entrance to the North Coast Business Park.



Beaver Trail

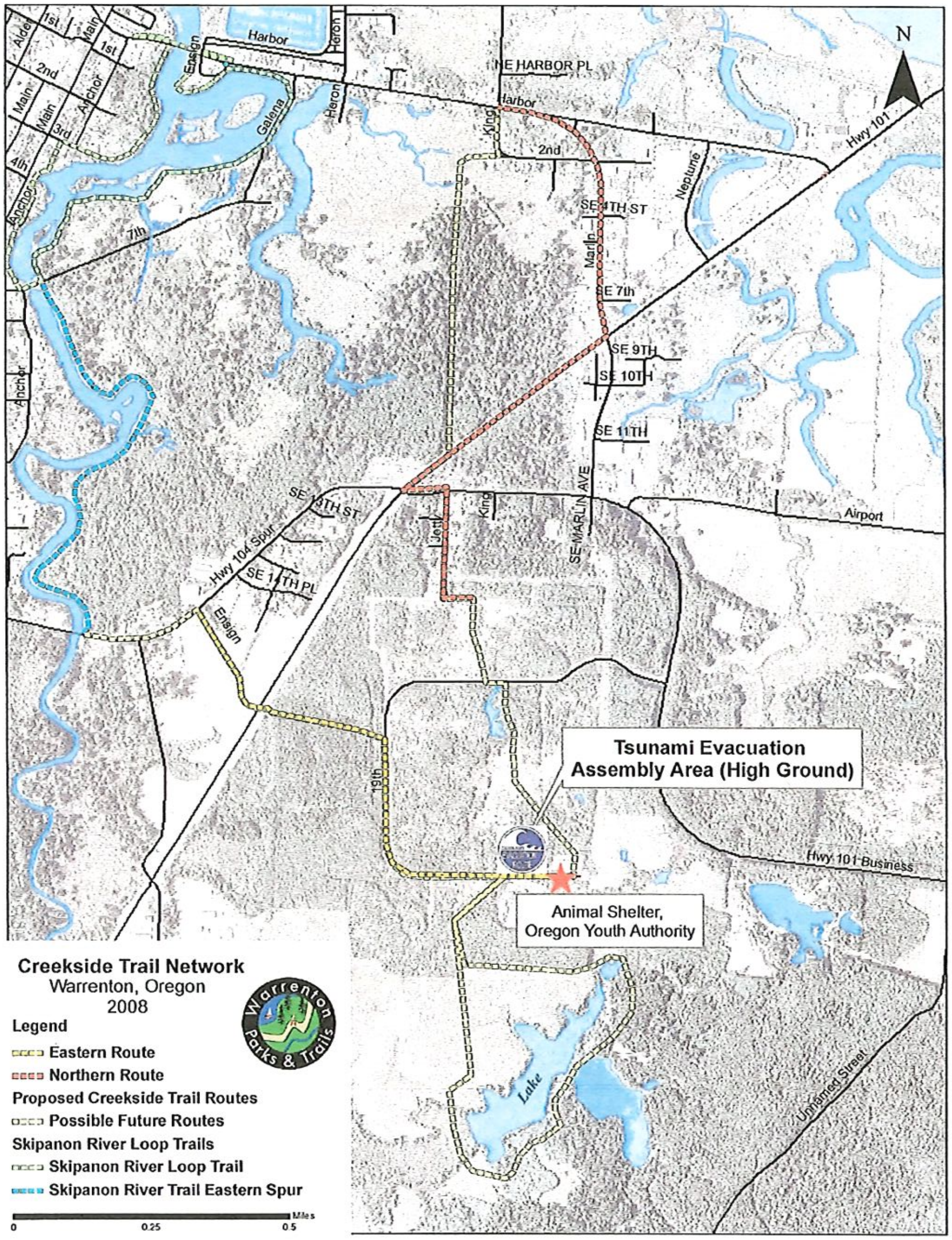
Warrenton, Oregon
2008

Legend

Proposed Trail and Connecting Trails

- Beaver Trail
- Hammond Post Office Trail
- Fort Stevens State Park

0 0.25 0.5 Miles


Tsunami Evacuation
Assembly Area (High Ground)
Animal Shelter,
Oregon Youth Authority
Creekside Trail Network
Warrenton, Oregon
2008
Legend
Eastern Route
Northern Route
Proposed Creekside Trail Routes
Possible Future Routes
Skipanon River Loop Trails
Skipanon River Loop Trail
Skipanon River Trail Eastern Spur
N
Hwy 101
Hwy 101 Business
Hwy 104 Spur
Airport
Harbor
NE HARBOR PL
2nd
SE 7th
SE 9TH
SE 10TH
SE 11TH
SE MARLIN AVE
Marlin
Neptune
King
Jetti
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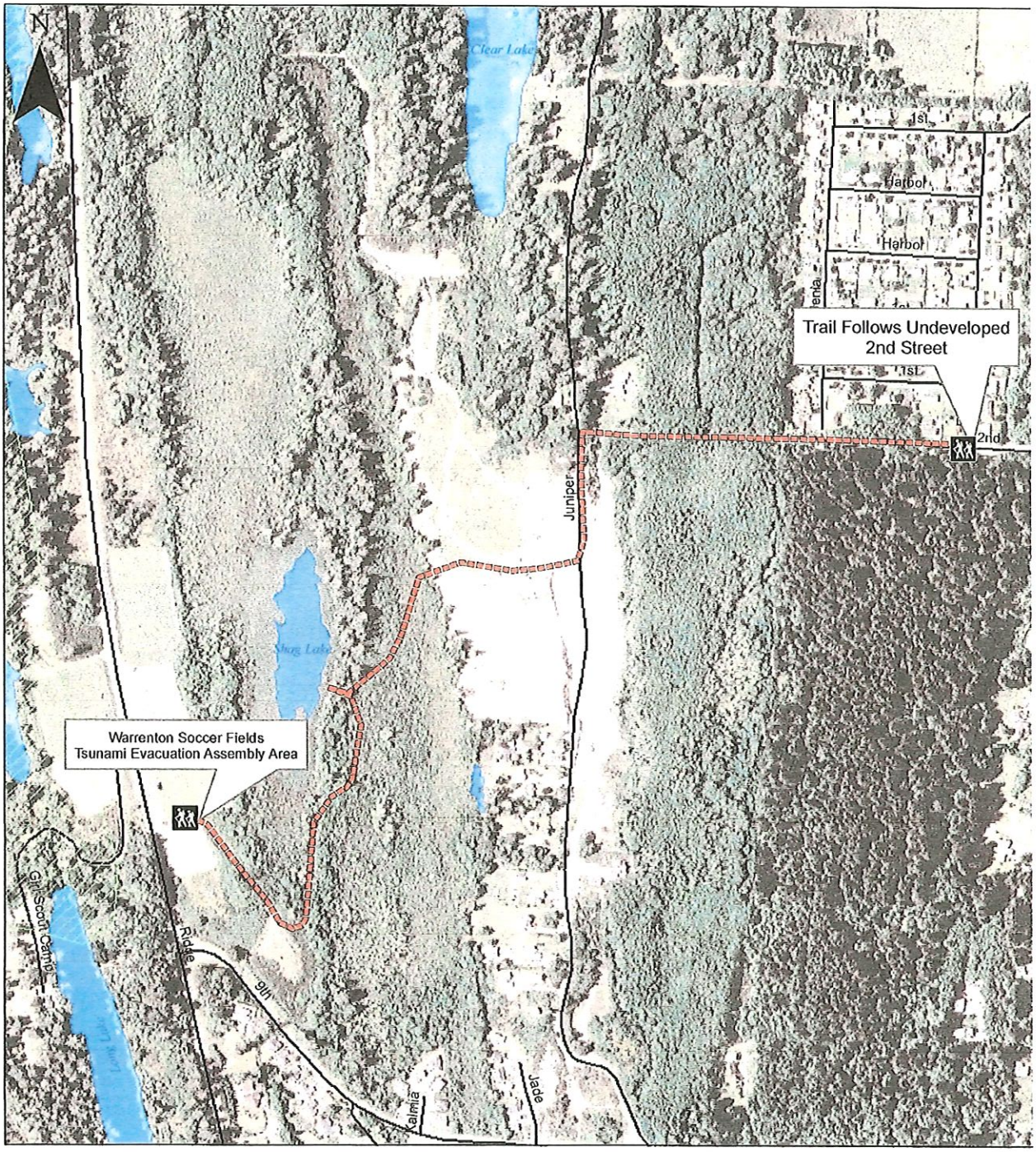


Legend

Possible Trail Route

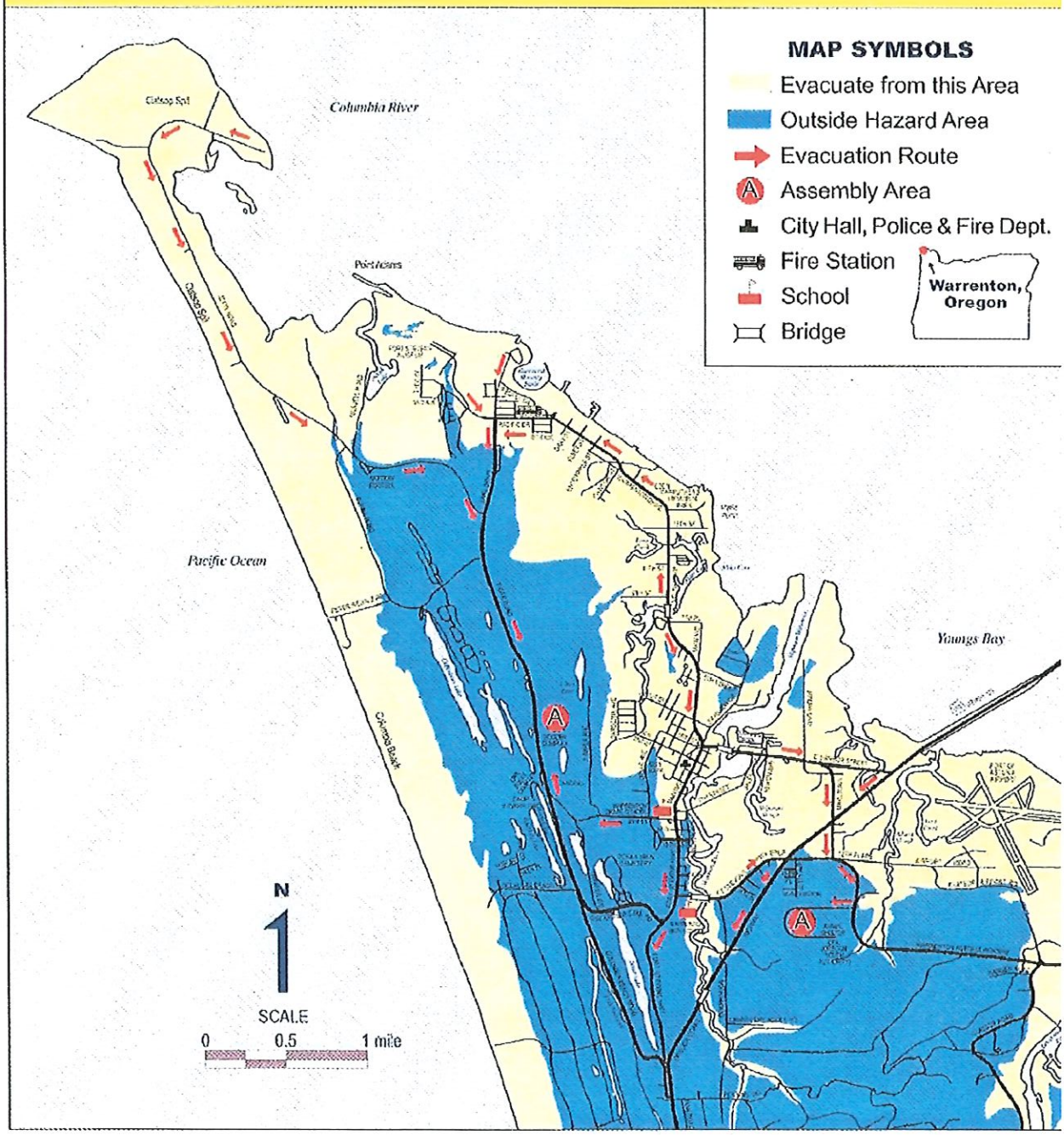
Fort Stevens State Park

Shag Lake Trail

Warrenton, Oregon

2008

Tsunami Evacuation Map: Warrenton



Section 8.460 Strategies

* Design and seek funding for trail improvements, such as leveling and hard surfacing that will allow for bicycle passage and disabled access.

* If opportunity arises, acquire trail access along the rivers.

* Work with Oregon Parks and Recreation Department to open the Fort Stevens gate at Seafarer's Park to allow access by pedestrians and visitors in and out of the park at this location.

* Market the trails in brochures and other regional tourist information.

* Design, develop, and place interpretive panels along the trails at historical, cultural, and wildlife habitat locations. Potential interpretive topics include local fisheries, such as species fished, gear, processing, ships and shipping on the Columbia.

* Improve trail surface where trail follows city streets, improve road shoulders for pedestrian use.

* Improve trail surface for multi-use.

* Provide signs for direction and trail connections and the Tsunami Evacuation Routes

* Complete the trail under the East Harbor Drive Bridge

* Research land use and access to the dike on the west bank south of 3rd Street to determine the feasibility of a full waterfront route along the west bank.

* Design and build multi-use trails.

* Identify particular scenic spots and build benches for walkers to rest and view wildlife and boaters.

* Create a pedestrian friendly access point from Alternate Highway 101 bridge to the south entrance of the Eastern Skipanon River Spur Trail.

* Work with the Port of Astoria to obtain easements or public use agreements for official designation of this trail.

Section 8.470 Goals

1. Locate trailheads at or in conjunction with park sites and community facilities to increase local access to the trail system.

2. Furnish trail systems with trailhead improvements that include interpretive and directional signage systems, benches, and parking.

3. Maintain up-to-date trail plans and maps.

4. Encourage trail use by schools for science education and athletic training.

5. Enhance access for people with disabilities.

6. Partner with local groups such as bird watchers.

7. Partner with local groups to help with trail maintenance.

8. Properly sign and maintain trails, including the creation of interpretive signage.

9. Market the waterfront access and trails system as a recreational resource to both residents and visitors.

10. Establish an "Adopt a Trail Program"

11. Design and build a portage over the 8th Street Dam

12. Identify other public access sites on the river that could feature a dock, ramp, landing or steps for a public small craft access point.

13. Design and build public access points for small craft; maintain pedestrian and small boat ramp and dock at 2nd Street Skipanon River access point.

14. Design and post boater information signage.

15. Create a water trail informational brochure and map

16. Proposals with earmarked funds and Clatsop County dedicated trail funds are directed toward developing a trail along the south shoulder of DeLaura Beach Lane.

Section 8.480 Funding

Federal and state grants, private/public partnerships, and community fund raisers.

Section 8.490 Design Guidelines

The trails in this Plan primarily serve pedestrians with safe and direct connections to and within local destinations, such as schools, parks, natural areas, waterways, and community centers. There are two categories of local trails: Multi-User Trails and Natural Trails.

- **Multi-User Trails** - City trails are typically paved or made of a smooth surface to accommodate most trail users. Ideally these trails should be constructed to ADA standards to provide for all trail users.

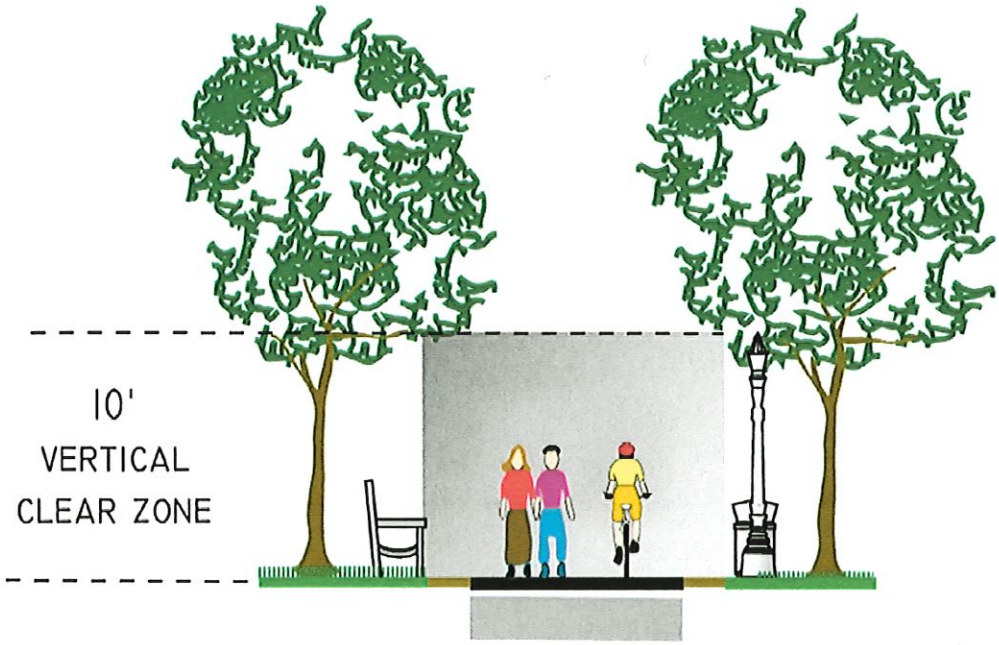
- **Nature Trails** - Natural trails are soft-surface trails typically found in undeveloped parks and natural areas and aim to provide a natural outdoor experience. These trails are usually for pedestrians only, but some trails could be open to mountain bikes and/or equestrians.

A. Trail Design Types - The following cross sections illustrate standard treatments for trail design opportunities in Warrenton. This section reflects ODOT's Design Standards (1994 Bicycle and Pedestrian Transportation Plan) and may be supplemented with other trail design documents (ODOT's Bicycle and Pedestrian Master Plan, AASHTO, and the MUTCD). The following table provides a reference chart for the various types of trails and their standards.

Table 1. Trail Design Types and Standards

	Multi-User Trail	Natural Trail
Facility Type	Shared use path	Soft Surface trail
Users	bicyclists pedestrians wheelchairs baby strollers equestrians	bicyclists pedestrians equestrians
Width	8' - 10', 1' soft shoulders	3' - 12'
Surface	Asphalt or Other smooth-rolling surface to accommodate all trail users	Earth, gravel, wood shavers, or other soft surface material

Figure 1. Multi-User Trail



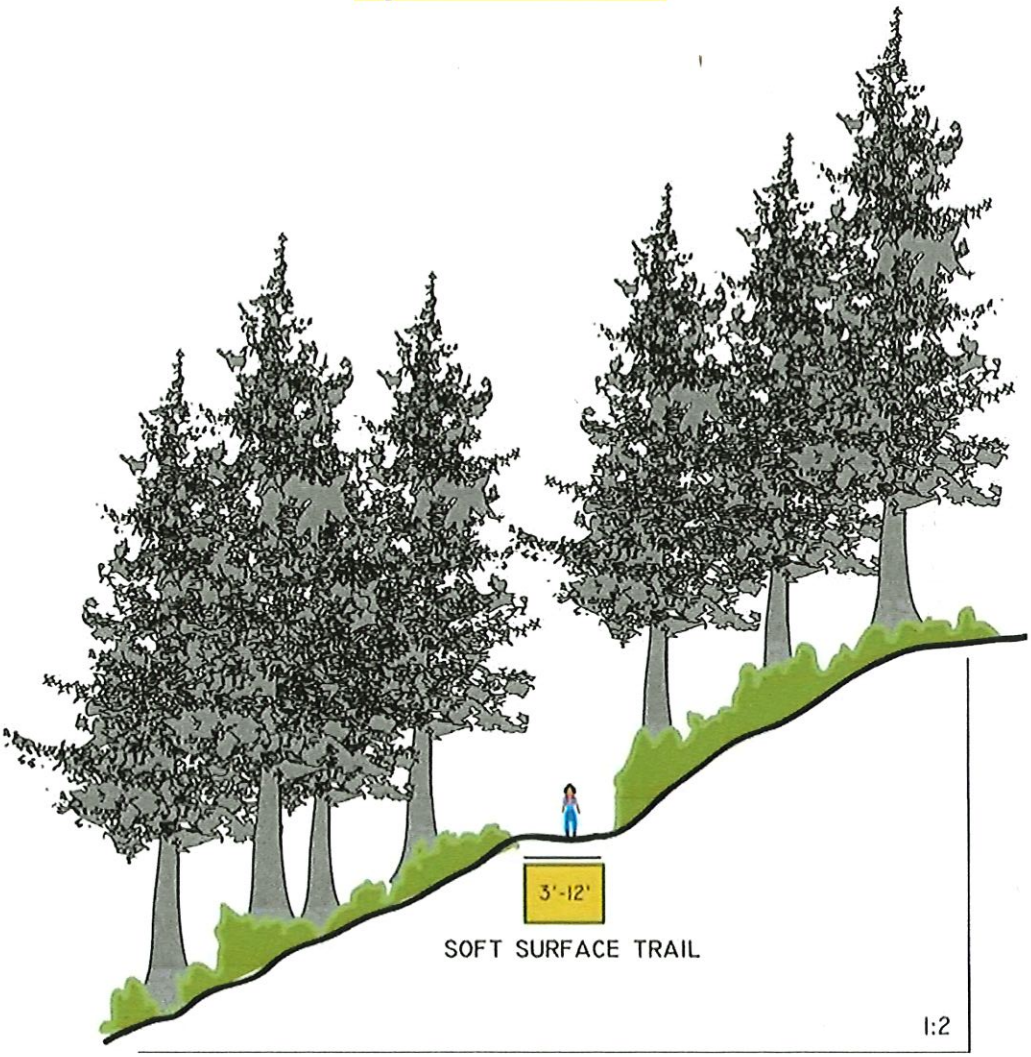
1. Multi-User Trail - Figure 1 illustrates a typical multi-user trail which provides access for most, if not all, trail users within neighborhoods, parks, green spaces, and other recreational areas. They typically have their own right-of-way and serve only non-motorized users. These trails should be at least 8' wide and at least 10' wide if bicycle use is anticipated. All efforts should be made so that at least one ADA accessible trail is available and serves the most desirable parts of the area (ie., picnic areas, viewpoints, playground, etc.).

Typical shared use path design that is appropriate for some natural trails. This trail is designed to accommodate two-way bicycle and pedestrian traffic, typically has its own right-of-way, and can accommodate maintenance and emergency vehicles. This type of trail is typically paved (asphalt or concrete) but can also be a surface that provides a smooth surface, as long as it meets ADA requirements. Wider soft shoulders should be provided for equestrians and runner/joggers if space allows.

2. Natural Trail - Figure 2 illustrates a typical natural trail which is usually considered when a trail is desired next to a natural resource. Trail width will vary depending on the existing topographic and environmental conditions. Natural trails should take into consideration drainage, erosion, compaction/impaction from anticipated use, presence of waterways and sensitive riparian areas, habitat areas, and environmental guidelines.

Trail width will depend on intended users. For example, narrower widths should be used in environmentally constrained areas with only hiking uses intended. Wider widths are desirable for shared bicycle and/or equestrian use. Areas with natural trails (i.e., natural parks and green spaces) should have a complimentary accessible route that meets or exceeds ADA standards in addition to the natural trails.

Figure 2. Natural Trails



B. Trail Features - There are a number of amenities that make a trail inviting to the user. Below are some common items that make trail systems stand out.

1. Interpretive Installations - Interpretive installations and signs can enhance the trail experience by providing information about the history of Warrenton. Installations can also discuss local ecology, environmental concerns, and other educational information.

2. Water Fountains and Bicycle Parking - Water fountains provide water for people (and pets, in some cases) and bicycle racks allow trail users to safely park their bikes if they wish to stop along the way, particularly at parks and other desirable destinations.

3. Pedestrian-Scale Lighting and Furniture - Pedestrian-scale lighting improves safety and enables the trail to be used year-round. It also enhances the aesthetic of the trail. Providing benches at key rest areas and viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches should be simple and made from recycled plastic for sustainability and longevity.

4. Maps and Signage - A comprehensive signing system makes a trail system stand out. Informational kiosks with maps at trailheads and other pedestrian generators can provide enough information for someone to use the trail system with little introduction – perfect for areas with high out of-area visitation rates as well as the local citizens.

5. Art Installations - Local artists can be commissioned to provide art for the trail system, making it uniquely distinct. Many trail art installations are functional as well as aesthetic, as they may provide places to sit and play on.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 9
ECONOMY
(2007 Buildable Lands Inventory does not apply to a developer/property owner's right to develop. The zoning and Wetland Maps apply to ability to develop.)

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 9 ECONOMY (2007 Buildable Lands Inventory does not apply to a developer/property owner's right to development. The Zoning and Wetland Maps apply to ability to develop.)

SECTION 9.100 FINDINGS

Statewide Planning Goal 9 is intended to identify existing and emerging economic opportunities within the Warrenton Urban Growth Boundary (UGB). This work includes a buildable lands inventory and an Economic Opportunities Analysis consistent with the rules and requirements of Oregon Land Use Planning Goal 9 (Economy), OAR 660-009-0015, and the "Industrial and Other Employment Lands Analysis Guidebook" (2005).[1] A goal is to establish a clear economic development direction for Warrenton that is consistent with local, regional, and state market trends and planning policies. The following steps have been taken to ensure that the City of Warrenton meets these objectives:

- Identify employment opportunities and trends for the next 20 years.
- Ensure an adequate supply of land within the City's urban growth boundary (UGB) to meet 20-year employment needs.
- Identify long-term (20-year) land needs for additional employment, considering the following factors:
  - Projected 20-year employment forecasts, considering population projections, current mix of employment, projected future industry trends and other factors.
  - Factors that determine land needs for specific types of employment uses.
  - Locational factors related to different types of businesses and employment areas.
  - Identify amount of land in each zoning designation needed to accommodate projected employment.
- Conduct an inventory of "buildable" land within the City's UGB that is zoned to allow for employment development.
- Compare the supply of land in different employment zones to the estimated need for employment in each zone to ensure that there is enough land within the City's UGB and that it is zoned appropriately to meet long term employment needs.

(1) Economic Data and Assumptions - The Economic Opportunities Analysis is based on data derived from a number of sources.

- The US Census – demographics, employment, industry data

[1] Oregon Department of Land Conservation and Development, Goal 9 Industrial and Other Employment Lands Guidebook, by Cogan Owens Cogan and Otak, Inc., 2005.

- Oregon Employment Department 10-Year Forecast for Clatsop County,
- County Business Patterns
- Oregon Prospector
- Applied Geographic Solutions
- Proprietary economic data (ESRI BIS, Urban Land Institute, Marketek, Inc.)
- Demographic data is for 2000–2005
- Future projections are for the years 2005-2025.
- Information was coordinated by Cogan Owens Cogan, LLC and Marketek, Incorporated. Marketek bases assumptions upon the analysis of composite and comparison data. Further refinement of data will take place as the process progresses and additional information becomes available.
- Future Projections: For the retail spending potential and supportable square feet (2005 – 2025): the analysis uses the county population projections and a constant persons per household of 2.44 to determine household units.

(2) Current Businesses and Economic Conditions - Warrenton has a natural resource-based economy which is closely intertwined with the economy of the County as a whole. Wood processing, food processing and commercial fishing are three of the natural resource-oriented activities which have been particularly important to the City's economy historically. These economic activities have significantly benefited trade and service establishments in the downtown area, Highway 101 corridor, and other locations. Trade and service firms have also benefited from tourists visiting Fort Stevens State Park, using local marinas, and traveling through the City on US Highway 101. Recent economic drivers in the City include large scale commercial development, especially along the Highway 101 corridor. Following is summary of current conditions in Warrenton based on US Census and other economic and demographic data.

- Total business establishments rose from 182 in 2000 to 185 in 2004, reflecting strong growth for a small community. Employees in business establishments increased from 2,045 in 2000 to 2,228 in 2004.

- Employment is concentrated in Retail Trade (32%), Manufacturing (25.5%), and Services (21.4%). The manufacturing employment is relatively high, reflecting a more balanced economy than many rural communities do and generally healthier wages than retail or services.

- Total percentage of establishments and number of employees for businesses in Warrenton are as follows:
  - 1-4 employees - 63.8%
  - 5-9 employees - 17.6%
  - 10-19 employees - 11.6%
  - 20-49 employees - 4.0%
  - 250-499 employees - two employers (less than one percent of firms but a more significant percentage of overall employment)

- Average travel time to work is 21.3 minutes

- Unlike other coastal communities that see a growing retiree population, Warrenton's median age is 37.3 years, which nearly parallels the state average (37.6 years)

(3) Land Use and Zoning - The City limits encompass an area of about 10,500 acres, or approximately 16.4 square miles. The unincorporated Urban Growth Boundary area adds approximately another 120 acres to the urban land base. Eight (8) zoning designations allow commercial and/or industrial development.

- General Commercial (C-1)
- Commercial Mixed Use (C-MU)
- Marine Commercial (C-2)
- Recreational Commercial (RC)
- General Industrial (I-1)
- Water Dependent Industrial Shorelands (I-2)
- Urban Recreational Resort (URR) (There is no longer any land with this designation within the city,)
- Aquatic Development (A-1)

(4) Future Economic Development Conditions - While the local economy of Warrenton has been dependent on manufacturing, fisheries, and forest products, new jobs are anticipated within the retail and service sectors. Much of Warrenton's future commercial demand will be tied to an expanding retail market of the North Coast and the opportunities presented by the redevelopment of key opportunity sites within the community—most notably the County-owned and other property along Highway 101 Business and the Dolphin Avenue area and along the harbor. Warrenton serves as a retail hub for the Seaside, Gearhart and Astoria market areas. Growth in these areas, as well as Warrenton will continue to increase the demand for retail services in Warrenton. Commercial services will also play an important part as new development and re-development of sites along the

harbor, Skipanon River and in city center take place, as does the increased visitor use of the Fort Stevens State Park continue.

Implementation of industrial and commercial development strategies in Warrenton's Comprehensive Plan are critical to attracting and sustaining the resource-based manufacturing, food processing, and services for local, national and international markets. In addition, as the residential growth of coastal communities takes place, retail for North Coast residents and the visitor market will be key. With the investment planned or occurring through these and other key community initiatives, Warrenton is poised to fulfill the market vision of being the destination retail center on the northern Oregon coast.

Recommendations for changes to the Comprehensive Plan are intended to encourage cooperation and coordination with businesses and regional economic development efforts such as the Clatsop County Economic Development Division, Columbia-Pacific Economic Development District (Col-Pac), NW Oregon Economic Alliance and the Northwest Oregon Regional Partnership; strengthening and enhancing Warrenton's downtown core and helping existing businesses expand locally. Encouraging more tourism and home occupations within the City are proposed to diversify the local economy.

(5) Vacant and re-developable land supply - Table 1 shows the total supply of net buildable lands for commercial and industrial employment. There are more than 467 net acres of vacant, partially vacant and re-developable employment lands zoned within Warrenton's UGB. Employment lands include parcels zoned as A1, C-1, C-2, RC, commercial and I-1 and I-2, industrial. Approximately 179 acres of land are zoned for commercial use and located along Highway 101 and in the Hammond area. While there are 288.1 acres of vacant industrial land, the A-1, Aquatic Development District zone also allows some level of industrial use, totaling 19.7 acres. There are only three lots in this designation, which are all categorized as re-developable. We've apportioned 50% of the land designated Commercial Mixed Use (CMU) to commercial uses.

Table 1. Buildable Employment Lands (Acres)

Zone	Supply	Parcels	Allowed Uses
Commercial	179.33	289	Commercial
Industrial	288.07	126	Industrial
Total	**467.4**	**415**	

Source: Cogan Owens Cogan

(6) Retail Expenditures - Table 2. Retail Expenditure Potential (Exhibit R-1) shows the potential for retail expenditures 2005 – 2025, broken out by merchandise or service category. Note that in the year 2025, 180,186 square feet of commercial space will be needed to fulfill the needs for shoppers and convenience goods, restaurants, entertainment/recreation and personal services. This translates into over $42 million in potential sales for the city and UGB market area only. This does not account for regional or visitor sales, which could significantly increase the sales and retail square footage requirements. These projections are consistent with our estimates of future commercial land needs.

A demand analysis for office space was not conducted. However, the space for office is included in the commercial land inventory. There is no need for additional land beyond that already identified in our analysis to accommodate office and other service job growth through the planning horizon.

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TABLE 2 - EXHIBIT R-1

RETAIL EXPENDITURE POTENTIAL
Warrenton, Oregon
2005-2025

Merchandise or Service Category	Per Household Expenditure	*Target Sales ($/SF)	2005 Retail Potential Sales	2005 Retail Potential Space (SF)	2010 Retail Potential Sales	2010 Retail Potential Space (SF)	2015 Retail Potential Sales	2015 Retail Potential Space (SF)	2020 Retail Potential Sales	2020 Retail Potential Space (SF)	2025 Retail Potential Sales	2025 Retail Potential Space (SF)
Apparel	$1,459	$209	$2,646,626	12,663	$2,878,607	13,773	$3,155,817	15,100	$3,433,027	16,426	$3,710,237	17,752
Home Furnishings	$1,069	$199	$1,939,166	9,745	$2,109,137	10,599	$2,312,247	11,619	$2,515,357	12,640	$2,718,467	13,661
Home Improvement	$1,168	$140	$2,118,752	15,134	$2,304,464	16,460	$2,526,384	18,046	$2,748,304	19,631	$2,970,224	21,216
Misc. Specialty Retail	$1,930	$216	$3,501,020	16,208	$3,807,890	17,629	$4,174,590	19,327	$4,541,290	21,024	$4,907,990	22,722
Shoppers Goods			**$10,205,564**	**53,750**	**$11,100,098**	**58,461**	**$12,169,038**	**64,091**	**$13,237,978**	**69,721**	**$14,306,918**	**75,351**
Grocery	$5,391	$390	$9,779,274	25,075	$10,636,443	27,273	$11,660,733	29,899	$12,685,023	32,526	$13,709,313	35,152
Health & Personal Care	$1,641	$365	$2,976,774	8,156	$3,237,693	8,870	$3,549,483	9,725	$3,861,273	10,579	$4,173,063	11,433
Convenience Goods			**$12,756,048**	**33,231**	**$13,874,136**	**36,143**	**$15,210,216**	**39,624**	**$16,546,296**	**43,105**	**$17,882,376**	**46,585**
Restaurants	$2,887	$263	**$5,237,018**	**19,913**	**$5,696,051**	**21,658**	**$6,244,581**	**23,744**	**$6,793,111**	**25,829**	**$7,341,641**	**27,915**
Entertainment/Rec	$918	$90	**$1,665,252**	**18,503**	**$1,811,214**	**20,125**	**$1,985,634**	**22,063**	**$2,160,054**	**24,001**	**$2,334,474**	**25,939**
Personal Services	$612	$151	**$1,110,168**	**7,352**	**$1,207,476**	**7,997**	**$1,323,756**	**8,767**	**$1,440,036**	**9,537**	**$1,556,316**	**10,307**
Total			**$30,974,050**	**132,748**	**$33,688,975**	**144,384**	**$36,933,225**	**158,288**	**$40,177,475**	**172,192**	**$43,421,725**	**186,096**
Five Year Net Gain					**$2,714,925**	**11,636**	**$3,244,250**	**13,904**	**$3,244,250**	**13,904**	**$3,244,250**	**13,904**
					1973		2163		2353		2543	
							190		190		190	

* Target sales are based on the Urban Land Institute, "Dollars and Cents of Shopping Centers."

Sources: ESRI BIS; Clatsop County Planning Dept, Urban Land Institute; Marketek, Inc.

(7) Job Density - Job density or the number of jobs per net acre is used to estimate how many jobs, on average, will be accommodated per acre of development. Net acres assume land taken out for public facilities and land constraints. The assumptions used for Warrenton follow:

Table 3. Jobs per Net Acre for Employment Sectors

Employment Sector	Jobs Per Net Acre
Industrial	8
Commercial	16
Institutions/Government	6
Other/Uncovered Employment	6

These densities are typical of smaller communities in Oregon. Overall, the Warrenton area has the land and development potential to satisfy the needs of future population growth over the next 20 years. The supply of land far exceeds the needs for commercial and industrial job growth.

(8) Project Land Need and Ability to Meet Needs - The projected 5-year demand for employment lands and associated facilities is 28.62 acres and the 20-year demand totals 85.85 acres.[2] This results in a surplus of about 439 acres to accommodate jobs in the next 5 years and about 382 acres to accommodate jobs over the next 20 years. Table 4 shows that the majority of surplus land is designated for industrial uses, which does not allow development of commercial uses. Some of this land is in the process of being rezoned from a combination of commercial, institutional and residential uses. Warrenton can expect the majority of future jobs to be the manufacturing, commercial and service sectors. Specifically, employment projections show the greatest increase in jobs coming from the manufacturing, retail trade, services, and tourism industries. Analysis assumes that Warrenton will continue to capture a relatively high share of the county's manufacturing and commercial service jobs, while maintaining a relatively lower, but consistent share of other jobs.

Institutional, government and "other/uncovered" employment is anticipated to come from both industrial and commercial designations. The surplus totals in Table 4 capture the demand for these types of jobs, hence the surplus column totals do not add up only the industrial and commercial acreages.

[2] Source: Economic Opportunities Analysis conducted by Marketek, Inc, and Cogan Owens Cogan.

Table 4. Employment Lands Needs by Industry Type (Acres)

	Supply	5-Year Demand	5-Year Surplus/(Deficit)	20-Year Demand	20-Year Surplus/(Deficit)
Industrial[1]	288.1	6.9	281.14	20.8	267.3
Commercial[2]	179.3	14.4	164.93	43.2	136.1
Institutional/Gov't[3] .		6.1		18.3	
Other/Uncovered Employment		1.2		3.5	
Total	**467.4**	**28.6**	**438.8**	**85.8**	**381.5**

[1] Includes I-1 and I-2 zones

[2] Includes C-1, C-2, RC zones. CMU vacant lands are apportioned 50% of their acreage to the Commercial category

[3] It is assumed that institutional and government and "other/uncovered" jobs will be accommodated in existing industrial and commercial lands. Some jobs associated with Fort Stevens Park will be accommodated within Parks/Open Space. Surplus calculation totals reflect demand for all four categories.

Source: Cogan Owens Cogan

SECTION 9.200 GOAL

(1) Retain, strengthen and expand the City's economic development activities to ensure that adequate land, funds, infrastructure, and services are available to meet the needs for jobs and industry.

(2) Promote cooperative economic development partnerships.

(3) Strengthen and enhance a strong commercial core within the City of Warrenton.

SECTION 9.300 POLICIES

Section 9.310 City Economy

(1) Ensure sufficient land is zoned for business development, expanding public facilities and services, carrying out various economic growth projects, obtaining adequate funding for activities to achieve economic gains, and undertaking other appropriate economic development actions.

(2) Encourage and support local industrial development in order to diversify beyond the City's three predominant industrial sectors (wood processing, seafood processing and commercial fishing), while maintaining strong support for these sectors.

(3) Work closely with individuals and organizations to increase desired industrial, general commercial and tourist commercial activities in Warrenton. Tourist-oriented establishments shall be encouraged to locate in Warrenton.

(4) Encourage present employers to expand their operations and aid them in doing what is necessary to maintain an economic base for employment within the City.

(5) Work with the local business community to strengthen the downtown commercial area as an important tourist and commercial center.

(6) Maintain an adequate supply of vacant commercial, industrial and waterfront development property to provide for the economic growth of the community.

(7) Work with the Clatsop County Economic Development Council and other related agencies and organizations to strengthen Warrenton's economy.

(8) Encourage residents, businesses and civic organizations to shop locally.

(9) Encourage successful home-based businesses.

(10) Institute a business license requirement for individuals and companies conducting business in Warrenton.

(11) Ensure public facilities and services are available to serve existing and prospective new businesses.

(12) Work with the Port of Astoria, community groups, and local businesses to identify and implement effective economic development strategies.

(13) Maintain and enhance all public infrastructure to create a pleasant and convenient business environment (from signage and pocket parks to sidewalks and parking lots).

(14) Concentrate/encourage small business and infill development in the core and not on the edges of the community.

(15) Ensure zoning allows for higher density, mixed-use development in the commercial core.

(16) Protect historic resources such as downtown buildings to maintain local character and attract visitors.

(17) Support the development and maintenance of a property inventory.

Section 9.320 Strategies

(1) Sufficient space shall be zoned for business growth and development activities and, to the extent practical, the capacity of streets and public facilities and services will be expanded to meet their needs. Expansion of water and sewer system capacity and the efficient use of the present capacity will be particularly critical for some establishments, such as fish processing firms.

(2) The City will encourage the development of the area between East Harbor Drive, Marlin Avenue and US Highway 101 as a regional shopping center complex.

(3) Undertake activities to provide, protect, and enhance scenic and recreational attractions in the area. The City Commission will choose a committee or organization to help evaluate, initiate and carry out appropriate tourist-oriented projects.

(4) A group will be appointed by the City Commission to assist in selecting economic development projects for the Economic Development Administration (EDA) funding list. It should also investigate other potential sources of non-local funds for these projects.

(5) Fees from business licenses and/or lodging taxes should be used primarily to benefit the local economy, including helping to pay for tourist-oriented projects.

(6) The City will cooperate with the Port district to improve road access, utility service levels and other infrastructure to help develop the industrial park.

(7) The City supports efforts by Clatsop County to develop a new county fairgrounds site and light industrial park at the Alumax property in the UGB.

(8) Prepare and keep updated a current inventory of available buildings and land with complete data, including price, features, utilities, infrastructure, maps, photos or contact information. If selected properties are known to soon be vacant, include those in the review.

(9) Determine which properties are ready for occupancy and which need renovation or complete site prep and development. Evaluate the condition, property owner attitude, price competitiveness and other factors to assess true market readiness.

(10) Select and target the top five properties for tenants and property improvements. Work with property owners on an action plan for improvement and/or to sell the property. Identify incentives for rapid change.

(11) The City will work through CEDC to achieve many economic objectives beneficial to the City and County as a whole, such as:

(a) Increasing the emphasis on production of lumber and wood products in the County instead of log exports;

(b) Expanding CEDC and other fish hatchery programs in the Columbia River Estuary area;

(c) Relieving the shortage of moorage spaces, particularly moorages for commercial fishing boats;

(d) Improving the understanding of, and commitment to, the sustained yield concept, a concept which, when applied, means that resources (forestry, fishing or others) will not be overused for short-term gains;

(e) Increasing the number of tourists that visit Clatsop County during the off-season, including development of motels and tourist-oriented shopping facilities;

(f) Providing more training opportunities for people who want to learn skills needed for local economic activities; and

(g) Expanding existing business operations and encouraging other firms to locate in the area.

(12) Enhance urban design of the downtown core, while still recognizing the city's historic character through the provision of street furnishings, planters, way-finding and directional signage, paving and other features.

CITY OF WARRENTON
COMPREHENSIVE PLAN

ARTICLE 10
PROCEDURES

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

ARTICLE 10 PROCEDURES

SECTION 10.100 FINDINGS

As indicated in the Introduction, this Comprehensive Plan is intended to: provide sound goals, policies and plan strategies for Warrenton's future community development; be periodically updated as local goals and opinions change and new information is obtained; and establish a basis for zoning and other techniques used to implement the plan. In order to effectively carry out these and other plan objectives, and to meet the requirements of Statewide Planning Goals 1 and 2, it is essential that appropriate methods be used to review and revise the plan and to relate plan provisions to implementation actions. This section describes the City's Goal and Policies with respect to planning procedures.

SECTION 10.200 GOALS

Establish a comprehensive planning process which benefits the public as a whole by insuring the opportunity for local citizens to be involved during all phases of the process, requiring an adequate factual basis for decisions and actions, achieving a desirable level of coordination and consistency with other governmental bodies, and providing a suitable balance between stability and change.

SECTION 10.300 POLICIES

Section 10.310 Plan Review and Update

(1) Effective review and updating of the Comprehensive Plan will be carried out through extensive involvement of the Planning Commission.

(2) The City will undertake a major review of its Comprehensive Plan in accordance with the State mandated periodic review schedule. The City will make other revisions to the Comprehensive Plan as necessary to address local needs and concerns.

(3) All Comprehensive Plan amendments shall comply with the Statewide Planning Goals and will be supported by adequate evidence indicating the desirability of the proposed revisions. The desirability of changes in the intent or boundaries of land and water use areas, as shown on the respective maps, will be determined in part by (a) the expected impact on the ability of the Plan to help satisfy land and water use needs; (b) the improvements to transportation facilities and community facilities and services, if any, necessary to accommodate the change; and (c) the physical development limitations and other natural feature characteristics of the areas involved.

(4) Amendments to the Comprehensive Plan text or map may be initiated by the City Commission, Planning Commission, Community Development Director, any City resident or any person or organization owning real property in the City. The person proposing the amendments will be responsible for providing justification for the revisions, and will also be responsible for providing a form of notice and for the text of any exception language, should such be necessary to meet Statewide Planning Goals.

(5) The Planning Commission and the City Commission shall hold public hearings on proposed amendments to the Comprehensive Plan or map. Notice of public hearing will be given in accordance with Development Code requirements.

(6) For purposes of reviewing and updating the Comprehensive Plan, the Planning Commission will be the officially recognized committee for citizen involvement. It will be appointed in an open and public manner and its membership shall be representative of a broad range of geographical, cultural and economic elements of the population in the Warrenton area. Adequate resources will be allocated for its activities and other citizen involvement efforts.

(7) The Planning Commission and City staff will provide the general public with an opportunity to be involved in inventory work, plan revisions and plan implementation. Efforts will be undertaken to respond to citizen suggestions and make technical information and minutes of meetings available to the general public.

(8) When reviewing and updating the Comprehensive Plan, the City will attempt to (a) give ample consideration to the comments and concerns of other governmental bodies; (b) achieve consistency with their policies to the extent appropriate; and (c) avoid unnecessary overlapping responsibilities. Affected special districts and appropriate local, regional, state and federal agencies will be notified by mail of public hearings on Comprehensive Plan amendments.

Section 10.320 Plan Implementation

(1) Implementation will occur in a manner which makes possible meaningful participation by local citizens and interested governmental bodies; consistency between the Plan and implementation measures intended to fulfill Plan objectives; and periodic review and update of these controls.

(2) Major actions undertaken to implement the Comprehensive Plan shall take place in a well-publicized, open atmosphere. The Planning Commission, general public and interested governmental bodies will be given an opportunity to comment on these actions before they are carried out.

(3) Provisions of the zoning ordinance, subdivision and partitioning regulations and other land and water use controls used to implement the Plan shall be consistent with the Plan. This does not mean, however, that these provisions have to be specifically authorized by the Plan or can not be more detailed than those in the Plan.

(4) Land and water use controls used to implement the Plan will be periodically reviewed and updated. Before changes in the regulations are adopted, there will be at least one public hearing on the proposal and adequate public notice of every hearing.

CITY OF WARRENTON
COMPREHENSIVE PLAN

APPENDIX I

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

APPENDIX I

GOAL EXCEPTIONS

NEED JUSTIFICATION FDR ECONOMIC DEVELOPMENT EXCEPTIONS

[WEST BANK SKIPANON AND EAST BANK SKIPANON]

Exceptions to the Estuarine Resources Goal are necessary for Clatsop County and the Lower Columbia River area to meet objectives of economic growth and diversification. Several exceptions are being proposed because a number of sites are projected to be needed to accommodate the range and quantity of use likely to locate in the estuary over the planning period. The CREST Plan was established through a regional planning approach. In light of this, it is appropriate that the need for economic development exceptions be treated as a unit rather than separately. The following findings and conclusions are based on the report An Economic Evaluation of the Lower Columbia River, prepared by CREST in 1981.

The economic development exceptions to Goal #16 are based on the following three (3) premises:

1) The lower Columbia River region needs to provide additional job opportunities to meet its economic development objectives.

2) Expansion of water oriented industry in general and water-dependent marine commerce in particular provides an excellent opportunity for providing economic development.

3) Market trends indicate increasing marine commerce for Oregon and other West Coast ports. Additional port sites and facilities will be required to accommodate the projected growth in marine commerce. Some of these facilities will be located in the Lower Columbia River area.

PREMISE 1: The Lower Columbia River region, and Clatsop County in particular, need to create new job opportunities. This is encouraged by the Statewide Planning Goals.

FINDINGS

1) The regional economy is suffering from three (3) major problems. First, an unemployment rate that has consistently been higher than the national and state average. Second, a high rate of seasonal unemployment, one that has worsened in Clatsop County for the period 1974-1978. Third, an economic base that is concentrated in a limited number of sectors; 70% of Clatsop County's manufacturing is concentrated in 2 sectors, lumber and wood products and seafood processing.

2) Clatsop County, based on projections to the year 2000, will have to create an additional 1350–1690 basic sector jobs.

3) For the reasons listed above, Clatsop County and the cities of Astoria, Warrenton and Hammond, have adopted the goal of diversifying and improving their local economies (Clatsop County Economic Element, p. 1; Astoria Comprehensive Plan, p. 66; Hammond Comprehensive Plan, p. 16 and Warrenton Comprehensive Plan, p. 114).

4) The Statewide Planning Goals and Guidelines, in Goal #9, the Economy of the State, have defined regions which display characteristics outlined in Finding 1 as "areas which have underutilized human and natural resource capabilities."

5) Goal #9, of the Statewide Planning Goals and Guidelines, further states that "economic growth activity in accordance with such plans shall be encouraged in areas that have underutilized human and natural resource capabilities and want increase growth activity."

CONCLUSION

The Lower Columbia River region, and Clatsop County, are in need of additional job opportunities to offset high unemployment rates, seasonality of employment, dependency on the fishing and forest products industry and to accommodate the employment requirements of anticipated growth. Local comprehensive plans are responding to this need by encouraging increased economic activity.

PREMISE *2* : Expansion of water oriented industry in general and water-dependent marine commerce in particular provides the Lower Columbia River region an excellent opportunity to diversity and strengthen the local economy and meet economic development goals and objectives.

FINDINGS

1) The Lower Columbia River region is at the mouth of the Columbia/Snake navigation, system that extends 460 miles from the Pacific Ocean to Lewiston, Idaho. This river system represents a low level route through a high interior plateau and means of transport serving a vast hinterland.

2) The lower Columbia River region is advantageously located with regard to the rapidly expanding Far Eastern market area.

3) The present Columbia River channel of 40 feet can accommodate loaded ocean-going vessels in the 50,000 deadweight ton range. In addition, relative to other Columbia River ports, the costs of deepening the river channel to accommodate deep-draft ships (50-foot draft) would be significantly less for other Columbia River sites.

4) The possibility of the Federal government instituting accelerated waterway user fees to defray the costs of channel maintenance greatly enhances the position of the Lower Columbia River area, because of the much shorter channel distance that must be maintained than for upriver ports.

5) Rail service in Clatsop County is provided by the Burlington Northern Railroad.

6) Through the Estuary Classification Rule, the State has recognized that estuaries with deep-draft capabilities are a unique economic resource. The Columbia River is one of only three (3) deep-draft estuaries.

7) According to the Estuary Classification Rule, deep-draft estuaries are to be managed to provide for navigation and other identified needs for aquatic, commercial and industrial water-dependent uses.

8) The estuary represents one of the region's prime comparative advantages. This is demonstrated by the fact that all the area's major basic sector employers are located in or adjacent to the Columbia River estuary.

9) Goal #9, of the Statewide Planning Goals, states that "a principal determinant in planning for major industrial and commercial developments should be the comparative advantage of the region within which the development would be located."

10) Increasingly bulk cargoes are being moved by deep-draft vessels (50-foot draft or greater). If Oregon is going to continue being competitive for such commodities, a deep-draft port facility will have to be developed. The Lower Columbia River represents the best opportunity for locating a deep-draft port facility in Oregon. The development, of a deep-draft port facility is consistent with State economic development objectives.

CONCLUSION

The Columbia River, because of the factors mentioned above, is one of the region's unique economic resources. These factors make the lower Columbia River region exceptionally well suited for expanded marine commerce. The Statewide Planning Goals encourage economic development planning that focuses on effective utilization of a region's comparative advantages.

PREMISE 3: Market trends indicate increasing marine commerce for Oregon and other West Coast ports. Additional port sites and facilities will be required to accommodate the projected growth in marine commerce. Some of these facilities will be located in the Lower Columbia River area.

COAL TRANSSHIPMENT

1) The United States federal government has committed itself to a policy of expanding the export of steam coal. The intent of this policy is to assist Pacific Rim allies that are presently heavily dependent on foreign oil and to improve the limited State's balance of payments.

2) The demand for steam coal by Pacific Rim countries is projected to rise dramatically over the next twenty (20) years. Japan's .imports are expected to increase from under 1 million tons in 1977 to between 99 and 118 million tons in 2000. The demand for steam coal by Taiwan is projected to increase to 41 million tons by the year 2000.

3) The major advantages that the United States has in competing in the steam coal market are the security of its supply and its ability, based on huge reserves, to provide virtually any amount of coal at the prevailing price. Also to the United States' advantage will be a desire of importing countries to diversify their sources of coal.

4) The major present disadvantages are that U. S. coal is more expensive than other coal, the inland coal movement system is underdeveloped and there is a lack of adequate coal export terminals.

5) These problems are projected to constrain marketing of U. S. coal until 1985. After 1985, as the constraints in Finding 4 are overcome, the United States* share of the Far East steam coal market will improve dramatically. One study has projected that demand for U. S. coal by Pacific Rim countries will exceed 50 million tons in the year 2000.

6) U.S. coal that will be exported to Pacific Rim countries is located in Utah, Wyoming, Montana and the Southwest. Because of the location of existing rail lines, the logical export port for coal from the Southwestern portions of

Utah will be California. Coal from Montana, Wyoming and portions of Utah will be exported through the Northwest ports.

7} The movement of coal is particularly sensitive to transportation cost. Thus, transshipment facilities that can efficiently handle high volumes and have deep-draft access to accommodate optimum size ocean vessels will be required to offset the price disadvantage of U. S. coal. There are presently no such facilities on the West Coast.

8) Coal shipments will likely be handled in deep-draft ships. The size of vessels moving bulk commodities is increasing. Between 1965 and 1979, the number of bulk carriers greater than 50,000 DWT increased from 47% to 58% of the fleet. This trend is expected to continue. For example, by 1985 it is anticipated that 65% of the ocean borne coal will be shipped in vessels in excess of 50,000 EWT and as 30 much as 30% of the fleet will be in the 100,000 DWT class.

9) Because of the extensive dredging required and its cost, Kalama and Portland, other upriver ports, do not have the capabilities of providing access to deep-draft vessels that will be needed to haul coal efficiently. Such a deep-draft facility will have to be developed to efficiently export coal from Montana and Wyoming.

10) The Clatsop County sites have a clear advantage over upriver sites in accommodating deep-draft vessels. The cost of necessary channel deepening to upriver sites would be excessive.

11) A need for coal transshipment facility on the Lower Columbia River has been established. Such a facility would require a minimum of 100 acres.

CONCLUSION

Substantial exports of steam coal from the United States to Pacific Rim countries are likely to begin in 1985. Facilities are needed in the Pacific Northwest that can handle deep-draft ships so that U. S. steam coal will be competitive on the international market. There is a need for one such facility in the Lower Columbia River. The minimum site size is approximately 100 acres.

OTHER BULK COMMODITIES

1) The Oregon Ports Study forecasts a need, on the Columbia River, for two (2) additional berths for the movement of bulk minerals other than coal.

2) Bulk shipments could take place from any Columbia River location where there is good rail access. Portland is presently favored because of rail service by several firms and higher quality track. Lower river ports are favored by the potential for a much deeper channel necessary to accommodate the anticipated large vessels that will move this cargo.

3) Other mineral bulk shipments will be influences by the same factors (as coal). Movements would be particularly sensitive to transportation costs, which means, that the movements of large volumes will depend on: excellent rail connections, high volume and efficient transshipment facilities and optimum size ocean vessels.

4) A need for two (2) bulk commodity (other than coal) sites has been established. Each facility would require a minimum of 30 acres.

GRAIN TRANSSHIPMENT

1) Wheat is one of the major exports from Oregon ports.

2) In addition to a continuation of growth within existing markets, it is likely that new markets (i.e., the People's Republic of China) will open. These will increase grain exports.

3) An additional 4 berths are projected to be required for wheat transshipment from the Columbia River by the Oregon Port Study. While Portland is favored because of existing rail service, lower river locations could be favored if grain sales were made in larger lots and receiving ports had deeper access channels accommodating the larger vessels that are being built.

4) The movement of Midwest grain, other than wheat, through Pacific Northwest ports is expanding rapidly. The factors favoring the Pacific Northwest are that the Asian markets are increasing and. vessel charter rates have been changing in favor of the Pacific Northwest, as have fuel costs. The volume of grain transshipped could be substantial since the total U.S. exports of corn are twice those of wheat.

5) There is a need for two (2) sites to handle the transshipment of grain on the Lower Columbia River. Each site will require 30 acres.

CONCLUSION

The export of wheat to Pacific Rim countries through Columbia River ports will, continue to increase. This trade will be enhanced by the addition of corn and other grains that have previously been shipped through Gulf Coast ports. There is a need for two (2) sites to handle the Lower Columbia River's anticipated share of this market. Each site will require a minimum of 30 acres.

FOREST PRODUCTS

1) Forest products are one of the major export commodities of Oregon ports.

2) Changes in the nature of forest products exported will require new facilities.

3) The Oregon Port Study anticipated that by the year 2000, 50% of the log exports from Astoria will be converted to lumber and the other 50% to landside loading of logs. The landside loading of logs will require new facilities, the equivalent of three (3) berths. It is further assumed that two-thirds of the lumber leaving Astoria will be by container. This will require two (2) additional berths.

4) Each new berth to accommodate the shore side handling of logs requires 20 acres. Each new berth to handle the container shipment of lumber requires 30 acres.

CONCLUSION

A shift in the method of exporting forest products (shore side loading) and a shift away from logs to finished lumber products will require additional port facilities. Five (5) new berths are anticipated, with a total acreage requirement of 120 acres.

CONTAINER MOVEMENT

1) The movement of container cargo from the Far East, through West Coast ports and then by rail to destinations in the Gulf Coast and East Coast, is expanding.

2) A recent MARAD study found that "bridge cargo movements" from West Coast ports to the East Coast increased by 37.8% between 1976 and 1978. Similar movements between the West Coast and the Gulf Coast region increased by 87.4%.

3) The recently completed Los Angeles Port Master Plan (July, 1979) details the advantages of "bridge system movements." It is cheaper. The added handling and rail cost incurred are less than those resulting from Panama Canal toll charges. The costs of delays while waiting to transit the Panama Canal are avoided (recently ships have had to wait 305 days to go through the canal). Fewer vessels are required to move the same amount of cargo (estimated at 40.5%). Overall, the study estimates these savings at 42.6%.

4) The Portland area is favored by competitive rail service. The Lower Columbia River is favored by its proximity to the ocean and the resultant reduced sailing times. An improved track between Astoria and Portland would greatly enhance Astoria's position.

5) The identified need for a number of large marine commercial uses, e.g., coal transshipment, will increase the likelihood that the rail line between Astoria and Portland will be improved to accommodate projected cargo movements, including "land bridge" containers.

6) There is a need for 140 acres to accommodate "land bridge" container shipments.

CONCLUSION

The shifting relative costs between transportation modes have created an opportunity for West Coast ports to handle container cargo bound for Gulf Coast and East Coast destinations for distribution. There is an opportunity for the Lower Columbia River to share in this growth. A need for 140 acres has been identified.

ALTERNATIVE SITES AVAILABLE TO MEET THE IDENTIFIED NEED

The overall analysis has resulted in the identification of a need for 480 acres of land to accommodate the projected demand for cargo movement and water-dependent heavy industrial activity in the lower Columbia River. This need is broken down as follows: lumber and log handling - 60 acres, grain - 60 acres, coal - 100 acres, non-coal bulk minerals - 60 acres, containerized forest products - 60 acres, and containerized general cargo - 140 acres.

There are a number of industrial sites available in the Lower Columbia River area, and in Clatsop County in particular. A procedure was established in An Economic Evaluation of the Lower Columbia River to determine which industrial sites would be suitable to meet the identified need for cargo movement and water-dependent heavy industrial activity. This procedure consisted of six (6) steps:

1) Identification and description of industrial site characteristics;
2) Identification of categories of likely industrial uses;
3) Establishment of site criteria for each category of industrial use;
4) Identification of sites that meet criteria for cargo movement and water-dependent;
5) Establishment of site criteria for categories of cargo movement;
6) Identification of which sites that are suitable for cargo movement and water-dependent heavy industrial, would be most suitable for subcategories of cargo movement.

A total of 25 alternative sites were evaluated for their suitability to be used by six (6) categories of industrial use. The six (6) categories were: non-water-dependent heavy industrial, non-water-dependent light industrial, seafood processing/small scale water-dependent uses, marinas and related activities, cargo movement and water-dependent heavy industrial.

Nine (9) sites were identified as having suitability for cargo movement and water-dependent heavy industrial uses. These sites are: Tansy Point, West Bank Skipanon-Site 1, West Bank Skipanon-Site 2, East Bank Skipanon, Port of Astoria Dock Area, Tongue Point, North Tongue Point, South Bradwood Landing and Russell Site at Westport.

These nine (9) sites were evaluated for their suitability to meet the needs of five (5) types of cargo movement; Log and lumber handling, grain transshipment, bulk cargo-full development, bulk cargo-limited development and container. These categories corresponded to the categories of cargo movement needs that had been identified.

Alternative site locations outside of the Lower Columbia River area were not analyzed, since they had been considered in the analysis that led to establishing the need for various types of cargo movement in the Lower Columbia River.

GOAL #16

EXCEPTION TO ALLOW WATER-DEPENDENT INDUSTRIAL DEVELOPMENT AT WEST SKIPANON PENINSULA

1) Within the context of the economic needs of the CREST region, the West Bank of the Skipanon has been identified as a potential log/lumber export facility because of the following locational attributes: proximity to an existing forest product manufacturing facility, proximity to the main Columbia River channel and the Skipanon channel, direct rail access, compatibility with adjacent land use and availability of sewer and water from the City of Warrenton.

2) As a participant in the CREST Mediation Panel, the City worked with state and federal agencies to determine specific conditions necessary to accommodate the projected 20-year development needs of the region while ensuring the protection of valuable estuarine resources. The mediation panel reached consensus agreement on planning designations at the West Bank of the Skipanon Peninsula. It was determined that log/lumber facilities are needed in the Lower Columbia River and are appropriate on the West peninsula of the Skipanon.

The panel designated an area large enough to accommodate a log/lumber export facility with a back-up area of 20 acres (1,500ft x 480ft) water-dependent development. This includes approximately 7.8 acres in Alder Cove designated aquatic development and approximately 12.2 acres of upland designated water-dependent development.

3) An exception is required to Statewide Planning Goal #16, Estuarine Resources, to designate 7.8 acres of marsh in Alder Cove Aquatic Development to allow adequate back-up land for a log/lumber export facility. This is an exception to the management unit guidelines of Goal #16 requirement, that major tracts of marshes and tide flats be designated Natural.

NEED

1) Additional log/lumber shipping facilities will be needed, in part due to an increase in timber production. The City of Warrenton concurs with the analysis reported in the "Beuter Report," Timber for Oregon's Tomorrow, 1976, "Beeman Report," Opportunities for development of Port Facilities at Warrenton, Oregon, 1978 (Port Facilities on West Bank Skipanon), Oregon Ports Study, 1980 and Washington Port Study, 1981. All are herein incorporated by reference and made a part of this Plan. The City of Warrenton and the mediation, panel found that log/lumber facilities are needed in the Lower Columbia River and appropriate on the West peninsula of the Skipanon.

2) The City finds that in order to meet the need for three (3) new berths to accommodate shoreside handling of logs, all available alternative sites will be required.

3) At present, Warrenton Lumber Company transports logs and finished lumber by water and/or trucks to the Port of Astoria for shipment to foreign and domestic markets. This requires double and triple handling of materials, adding significantly to operating costs and contributing to a less competitive position for the Company's products (Beeman Report,1978). By developing an on-site log/lumber export facility, the Company could realize significant cost savings, enabling the Company to remain a viable business. Based on an analysis presented in Opportunities for Development of Port Facilities at Warrenton, Oregon,

prepared for Dant and Russell, Inc. and Warrenton Lumber Company in 1978, by Ogden Beeman, and hereby incorporated, an income potential of $1.24 million as projected against an annual cost of $900,000 yields a net economic benefit of $360,000 from construction of the proposed facility, under present prices and costs. Construction of an on-site log/lumber export facility would enable the Company to maintain a competitive position, thus avoiding the phasing out o the mill and possible loss of 135 mill jobs as well as 62 woods jobs. Wood processing firms in Oregon must follow the industry trend of increased capitalization and consolidation of facilities if they are to remain economically viable. The proposed facility is an expansion of an existing operation important to the economy of the area.

4) The minimum requirements to establish a log/lumber export facility at the West Bank Skipanon are:

A) Water frontage for two (2) ship berths;
B) a 20~acre site as back-up land;
C) Dimensions of 1,500 feet along the Skipanon Waterway by 480ft in width (excluding the 100-foot wide wharf structure);
D) Back-up land directly adjacent to the berths; and
E) Deepening of the Skipanon navigation channel to its authorized depth of 30ft, plus an additional 5 to 10 feet for shipping berths.

5) Company-owned frontage along the Skipanon is sufficient to accommodate two (2) 750ft berths in the location shown on the map without interfering with the existing mill operation. The shape and existing width (150ft) of the West Bank Peninsula provides a significant impediment to development of a log/lumber export facility due to the inadequacy of upland back-up land adjacent to the berth sites. The proposed exception is intended to ameliorate this site specific limitation.

6) The purpose of the exception is to provide an opportunity for development of 20 acres of back-up land immediately adjacent to the berths (dimensions of 1,500ft x 480ft) which is considered to be the minimum practical condition for development of a log/lumber export facility. The location and configuration of the needed back-up area is constrained by the presence of existing mill structures and mill storage areas, a site used to capacity at present. On-site alternatives to location of the back-up area are discussed in the alternatives section.

7) 7.8 acres is the maximum amount of fill that may be allowed within the exception area. Specific proposals for fill must be justified at the time of permit application.

8) An approved site design which requires alteration of all or a portion of the exception area will be mitigated in areas of similar biological potential.

9) Adequate shoreland and ocean disposal DMD sites have been identified in the CREST Plan to meet disposal needs of the channel and berth deepening project.

ALTERNATIVES TO THE PROPOSED EXCEPTION

1) The Skipanon Peninsula on-site alternatives to using the tip of the Peninsula were examined by Ed Christie of Dant and Russell, Inc., a copy of which report is incorporated herein by reference and made a part of this Plan.

2) Alternative 1 shifts the dock facilities 1,500 ft South along the Skipanon Waterway and retains the minimum size and configuration requirements to support a log/lumber export facility. This alternative was found to have the following impacts;

A) Encroachment upon the land currently used for sorting and storage by the existing mill operation;

B) Direct impact on the current mill operation, requiring substantial redesign and reconstruction expenditures;

C) Renders the existing mill operations not feasible because remaining acreage available for that use is insufficient; and

D) No fill is required in Alder Cove.

3) Alternative 2 shifts the dock facilities 750ft South along the Skipanon Waterway and retains the minimum size and configuration requirements to support a log/lumber export facility. This alternative was found to have the following impacts;

A) Encroachment upon land currently used for sorting and storage by the existing operation;

B) Necessitating expenditures for the redesign and reconstruction of the sorting and storage yard areas;

C) Reduction of land available for development to the extent that insufficient land would remain for either existing mill or log/lumber export facility;

D) Insignificant savings of wetlands resulting from the shape and topography of the Peninsula.

4) Alternative 3 has an "L" configuration with a 150fo (width) by 1,500ft (length along the Skipanon Waterway) wharf. This 1,500ft is in the same location as described in the exception. Approximately 150ft of width, of usable surface area would also be utilized on the neck of the peninsula with the remainder of the area made up of a rectangle adjacent to and South of the Peninsula of 850ft in length (extending westward) and 400ft in width (extending southward). This alternative was found to have the following impacts:

A) An increase in the number of days to load or unload a ship;
B) An increase in the cost of loading a ship by $22 per 1,000 board feet of logs ($2.2 million per year) and $8 per 1,000 board feet for lumber ($845,000 per year);
C) Result in the double handling of logs/lumber;
D) A significant negative impact on the existing mill operation; and
E) No requirement to fill wetlands.

5) Alternative 4 involves construction of a piling supported platform of wetland and submersible and submerged lands to be used to support a portion of the 20 acre back-up area. This alternative was found to have the following impacts:

A) Approximately 300,000 square feet of area would have to be covered with dock and piling;
B) The cost of the piling alternative (1978 dollars) would be $12,000,000;
C) The cost of fill, pursuant to the exception, would be $2,000,000 to $3,000,000 (1978 dollars);
D) Increased costs of the alternative would not be economically feasible; and
E) Disposal of area spoils being pumped to another location significantly increases dredge spoil costs.

6) None of the alternatives satisfied the demonstrated need for the additional log/lumber exporting facility on the West Bank of the Skipanon Waterway.

A) Alternatives 1 and 2 were both found to reduce the acreage available to the extent that it would be impractical to retain the existing operation in addition to a log/lumber exporting facility. Additionally, substantial economic burdens would be imposed by these alternatives not otherwise required by the exception.

B) Alternative 3 would result in a substantial reduction in the quantity of logs shipped because of operating inefficiencies created by the configuration. Increased costs and time to handle the logs/lumber would make this alternative economically not feasible.

C) Alternative 4 is economically not feasible.

7) Additional background material for the on-site alternatives is included in the accompanying report.

ENVIRONMENTAL CONSEQUENCES

1) There will be a loss of primary marsh detrital export from approximately 4.2 acres of marsh below mean high water and 3.6 acres above mean high water, a total of 7.8 acres out of 75 acres of marsh in Alder Cove and 11,457 acres of marsh in the Columbia River estuary with several more in minor marsh.

2) There will be some undetermined impact on production on several species of plankton and benthic invertebrates in Alder Cove as well as some effect on salmon, smolt, white and green sturgeon, juvenile starry flounder, anchovy and herring.

3) Some wildlife habitat will be lost through loss of cover for feeding shoreland birds and water fowl.

4) There will be a need to dispose of dredge spoil from the mooring berths (75,000 c.y. annually) and from the Skipanon channel maintenance.

5) Less water log loading and transportation will result in better water quality.

SOCIO-ECONOMIC AND ENERGY CONSEQUENCES

1) The deployment multiplier of 1.8788 (OCC and DC, Economic Survey of the Coastal Zone, November, 1974, p. J-5) and the fact that $1.00 spent in lumber production yields $1.2599 in direct and indirect effects on the economy (CREST Inventory, June, 1977, pages 404-417), mean a significant impact on the economy of the City if the mill and auxiliary operations are not maintained as a viable economic entity.

2) The property's proximity to the mouth of the Columbia River will reduce energy use for certain types of shipping activities. The location of the site near the population center of the area will reduce energy consumption by workers.

3) There would be a need to maintain the Skipanon channel to a 30ft depth.

4) Noise: The addition of an export facility will increase the amount of noise from, the existing operation. Because of its location, impacts on residential areas should be minimal. The air and noise pollution levels associated with the diesel truck transport of logs and lumber from the mill to port docks would be lessened if the materials were shipped direct from the mill site.

5) It is assumed that no significant additional traffic congestion would result from the addition of a log/lumber export facility to the existing mill operation. In fact, traffic congestion may be reduced due to a reduction in the number of truck hauls from the mill site to the Port of Astoria loading area.

6) The present economic advantages of the facility will tend to grow rather than diminish over time.

7) In a broader perspective, the West Bank development site is a unique resource and one of very few potential deep-draft port sites along the Columbia. This site, along with other potential sites, represents unrealized resources for Warrenton's economy, as well as that of the state and nation.

COMPATIBILITY

1) The proposed designation would be compatible with the existing mill site operation to the South, the federally authorized Skipanon River channel and the proposed marine industrial development on the East Bank of the Skipanon.

2) Post-fill improvement techniques, such as the planting of natural vegetation along the western edge of the bank-up area, will enhance the compatibility of future uses with the adjoining marsh to the West.

3) This industrial site is located on the extension of the Skipanon Peninsula away from the main residential areas of the City.

4) The back-up area will have little effect on circulation and flushing in Alder Cove because the fill is relatively small compared to the side of the cove and is above MLLW.

GOAL #16
EXCEPTION FOR PILE SUPPORTED ACCESSWAY
TO ENABLE WATER-DEPENDENT DEVELOPMENT AT

WEST SKIPANON PENINSULA, SITE II

1) Within the context of the economic needs of the CREST region, the West Bank of the Skipanon, Site 2, was chosen as the potential limited bulk cargo facility site due to the availability of 32 acres of land, proximity to the main Columbia River channel, on-site location of railroad, minimum estuarine alterations required and availability of public facilities.

2) In the CREST Plan, a Conservation Aquatic designation between the tip of the West Peninsula and the main Columbia River channel was adopted to allow a pile supported access-way to or near the main navigation channel. No objections to acknowledgement of the Conservation Aquatic designation were raised during the LCDC review of the CREST Plan, nor was the City required to make any revisions to the designation by the draft review of compliance order issued by LCDC. However, during mediation, panel discussion held with state and federal agencies to reach consensus agreements on development uses and planning designations on development sites in the Columbia River Estuary, LCDC raised the issue that the intertidal flats North of the tip of the West Bank Peninsula may qualify for a natural management unit requiring a goal exception to locate piling supported structures. In order to eliminate possible future problems in the development of the West Bank and to be consistent with actions taken on the East Bank, the City proposes an exception to Goal #16 to designate a corridor through the intertidal flats North of the Peninsula Conservation Aquatic to allow a pile supported access-way to or near the main navigation channel of the Columbia River. This is an exception to the Goal #16 requirement that major tracts of marshes and tide flats be designated natural.

NEED

1) Natural 40ft water depths occur approximately 1,500ft North of the end of the West Skipanon Peninsula. The main Columbia River navigation channel is a short distance beyond. The West Skipanon Peninsula does not currently have deep water access to the Columbia River channel. Deep water access to the main Columbia River channel is necessary to establish the minimum practical conditions for water-dependent development on the site. Deep water access to the main Columbia River channel can be obtained directly off the tip of the Peninsula or via the Skipanon River.

2) To gain deep water access North of the tip of the West Peninsula requires a Conservation Aquatic designation of intertidal flats North of the Peninsula to allow a pile supported access-way to or near the navigation channel.

3) The Skipanon. River is maintained at a depth of 13 to 15ft, based on present channel use. Expansion of navigational access is currently limited by the federally authorized 30ft deep and 200ft wide channel. Deep water access (40ft) to the main Columbia River channel would require Congressional authorization of a deeper channel for the Skipanon River.

ALTERNATIVES

1) Deep water access via the Skipanon is currently limited to authorized depth, but remains a possibility for the future. A log/lumber export facility has been proposed for the Skipanon River in conjunction with the existing wood processing facility on the West Bank. Due to the existing mill location and the fact that a log/lumber export facility would fully utilize the limited area for ship berths, it is unfeasible for a limited bulk facility at Site II to gain deep water access via the Skipanon channel.

2) An alternative to providing opportunity for deep water access is to use the site for a non-water-dependent use. However, the site's location close to the Columbia River channel, the presence of public facilities, availability of land, and minimum estuarine alterations required make the site suitable for water-dependent development.

3) Obtaining deep water access by means of a pile supported structure from the West side of the Peninsula would result in disruption of a larger area of intertidal area as a distance to the main Columbia River channel is greater. This would result in greater adverse impacts.

4) The alternative to use of piling to gain deep water access to the site is to dredge a channel into the Peninsula. This would result in much greater disruption of estuarine resources and would also require periodic maintenance dredging.

A. ENVIRONMENTAL CONSEQUENCES

Conservation Access Corridor

Development of the access corridors could result in the degradation of some tidal flats. Tidal flats provide feeding and resting areas for juvenile salmon and other fishes, as well as for shorebirds and wading birds. Tidal flats also play an important role in the recycling of minerals and nutrients. The impacts of piling supported structures on the biological processes of the flats are expected to be minimum. The intertidal area affected directly by the placement of piling would likely be 0.25 to 0.75 acres in extent while estuarine tidal area beneath the access structure, subject to shading and other adverse effects may be 2.0 to 2.75 acres in area.

B. SOCIO-ECONOMIC CONSEQUENCES

There are no socio-economic consequences nor energy consequences resulting from this exception by itself. The impacts that can be expected will result from the development of the site for industrial use. This exception provides the minimum practicable conditions for development of the site as a water-dependent industrial site. If this exception were not taken, the site would develop as a non-water dependent site. Impacts on the economy of the area, public facilities, and traffic would depend on the type of facility constructed, not whether the facility were water-dependent or non-water-dependent .

C. COMPATIBILITY

1) If deep water access is obtained off the tip of the West Bank Peninsula instead of the Skipanon River, the potential conflict from this source with the commercial and recreational small boat traffic on the Skipanon River would be reduced. Possible interference with small boat traffic turning into the

Skipanon River due to the length of a pile supported access-way will need to be addressed during permit review of any proposed structure.

2) Alterations permitted in the area for which an exception if being taken, must be carried out in a manner which minimizes adverse environmental impacts on productive tidal marshes, mudsand fiats, wildlife, fisheries and other important natural resources and must comply with restrictive zoning ordinance standards.

GOAL #16
EXCEPTION TO ALLOW WATER-DEPENDENT INDUSTRIAL DEVELOPMENT AT EAST SKIPANON PENINSULA

1) Within the context of the economic needs of the CREST region, the East Bank of the Skipanon has been identified as a potential deep-draft port development site because of the following locational attributes: availability of up to 200 acres of land, proximity to the main Columbia River channel and the mouth of the Columbia River, direct rail access, compatibility with adjacent land use and availability of sewer and water from the City of Warrenton. The site was found to be most suitable for intensive development as a bulk cargo facility and for water-dependent heavy industrial uses (An Economic Evaluation of the Columbia River Estuary, 1981).

2) As a participant in the CREST Mediation Panel, the City worked together with state and federal agencies to determine specific conditions necessary to accommodate the projected 20-year development needs of the region while ensuring the protection of valuable estuarine resources. The mediation panel reached consensus agreement on development uses and planning designations at the East Bank of the Skipanon Peninsula. The June 30, 1981, Mediation Panel Agreement establishes particular development conditions allowing for two, potentially exclusive, water-dependent port facility development operations on the East Bank of the Skipanon.

Both development options require an exception to Statewide Planning Goal #16, Estuarine Resources, to designate a limited portion of intertidal flats North of the East Skipanon Peninsula as Conservation Aquatic, allowing for a pile supported access-way extending from uplands to or near the main navigation channel of the Columbia River (see Maps A and B). This is an exception to the management unit guidelines Goal #16 requirement that major tracts of marshes and tide flats be designated Natural.

Development Option 2 requires an exception to the same requirement of Goal #16 for designation of 25 acres of marsh and intertidal flats lying East of the East Skipanon Peninsula as Development Aquatic to enable the site to be developed as multi-bulk facility (see Map B).

EXCEPTION TO DESIGNATE INTERTIDAL FLATS NORTH OF THE EAST SKIPANON PENINSULA AS CONSERVATION AQUATIC ZONE

NEED

1) The main navigation channel of the Columbia River is 2,300 feet North of the end of the East Skipanon Peninsula. The East Skipanon Peninsula does not at present have deep water access to the Columbia River channel. Deep water access to the main navigation channel is necessary to establish the minimum practical conditions for water-dependent development on the site. Deep water access to the main Columbia River channel can be obtained directly off the tip of the Peninsula or via the Skipanon River.

2) To gain deep water access off the end of the Fast Skipanon Peninsula, intertidal flats North of the Peninsula, must be designated Conservation Aquatic to allow installation of a pile supported access-way extending from uplands to or near the navigation channel.

3) The Skipanon River channel is maintained at a depth of 13ft to 25ft. Navigational access is limited by the existing federally authorized 30ft deep and 200ft wide channel. Deep water access (40ft) to the main Columbia River channel would require Congressional authorization of a deeper channel for the Skipanon River.

ALTERNATIVES

1) Deep water access via the Skipanon River is impeded by present dredging maintenance depths and the dimensions of the federally authorized project, but remains a possibility for the future. A particular industrial use may have design and operational characteristics making one means of access more feasible than the other, or may require access via the channel and the tip of the Peninsula. A problem yet to be addressed in using the Skipanon River access for major industrial uses is user conflicts with existing commercial and recreational small boat traffic on the limited surface area of the river.

2) An alternative to providing the opportunity for deep water access is to use the site for a non-water-dependent use. However, the site's location at River Mile 11 and proximity to the Columbia River channel, the size of site, and the availability of public services make the site especially suited for water-dependent development.

3) Obtaining deep water access by means of a pile supported structure from the East side of the Peninsula would result in disruption of a larger area of intertidal area as the distance to the main Columbia River channel is greater. This would result in greater adverse impacts.

4) The alternative to use of piling to gain deep water access to the site is to dredge a channel into the Peninsula. This would result in much greater disruption of estuarine resources and would require periodic maintenance dredging.

EXCEPTION TO DESIGNATE 25 ACRES OF MARSHES AND INTERTIDAL FLATS LYING EAST OF THE EAST BANK OF THE PENINSULA DEVELOPMENT AQUATIC

NEED

1) The shape and configuration of the East Bank Peninsula results in particular impediments to effective usage of the site limiting its potential as a deep-draft multi-bulk facility. The exception is intended to ameliorate the specific site limitations at this site.

2) The minimum practical conditions for establishment of a multi-bulk facility at the East Bank Skipanon are access to a deep-draft channel, ability to effectively move commodities and cargo to vessel loading areas, adequate adjacent back-up area for storage and marshalling of commodities and cargoes and minimum dimensions necessary to site a loop rail track.

3) Possible shipping points on the East Bank of the Skipanon include the northern tip of the Peninsula and the western side of the Peninsula via the Skipanon River. Both of these shipping points are located on the extension of the Skipanon Peninsula whose width for a distance of approximately 720 feet is only 150 feet wide. This width presents a severe constraint to intensive water-dependent utilization of the site. The existing width is insufficient to provide an adequate back-up area necessary for vessel loading and unloading, and is an obstacle to efficient movement of commodities to vessel loading areas.

4) Designation of the 25-acre exception area as Development Aquatic would increase the width of the Skipanon Peninsula to average 555ft width. This is considered the minimum adequate dimension necessary to provide back-up areas, enabling the site's use as multi-bulk facility. Use of the exception area will be allowed only if during the permit process it is demonstrated that the particular facility and site design requires adjacent loading or back-up land which cannot be met at other upland or shorefront portions of the East Bank site. The existing upland is the priority area for water-dependent development.

5) The shape of the East Skipanon Peninsula adds to the reason why a multi-bulk facility may require immediate adjacent loading area infringing into the 25-acre exception area. The vessel loading area at the North end of the Peninsula is 3450ft from the main tract of industrial land. A probable location for vessel loading via the Skipanon River is approximately 2,400ft from the main industrial tract.

6) A loop track rail is necessary at the East Bank Skipanon if the site is to be used as a location for bulk materials transshipment. Minimum rail loop engineering criteria may require that a portion of the structure be located within the 25-acre exception area. Existing uplands must be used to the maximum extent practicable. In addition, provision of a loop track rail is tied to the 25-acre exception in that the loop track rail would occupy a substantial amount of the upland industrial tract. This may result in the unavailability of adequate uplands for necessary back-up area for vessel loading necessitating use of a portion or all of the exception site.

7) If an approved site design requires alteration of all or a portion of the exception area due to a need which cannot be met at other upland or shorefront portions of the site, alteration in the exception area is linked to on-site mitigation. A mitigation site in the southwest portion of the site where the Peninsula is the widest has been reserved to mitigate any alteration made within the exception area. Essentially an alteration in one part of the Peninsula would be compensated for by the return of another part of the Peninsula to the estuarine ecosystem. The result would transform the shape and dimension of the East Skipanon Peninsula into the minimum practical conditions for a bulk facility.

ALTERNATIVES

1) One alternative would be to establish loading areas, back-up land and the rail loop track on existing uplands. The mediation agreement and state and federal permit processes require that existing uplands be utilized to the maximum extent practicable. Alterations in the 25-acre exception area may only be approved when it is demonstrated that the need cannot be met at other upland or storefront portions of the site.

2) Loop track rail facilities provide an efficient means of unloading train shipments of bulk commodities and, especially on confined sites, are the means of turning the trains for return to the shipment source. If a loop track were not provided at this site, unit trains would require turning and uncoupling of the locomotives and pulling the string of rail cars from the rear. Due to the loss of operating time and the design and makeup of specialized unit trains, this is considered an unfeasible hardship by railroad operators of unit train equipment.

3) The alternative to providing adequate immediately adjacent back-up area for loading ships is to provide back-up area to the South in the main industrial track. However, this area is 2,400ft to 3,450ft from the shipping areas at the North end or West side of the Peninsula, and would result in inefficient and uneconomical movement of cargo, double handling of commodities and impracticable operating conditions.

ENVIRONMENTAL CONSEQUENCES

1) Conservation Access Corridor

Development of the access corridors could result in the degradation of some tidal flats. Tidal flats provide feeding and resting areas for juvenile salmon and other fishes, as well as for shorebirds and wading birds. Tidal flats also play an important role in the recycling of minerals and nutrients. The impacts of piling supported structures on the biological processes of the flats are expected to be minimal. The intertidal area affected directly by placement of piling would likely be 0.25 to 0.75 acres in extent, while estuarine tidal area beneath the access structures subject to shoaling and other adverse; effects, may be 2.0 to 2.75 acres in area.

2) 25-acre Exception

Transition Marsh: This 25-acre area is 8ft to 13ft above MLLW, dominated by common rush and grasses, and used by domestic cattle. Wildlife value is low to moderate, some plant material is exported to the estuary by occasional higher

tides and the area provides a buffer area between more intensively developed upland and lower tidal marshes and flats. Filling will totally alter this area and remove it from the aquatic system. Natural habitat, value and productivity, while low, will be completely lost.

Air Quality: Air quality impacts associated with water-dependent industrial facilities range from minimal impacts (e.g., container operations) to potentially large impacts. Present air quality is excellent. An increase in air pollution should not exceed allowable increments under the region's Class II status.

Water Quality: Port activity will lead to increased risks of oil spills. Oil spills would have a major impact on adjacent fish and wildlife habitat. Some port activities (e.g., coal transshipment) could affect water quality due to watering of coal piles. However, systems of catch basins and water treatment facilities can be designed to minimize any impact.

SOCIO-ECONOMIC AND ENERGY CONSEQUENCES

The impact of development of East Skipanon Peninsula will depend on the type of facilities developed. The following impacts could be expected from another large water-dependent industrial use:

A) Use of the site will generate considerable economic returns for other sectors of the economy;

B) The assessed valuation of property in the area will be substantially increased;

C) New or expanded community facilities and services will be needed and housing prices may increase. The City's Comprehensive Plan makes provision for the demand on housing and public facilities that a water-dependent development would require?

D) Fewer high school graduates and other residents will need to leave the area to find work;

E) A wider variety of goods and services will be available to area residents;

F) There will probably be a need to maintain the Skipanon channel at greater depths.

Historical and Archaeological Sites: No historical or archaeological sites have been identified.

Transportation: Full development of the East Skipanon Peninsula facility would require improvement of rail service. Local traffic congestion will be increased due to industrial use of the site.

Noise: Port activity will increase the amount of noise. Because of its location, impacts on residential areas should be minimal.

Energy: Construction of offshore oil and gas production platforms will help the United States achieve energy self sufficiency. The property's proximity to the mouth of the Columbia River will reduce energy use for certain types of

shipping activities. The location of the site near the population center of the area will reduce energy consumption by workers.

COMPATIBILITY

1) Alterations permitted in the areas for which an exception is being taken, as indicated by the subarea policies, must be carried out in a manner which minimizes adverse environmental impacts on productive tidal marshes, mud sand fiats, wildlife, fisheries, and other important natural resources, and complies with restrictive zoning ordinance standards.

2) Aquatic areas to the North are associated with the Columbia River Channel and are classified Development Aquatic. Aquatic areas to the West are associated with the Skipanon Channel and are classified Development Aquatic. Nearby portions of the Skipanon River's eastern Peninsula are Water-Dependent Development Shorelands and are included in the marine industrial district.

3) This industrial site is located on the extension of the Skipanon Peninsula away from the main residential areas of the City.

GOAL EXCEPTION
TO ALLOW CLATSOP COUNTY AIRPORT DIKE REALIGNMENT
DESCRIPTION OF PROPOSED EXCEPTION:

The Clatsop County Airport is located in the City of Warrenton and owned and operated by the Port of Astoria. Three acres of forested and scrub/shrub estuarine wetland lying northeast of Runway 25-7 of the Clatsop County Airport are designated Development Aquatic. This designation is necessary to allow for the removal of 800ft of existing flood control dike and construction of 750ft of new dike, waterward of the present flood control structure such that precision runway instrumentation may be installed on Runway 25-7. The dike relocation will remove no more than three acres of estuarine wetland fringing Youngs Bay, northeast of Runway 25-7. The wetland site receives irregular tidal exposure. An exception to two requirements of Statewide Planning Goal 16, Estuarine Resources, is proposed to allow for this development use. First, the dike relocation will require filling of estuarine wetlands in order to accommodate a non-water dependent use. Secondly, the Development Aquatic designation and associated dike construction and fill activities are contrary to the natural management unit guidelines contained in the Management Units Section of Goal 16.

NEED - WHY THE PLANNING DESIGNATION SHOULD BE PROVIDED FOR.

Analysis of present and potential use of the Clatsop County Airport is contained n the "Clatsop County Airport Master Plan, 1979-2000 - Technical Report," and the supplementary "Master Plan Environmental Impact Assessment Report," prepared by Parametrix, Inc. in 1979 for the Port of Astoria. These documents establish the specific airport improvements necessary to improve and increase the intensity of use of the Clatsop County Airport.

Movement of the existing flood control dike is essential to more intensive utilization of the airport. The dike relocation is necessary for installation and safe optimal use of an instrument landing system (ILS), a central element of the airport use and improvement strategy set forth in the Clatsop County Airport Master Plan.

Installation of an ILS electronic guidance apparatus will establish a precision instrument runway at the Clatsop County Airport. The ILS is a sophisticated electronic guidance system consisting of a localizer antenna (located beyond the far end of the runway, providing vertical guidance) and a glide slope antenna (positioned alongside the runway and establishing vertical, guidance). These antennae operate synchronously with marker beacons and approach lights. Approach lights necessary to compliment the ILS include runway alignment indicator lights (RAIL) and a medium intensity approach light system (MALSR). This system will provide aviation users of the Clatsop County Airport with sufficient instrumentation to make precision approaches to Runway 25 during extreme weather conditions.

The present dike must be moved waterward because the profile of the dike top penetrates the prescribed safety dimensions of the approach surface, glide slope critical area and primary surface area of Runway 25-7, as established by Federal Aviation Regulations (FAR), Part 77, pertaining to precision instrument runways. The constructed elevation of Runway 25-7 is 9.0ft NGVD (National Geodetic Vertical Datum). The airport is built on diked estuarine sandy soils with natural site elevations ranging from 1.0 to 9.0ft in elevation (NGVD). Analysis of ILS siting alternatives and minimization of wetland impacts due to dike relocation is presented in Section 85.30 Alternatives.

Expansion of the usefulness of the Clatsop County Airport, providing all-weather operations and optimal safety areas, will result from ILS installation. Minimum conditions for aircraft approaches and landings will be enhanced to one-half mile horizontal, visibility with a 200ft cloud base. Present navigational aids at the airport limit instrument assisted aircraft operations to minimum weather conditions of one mile horizontal visibility with a 500ft cloud base. An ILS installation would increase the utilization of Runway 25-7 by approximately 45% to 50% (Parametrix 1979). One of the immediate users of the improved instrumentation will be the U. S. Coast Guard. The Coast Guard intends to exploit the site location advantages of the airport, using the facility as a Northwest base for I-IU-25 jet patrol aircraft. These patrol planes will be used to fulfill the Coast Guard's mandate to monitor fishing vessel activities in the 200-mile fisheries conservation zone and to enforce federal marine pollution standards. The Coast Guard and the federal Aviation Administration require precision runway instrumentation for safe all-weather operation of the jet patrol planes. Additionally, an ILS would allow optimal and intensive use of the planes by the Coast Guard in its enforcement activities. The HU-25 patrol planes, equipped for Coast Guard operational needs, would require between 5000ft and 6000ft of runway for fully laden, all-weather takeoff. The minimum length for safe, all-weather landing is 5000ft. Discussion of the selection of Astoria as the base of Coast Guard patrol responsibilities in the Northwest is included in the alternatives section below. ILS improvements would also lead to other airport improvements outlined in the airport master plan and generally enhance future general and commercial aviation use of the airport (refer to Socio-Economic Consequences section below).

ALTERNATIVE PRECISION RUNWAY INSTRUMENTATION OPTIONS

The airport master plan and environmental assessment studies cited above provide detailed analysis of alternative runway development and placement of this ILS. The following discussion draws from these materials as well as information provided by the Federal Aviation Administration and state and federal resource agencies. Analysis of runway development alternatives is based on the orientation of the runways to seasonal weather conditions, the ability of the landing instrumentation to function correctly and the amount of construction and wetland impacts resulting from runway development.

1} Construction of ILS on Runway 21-3.

Runway 21-3, 3984 feet in length and 200 feet wide, is used by general aviation interests. This runway is the shortest of three runways at the Clatsop County Airport and is equipped as a visual approach only surface. Modifications of Runway 21-3 for use by larger planes, including at least 2000ft of additional surface, provision of an ILS and a full complement of approach lights, would require a significant and prohibitive investment (Parametrix 1979, FAA 1981 - D. Taylor, personal communication). Moreover, the orientation, of Runway 21-3 in relation to seasonally strong wind conditions and the airport flood control dike would prevent safe, intensive all-weather use of the runway for general, commercial and Coast Guard aviation (Parametrix 1979, FAA 1981 - D. Taylor, personal communication).

2) Construction of ILS on Runway 13-31.

Runway 13-31, 5059ft in length and 200ft wide, is the second longest existing runway at Clatsop County Airport. In order to meet the landing and takeoff runway length requirements of HU-25 patrol planes an additional 500ft to 1000ft of runway would be needed. In addition to an ILS, Runway 13-31 requires redesign for a complete

approach light system, leveling, and new pavement. The directional orientation of Runway 13-31 is considered poor for a precision instrument runway for two reasons. First, winter wind conditions would prevent thorough all-weather use of the runway. Secondly, installation of an ILS and the necessary approach lights, allowing for instrument assisted landings from the northwest, would be obstructed, by the Burlington Northern Railroad tracks which pass the northern tip of the existing runway (Parametrix 1979). The track embankment and rail traffic preclude these installations. Further, industrial development of the east bank of the Skipanon Peninsula would present a potential obstacle to the approach surface and glide slope critical area of a precision instrument runway.

Installation of a displaced instrument landing threshold, moving the touchdown location or focus of the ILS and approach light system, southwest along Runway 13-31 would eliminate obstructions posed by the railroad and potential development at the Skipanon Peninsula. However, such a displacement would position the instrument landing threshold of Runway 13-31 within the runway intersection of the airport, effectively closing Runways 21-3 and 25-7.

Alternatively, an instrument landing system could be installed on Runway 13-31 providing for all-weather landing of aircraft from the southeast. This option would require clearing of approximately 60 to 70 acres of woodland for placement of the necessary PAIL and MALSR approach lights. Additionally, 500ft to 1000ft of new runway necessary for safe all-weather takeoff capability would be constructed. This alternative is considered infeasible due to the inability to locate a localizer antenna at the north end of Runway 13-31 and since the topography south of the runway would prevent the establishment of safe approach surface, glide slope and primary surface area dimensions (Parametrix 1979, FAA 1981 -D. Taylor, personal communication). Further, seasonal wind conditions would prevent optimal use of the precision instrument installation.

3) Construction of ILS on Runway 25-7.

Runway 25-7 is the primary runway at the Clatsop County Airport. The surface of the runway is the most uniform, having been repaved and leveled in 1978, and the runway is most suitable for operating aircraft with respect to seasonally prevailing winds.

In order to upgrade the entire length of Runway 25-7, providing for the proper functioning of ILS antennae and meeting FAA approach, glide slope critical area, and primary surface area requirements, approximately 1800ft of dike would require relocation. This would remove 28 acres of wetlands from tidal influence. Further, four piling structures supporting runway approach lights would be located outside the dike east of the runway, extending into tidal marsh and the Lewis and Clark River. This option would make the entire length of Runway 25-7 5800ft, available for instrument landing and takeoff.

In order to meet ILS operating specifications and FAA area and slope requirements without relocation of surrounding flood control dikes, a displaced landing threshold of 1300ft would be necessary. Such a displacement would reduce the instrument assisted landing length of Runway 25-7 to 4500ft. Extension of the runway to the West would be necessary to provide safe all-weather landing criteria. However, 500 to 600 additional feet of runway at the western extremity of Runway 25-7 would require filling and rerouting of Vera Creek. This option would require two pile supported approach lights located in the tidal marsh east of the foot of Runway 25-7.

While retaining the full length of Runway 25-7 for takeoff purposes, it is possible to reduce the amount of dike relocation by providing a displaced ILS assisted landing threshold. The Airport Master Plan indicates a 714ft displacement of the landing threshold would allow for safe all-weather instrument landings, maintaining 5000ft of runway for emergency landing of fully laden aircraft. This alternative would require relocation of 800ft of flood control dike and subsequent loss of 3 acres of tidally influenced wetland. Three pile mounted approach lights would be required in the wetland area east of the dike beyond Runway 25-7.

The latter alternative was identified in the Clatsop County Airport Master Plan and by the Port of Astoria and the Federal Aviation Administration as the most suitable instrument runway development option. A minimum of dike relocation would be needed, and construction and installation costs would be minimized. Moreover, this runway development option would maximize the all-weather use of a precision runway installation at the Clatsop County Airport. Aircraft operations would be least affected by adverse weather conditions and the proper functioning of the ILS equipment would be assured.

The alternative of no action, foregoing the installation of a precision instrument landing facility at Clatsop County Airport, would preclude expansion of Coast Guard operations. The Coast Guard would not be allowed to pursue its plans to locate the HU-25 jet aircraft at the Astoria Air Base, and the permanence of the present Air Base operation might be reconsidered. Without additional runway development the Clatsop County Airport would continue to be restricted in use, and future general and commercial aviation activities would be limited (refer to Socio-Economic Consequences discussion below).

CLATSOP COUNTY AIRPORT AS A BASE FOR COAST GUARD PATROL PLANES

The U. S. Coast Guard intends to station two HU-25 jet patrol planes at the Clatsop County Airport. These planes would supplement the three H3F Sikorsky helicopters in service in Astoria at present, and provide expanded patrol coverage of the 200-mile fisheries conservation zone and surveillance of marine pollution occurrences. The Coast Guard selected Clatsop County Airport as the site for the jet patrol planes for three reasons. First, Astoria is centrally located, providing timely and fuel-efficient patrol coverage of the Washington and Oregon conservation zone. The Clatsop County Airport alone has sufficient existing runway length and runway development potential to accommodate the patrol aircraft. Port Angeles, Washington, and North Bend, Oregon airport facilities are inadequate and cannot feasibly be expanded. Second, installation of an ILS at Astoria would provide the most optimal all-weather capability of the alternative airport sites. Third, the present Coast Guard air station at Clatsop County Airport has adequate existing hangar space and back-up facilities to support the new patrol aircraft.

ENVIRONMENTAL CONSEQUENCES

The Development Aquatic designation is intended to accommodate the relocation of 800ft of flood control diking and the associated filling of three acres of forested tidal swamp.

The forested tidal swamp area loss will reduce the total estuarine area which contributed detrital export to the estuary. The detrital material is part of the food supply for the lower organisms of the food web (CREST Inventory 1978, Columbia River Estuary Regional Management Plan 1979). A minor decrease of food particulate available to benthic invertebrates could result, which may affect the resident and

transitory fish by altering the abundance of invertebrate food species. Such an effect is, however, not expected to be significant.

The forested tidal swamp also provides food and shelter for many aquatic and terrestrial species of wildlife (CREST Inventory 1978, Columbia River Estuary Regional Management Plan 1979). Species affected by the loss of this area due to dike relocation could include aquatic fur-bearers, waterfowl and numerous other species of birds. Loss of this habitat is not expected to be significant.

Siting and use precision runway instrumentation on Runway 25-7 requires control of the height of woody vegetation in limited portions of estuarine wetlands adjacent to the airport to ensure unobstructed margins for aircraft navigation. As indicated above, realignment of the dike waterward of its present location is necessary in order to remove the dike from within the primary surface area, dimensions prescribed in Federal Aviation Regulations (FAR), Part 77 (the primary surface area extends 500ft outward at 90 degree angles to the runway centerline). FAR, Part 77 also requires establishment of a transitional surface, beginning at the outer edge of the primary surface and extending up and out at a slope of seven feet in horizontal distance for each vertical foot. The upward sloping transitional surface must be maintained free from obstructions. As a result, trees growing in estuarine wetland areas (waterward of the realigned dike and at the eastern end of Runway 25-7) must be topped if they penetrate tile transitional surface in order to create and maintain an aviation clear zone.

Selective topping of trees in estuarine wetlands will be accomplished without disruption of the topography and drainage of natural aquatic areas, without building of roads, filling or other alteration of the area. Generally, spruce trees cropped at a trunk diameter of less than six inches will continue to grow, expanding in girth rather than apically. Thus, approximately 80 percent of 50-80 trees affected by federal aviation clear zone requirements will survive the necessary trimming and continue to provide wildlife habitat. Clear area height restrictions also apply to the estuarine wetland lying East of Runway 25-7. Ten to twenty trees must be topped in this area. Wildlife habitat is not expected to be significantly altered due to these tree height management requirements, either as a result of initial tree top removal or as a result of long-term selective maintenance of clear zone height requirements. Tree height management policies pertaining to natural estuarine aquatic areas adjacent to the Clatsop County Airport have been included in the City of Warrenton Comprehensive Land Use Plan Aquatic Natural zone.

Alteration of three acres of forested and scrub/shrub estuarine wetland, as noted in the discussion of project alternatives, will require mitigation. This Goal 16 exception narrative does not propose specific mitigation options for the potential alteration of intertidal and tidal estuarine wetlands. Mitigation provisions will be made when dredge and fill activities are presented for permit review pursuant to the development designation proposed by this exception statement. The object of the above comparative alternatives discussion is to demonstrate that the Development Aquatic designation of three acres of forested tidal swamp is necessary in light of available, feasible alternative runway development options. The Development Aquatic designation is the minimum necessary in order to accommodate more intensive all-weather use of the Clatsop County Airport. The steps necessary to mitigate the impacts expected from activities made possible by the development designation will be specified by federal and state resource agencies responsible for permitting alteration of intertidal and tidal estuarine wetlands.

The ILS improvements, of which the dike modification is an element, would lead to increased air traffic activity at the airport which, in turn, will create noise impacts in the Jeffers Gardens area and in the City of Warrenton. The area most impacted by increased activity at the Clatsop County Airport will be residential zones East of Runway 25-7. The slow gradual approach of instrument assisted landing aircraft will create a day-night average sound level or LDN value (a weighted average of equivalent sound levels) of approximately 60 over Jeffers Gardens and the area surrounding Alternate Highway 101 and Daggett Point. The LDN 60 value represents noise impacts expended through the year 2000. Noise impacts resulting from planes taking off to the West on Runway 25-7, specifically the LDN 60 noise level contour, will extend across the City of Warrenton. The LDN 70 contour, generally associated with heavy aircraft use, will be completely contained within the primary airport boundary through the year 2000. Noise impact data and LDN contours developed by technical consultants and the FAA indicate that the expected 3000 Coast Guard jet operations per year at the Clatsop County Airport will have no discernable effect distinct from existing and expected commercial and general aviation airport activities (FFA letter to the Port of Astoria 1981). The noise level contours will expand in subsequent years due to an expected increase in air traffic irrespective of the ILS installation and Coast Guard jet patrol plane use of the airport. The present City of Warrenton Comprehensive Plan, zone, Airport Development (1-4), pertaining to lands surrounding the airport, is sufficient to protect future development in adjacent areas from noise impacts {see attached LDN Contour Map).

It is also expected that the LDN noise levels noted above will have some undetermined adverse impact on wildlife use of the airport vicinity. This impact is expected to be minor.

The dike relocation activity would most likely involve a single-action environmental alteration. Once this relocation is completed, only normal maintenance activities are anticipated.

The chosen scheme for the installation of the ILS improvements will have lesser environmental impact than other alternatives.

SOCIO-ECONOMIC CONSEQUENCES

Without acceptance of the 3-acre Development Aquatic designation the Port of Astoria will be unable to Instigate the ILS improvements proposed in the Clatsop County Airport Master Plan, and the airport would be unable to handle the Coast Guard HU-25 jets. The local economy would not realize the potential positive employment and economic benefits that would, result from the increased activity at the Coast Guard Air Base. Future prospects for the continued use of the Air Base as a helicopter base could be endangered if the airport were unable to accommodate the HU-25 jets. The existing helicopter air station operates with a crew of 21 officers and 95 enlisted personnel.

The proposed ILS improvements would provide for a more intensive utilization of an existing transportation facility. The existing airport facilities are a public asset with the potential for expansion in areas such as commercial and passenger service. Minor improvements, such as the installation of an ILS, could allow for greater use of the airport. Airport improvements could also lead to increased development of airport-related industries at the Port of Astoria's airport industrial park. An income multiplier of 2.5 is estimated for aviation activity at the Clatsop County Airport (see attached Table).

The potential socio-economic benefits which could result from improvements at the Clatsop County Airport would affect the City of Warrenton, the City of Astoria, Clatsop County and the entire Worth Oregon coastal region. The airport is the only facility of its size and potential on the North Coast. Its location, in close proximity to the population centers of the area, would allow for maximum private and public use. A national interest is also involved, since the proposed improvement work would be directly associated with federal enforcement of the 200-mile fisheries conservation zone and pollution control requirements.

ENERGY CONSEQUENCES

One of the factors which was considered by the Coast Guard in its selection of Clatsop County Airport as a potential HU-25 jet base was its central location along the Pacific Ocean coastline. The location provides for timely dispatching of aircraft and also results in substantial, fuel savings as compared to inland airports or airports located on the extreme North or South Coast.

The chosen ILS improvement option is the most adaptable alternative to the existing airport, facilities. It will not require energy consumptive improvements such as runway extension paving.

COMPATIBILITY

There are no other intensive uses in the immediate vicinity of the proposed dike relocation. The area adjoins Youngs Bay to the North and the Lewis and Clark River to the East. Land areas to the South and West are devoted to Airport open space (1-4, Airport Development Designation and Airport Hazard Zone Overlay).

There are indirect use impacts which can be tied to increased air traffic use of the airport. Increased air traffic will result in proportional increases in noise levels, airway congestion and accident potential.

Controls on dike relocation and filling methods could be utilized to reduce environmental impacts. Techniques such as vegetative replanting or buffering could be used to minimize impacts upon adjoining wildlife habitat areas.

It is expected that the public good will benefit positively from the Development Aquatic designation, and that the public's need and gain will offset any negative impacts resulting from development subsequent to the designation.

AVERAGE EXPENDITURES PER AIRCRAFT

Aircraft Type Aircraft	Cost Per Hour	Average Hours Flown	$/Based
Single	$ 14.00	190 2,660	
Multi-Piston	$ 60.00	260 15,600	
Rotary	$ 70.00	346 24,200	
Turbine	$290.00	414	120,060

Reference: Clatsop County Airport Master Plan, 1970-2000, Technical Report, Parametrix 1979

EXCEPTION

DREDGING FOR TIDEGATE MAINTENANCE

DESCRIPTION OF PROPOSED EXCEPTION

Seventeen (17) diking and drainage districts are chartered within Clatsop County, exercising taxation powers over 15,156 acres of agricultural land and urban developed areas. Approximately 63.4 miles of dikes are the means of protecting nearly all of the farmland in the estuary area (80% of crop and pasture land in Clatsop County is diked), and make possible urban development in Warrenton (3,800 acres, including the Clatsop County Airport) and Miles Crossing. For the most part, flood control structures in Clatsop County were constructed prior to 1940, some diking districts were formed in the early 1900s, with all dikes, tidegates and tidegate drainage channels requiring periodic maintenance. Maintenance of tidegate drainage channels generally entails removal of sediments which have accumulated in adjacent slough channels and drainage ways water-ward of the tidegate structure. Because of the remote nature of the dikes in Clatsop County and limited access to the dikes by land-based heavy equipment, maintenance of tidegate drainage channels has historically been dependent upon dredging of sediments from aquatic areas serving as tidegate drainage routes and spoiling of the dredged materials atop and along the dike structures. Since dredging of estuarine aquatic areas to remove shoal areas waterward of tidegates in order to restore the drainage capacity of these structures is a necessary activity in Clatsop County, an exception to two (2) requirements of Statewide Planning Goal #16, Estuarine Resources, is proposed. First, dredging in estuarine aquatic areas is broadly limited to water-dependent uses by Goal #16. As a result dredging to restore the function of tidegates would be prohibited in all estuarine areas of Clatsop County. Secondly, permissible uses identified In the Natural and Conservative management unit sections of Goal #16 do not permit dredging activities in aquatic areas with such management unit designations. The proposed exception is site specific in scope, in that in specific areas of Clatsop County the most effective and feasible means of accomplishing necessary maintenance of existing tidegate drainage channels and drainage ways is dredging of aquatic area sediments and dike-top disposal of the dredged materials.

NEED - WHY DREDGING FOR TIDEGATE MAINTENANCE SHOULD BE PROVIDED FOR.

Along the lower Columbia River, and within the CREST planning area, an extensive system of diking and drainage districts protect and make possible agricultural and development uses. Most of the dikes located in aquatic margins of Clatsop County are composed of materials excavated from immediately adjacent sediments - soils that are easily eroded. Generally, dikes built along the lower Columbia River and tributary areas have been sited in estuarine aquatic and swampy lowland areas where soils are comprised of estuarine deposits (Coquille and Clatsop soil associations), river terrace deposits (Knappa, Walluski, Chitwood and Hebo soil associates), and floodplain deposits (Sauvie, Nehalem and peat soil associates). These soils may contain considerable decayed or decaying organic matter. Although in some cases the soils underlying dikes in Clatsop County may be interstratified with unconsolidated silt and clay, the soils are mostly compressible and not well suited for supporting structures such as dike foundations and tidegates, or for use as filled earth embankments. Thus, the

character of soils underlying Clatsop County dikes and used in the construction of dikes contributes to degradation of the dike embankments and shoaling of tidegate drainage channels. In addition, sediments accumulate in tidegate drainage channels due to erosion caused by livestock, wave action (natural and created by man) and other adverse effects of human activities.

Although dredging to restore drainage channels in service as drainage passages waterward of tidegates does not occur on a regular basis in Clatsop County, it is necessary to recognize the potential need for such activity and establish that this particular activity is available as a maintenance option to diking and drainage districts. Following is a discussion of three (3) circumstances leading to the necessity of clearing tidegate drainages in Clatsop County.

1) In areas where dike networks and tidegates have been efficiently designed and maintained, sediments should not accumulate in tidegate drainage channels. Generally, dike systems are planned and constructed such that tidegates may be sited adjacent to natural sloughs in the area. Tidegates are located to take maximum advantage of the existing slough network as it becomes isolated by dike construction. Tidegates are commonly situated at the point where dike structures cross sloughs, but are set aside the slough channel due to the difficulty of placing fill of stability sufficient to support a tidegate pipe and flapgate on the fine sediments within the slough channel. Thus, tidegates funnel drainage from slough areas behind dikes, discharging water to the remaining portion of the slough channel waterward of the dike structure. When interior drainages (in agricultural and developed areas) are kept clear, flow through tidegates during low water periods is sufficiently vigorous to scour slough channels waterward of the dike. In cases where drainage is impeded, tidegate discharge is not adequate to flush sediments from the slough channel and shoaling may result, reducing tidegate discharge flow rates. Dredging is necessary in such cases to restore drainage capacity and facilitate self-scouring action.

2) A second circumstance resulting in the need for dredging of estuarine aquatic areas to restore drainage from tidegates involves erosion at the discharge point of the tidegate. As noted above, tidegates are generally installed adjacent to the location at which existing sloughs are crossed by dike structures. Since it is necessary to site tidegates aside the centerline of sloughs crossed by dikes, short drainage ways connecting tidegates to the slough channel waterward of the dike are necessary. Excavated drainage ways are subject to erosion due to discharge from tidegates, with plunge pools forming under the tidegate discharge point and shoal areas or blockages forming to separate the drainage way from the existing slough drainage channel. This creates a perched condition at the discharge of tidegates accompanied by reduction in flow volume from diked areas. Dredging of the shoal area (and riprap of the discharge point) is necessary in such cases to restore discharge capacity.

3) Shoaling of tidegate drainage channels due to erosion, and increased sedimentation caused by human activities is a third circumstance necessitating dredging of estuarine aquatic areas to maintain the function of tidegates. Erosion of dikes and banklines by boat wakes results in deposition of sediments in tidegate drainages. Further, sediments released by dredging operations may accumulate in tidegate drainage channels. An example of the latter has occurred to a limited degree in drainage channels servicing tidegates draining pasture area at the base of the East Skipanon Peninsula into the Skipanon Waterway. Disposal of dredged materials within diked areas on the East Skipanon Peninsula has occurred on three (3) occasions in the last twenty (20) years and in each instance discharge from disposal areas has been routed through interior drainages to tidegates emptying into the Skipanon Waterway. Drainage of sediment laden

water through tidegates leads to accumulation of materials in tidegate drainage channels, thus requiring dredging as a remedial action.

FREQUENCY OF TIDEGATE DRAINAGE CHANNEL AND DRAINAGE WAY MAINTENANCE

As sediment traps, tidegate drainage channels require periodic dredging to remove obstructing accumulations of sediments. Attachment 1 indicates 137 tidegates are in service in Clatsop County, providing for drainage in twelve (12) active diking and drainage districts. Responsibility for maintenance of dikes and tidegates in Clatsop County generally lies with individual diking districts. In several cases, however, maintenance of flood control structures is the responsibility of entities other than chartered diking districts. For example, the City of Warrenton is responsible for maintenance of structures comprising the Warrenton Diking District (formerly Warrenton Diking Districts No. 1, 2 and 3). In addition, many areas (Svenson Island, the Walluski River and portions of the Lewis & Clark River and the Youngs River) are maintained by the efforts of individual property owners, since particular diking districts have become defunct and because some areas were never included in diking or drainage districts. In any case, it is difficult to ascertain the frequency of tidegate drainage maintenance events, due to the absence of record keeping. Each diking and drainage district is directed by elected officers, without continuity of documentation of maintenance activities. Individual property owners often maintain dike and drainage facilities under their control in a piecemeal fashion, and records of such information for periods exceeding 2 to 3 years, are generally unavailable. The Corps of Engineers began documentation of dredge and. fill activities in aquatic areas pursuant to federal regulatory requirements in 1968, however, in many instances federal permits allowing dredging activities may be issued while the permitted dredging is never performed, or is carried out in reduced scope. Thus, the record of federal permit actions certifying dredging activities does not relate directly to the periodicity of dredging for maintenance of dike facilities. Attachment 2, recording expenditures by individual diking districts during the period 1970 - 1981, is submitted as an account of dike maintenance activities in Clatsop County. Each chartered diking district is authorized to raise, through taxation of property owners within the district, funds necessary for maintenance of flood control structures. Tax funds are collected by the Clatsop County Treasurer and held for payment to contractors engaged by individual diking districts. County Treasurer records of payments to contractors are not itemized, however, it is not always possible to distinguish between outlays of diking district funds for maintenance activities such as mowing of dikes, refitting of tidegate drain pipes, etc., and expenses for dredging activities. Information presented in Attachment 2, together with, verification of the entries with the Clatsop County Office of the Soil Conservation. Service and local diking and drainage district superintendents, indicates that dredging of sediments from tidegate drainage channels and drainage ways has not been frequent in Clatsop County. It is not possible to say with certainty if dredging of tidegate drainages has occurred in the last ten (10) years. Such activity is not indicated in recent diking and drainage district records as illustrated in Attachment 2.

In the event of shoal material, accumulating in drainage channels leading from tidegates it is emphasized that dredging necessary to clear sediments is limited, to the minimum necessary to restore the discharge capacity of tidegates. Since nearly all tidegates in Clatsop County are located near the channel of existing sloughs, maintenance dredging entails removing materials that have accumulated in natural slough channels or clearing of short drainage ways connecting tidegate discharge points with slough channels. Thus, dredging needs are limited to existing slough channels and connecting drainage ways, and dredging for maintenance of tidegate drainage channels is not for the purpose of

establishing new ditches or channels in estuarine aquatic 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 sediment blockage and subsequent constriction of tidegate discharge flow activity.

ALTERNATIVE MEANS OF MAINTAINING TIDEGATE DRAINAGE CHANNELS

Re-establishing drainage capacity in tidegate channels that have become blocked is possible only by physically removing accumulated sediments. Dredging is the most common method, of removing sediment obstructions in aquatic areas and appears to be the only feasible means available to diking and drainage districts for maintenance of tidegate channels. It has been suggested that water pumped through a nozzle apparatus would be capable of cleansing or forcing sediments from drainage channels, but such equipment is not generally available. Alternatively, timely and appropriate management of agricultural lands and maintenance of structures protecting and draining agricultural areas would reduce the need for remedial dredging of tidegate drainage channels.

ENVIRONMENTAL CONSEQUENCES

The Goal #16 exception proposed by this narrative is limited in scope and applies only to dredging necessary to restore the functional operation of tidegates through excavation of accumulated, sediments. No dredging of naturally occurring vegetation or other estuarine aquatic area resources is proposed or intended. Excavation will in all cases be limited to restoring the flow capacity of existing drainage channels and drainage ways. As a result, no net loss of functional characteristics and processes important to estuarine aquatic areas is expected. Areas of sediment accumulation may provide habitat for estuarine invertebrates and fish and wildlife species. However, the habitat value of sediment blockages or bars affected by the proposed exception probably differs little from the habitat value of unaffected portions or existing slough channels and drainage ways. Thus, no significant impact is expected due to removal of sediment blockages and restoration of the depth and flow capacity of natural slough channels and existing drainage ways. In instances of perched tidegate discharges, excavation and restoration of drainage ways will reduce the likelihood of fish stranding. In all cases dredging will involve fine sediments, but increases in oxygen demand and turbidity are expected to be limited in scale and duration, and confined only to existing drainage channels and drainage ways. Moreover, the frequency of tidegate drainage channel dredging maintenance is very low. All dredged sediments will be deposited along dike tops as nourishment of dike structures with special provisions taken to prevent return of dredged sediments to estuarine aquatic areas, thus preventing adverse estuarine impacts. In all instances, dredging necessary for maintenance of tidegate drainage channels and drainage ways will be coordinated with state and federal resource agencies, local governments and private interests to ensure adequate protection of estuarine resources (e.g. fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

SOCIO-ECONOMIC CONSEQUENCES

Maintenance of tidegate drainage channels will protect existing investments in agriculture and urban development in areas served by dike structures and tidegates in Clatsop County. Flood control will be more consistently attained, with agriculture and urban areas subjected less frequently to interruption of

activities and damage due to high water. Positive benefits are expected as a result of the proposed exception.

ENERGY CONSEQUENCES

The net impact of the proposed exception on economic and efficient utilization of all forms of energy is expected to be positive.

Maintenance of existing tidegate drainage channels and drainage ways will enhance the productive use of agricultural and urban development areas of Clatsop County. Protection from flooding events will reduce the need to expend energy resources to control flooding behind dikes and eliminate commitment of non-renewable resources to reconstruct and rehabilitate flood damaged areas. It is anticipated that these savings will exceed the energy resources consumed by dredging of sediments from tidegate drainage channels and drainage ways.

COMPATIBILITY

The limited and specific dredging activities proposed by this exception narrative are intended to be compatible to the maximum extent feasible with the preservation and protection of fish and wildlife habitat and essential properties of the estuarine resource (e.g. dynamic geological processes, continued biological productivity, unique or endemic communities of organisms, species diversity). Minor and temporary estuarine perturbation due to tidegate maintenance dredging proposed by this exception is consistent with preservation and protection of natural resource values and the long-term use and conservation of renewable estuarine resources. Further, maintenance dredging of existing tidegate drainage channels and drainage ways is essential to the protection of adjacent agricultural and urban developed areas protected by dikes. The low frequency, periodic aspect of the activity proposed by this exception does not introduce the potential for cumulative adverse effects on fish and wildlife habitat and essential properties of the estuarine resource. Dredging necessary for maintenance of the discharge capacity of tidegate drainage channels and drainage ways is not expected to adversely impact estuarine aquatic resources in areas adjacent to dredging operations.

Notwithstanding this proposed exception, dredging for maintenance of tidegate drainage channels and drainage ways must meet the other dredging requirements of Goal #16: 1) demonstration of public need, and 2) minimization of adverse estuarine impacts. The foregoing discussion of need, alternatives and environmental consequences is intended as a general expression of the appropriateness of the dredging activity proposed by this exception with respect to these Goal #16 requirements. Dredging activities necessary for maintenance of tidegate drainage channels and drainage ways will in all cases be coordinated with state and federal resource agencies, local governments and private interests to ensure adequate protection of estuarine resources.

GOAL EXCEPTION

DIKE MAINTENANCE

DESCRIPTION OF THE PROPOSED EXCEPTION

Clatsop County contains sixteen chartered diking and drainage districts, exercising taxation powers over nearly 15,200 acres of agricultural land and urbanized areas. Approximately 63.4 miles of flood containment structures are the means of protecting nearly all of the farmland in the estuary area (80 percent of crop and pasture land in Clatsop County is diked), and make possible urban development in Warrenton (3,800 acres, including the Clatsop County Airport) and the Jeffers Gardens area. For the most part, food control structures in Clatsop County were constructed prior to 1940. Some diking districts were formed in the early 1900s. All dikes and dike structures require periodic maintenance, which generally entails placing fill material atop and behind the dikes, augmenting the elevation of the dikes and adding to their structural integrity. Because of the remote nature of the dikes in Clatsop County (i.e., distance from fill material sources of suitable quality, distance from other water-dependent dredging operations that may produce fill material useful for dike maintenance, and limited access to the dikes by land-based heavy equipment), maintenance of flood control structures has historically been dependent upon dredging of fine clay and silty sediments from subtidal aquatic areas adjacent to dikes and spoiling of the dredged materials atop and along the dike structures.

Since dredging of subtidal aquatic areas to obtain materials for dike maintenance is needed in certain situations or areas of Clatsop County where alternative sources of maintenance materials are not available or are not economically feasible, an exception to two requirements of Statewide Planning Goal 16, Estuarine Resources, is proposed to allow for this alternative dike maintenance activity. First, dredging in estuarine aquatic areas is broadly limited to water-dependent uses by Goal 16. As a result, dredging to obtain fill materials for dike maintenance would, be prohibited in all estuarine areas of Clatsop County. Secondly, permissible uses identified in the natural and conservation management unit sections of Goal 16 do not permit dredging activities in aquatic areas with such designations. The proposed exception is situational in scope, in that in certain cases and circumstances in Clatsop County the most effective and feasible means of accomplishing necessary maintenance of flood control structures is dredging of aquatic area sediments and dike-top disposal of the dredged materials.

NEED - WHY DREDGING FOR DIKE MAINTENANCE MATERIALS SHOULD BE PROVIDED FOR.

Along the Lower Columbia River, and within the CREST planning area, an extensive system of diking and drainage districts protect and make possible agricultural and development uses. Most of the dikes located in the aquatic margins of Clatsop County are composed of materials excavated from immediately adjacent sediments - soils that are easily eroded. Generally, dikes built along the Lower Columbia River and tributary areas have been sited in estuarine aquatic and swampy lowland areas where soils are comprised of estuarine deposits (Coquille and Clatsop soil associations), river terrace deposits (Knappa, Walluski, Chitwood and Hebo soil associations), and floodplain deposits (Sauvie, Nehalem and peat soil associations). These soils may contain considerable decayed or decaying organic matter. Although in some cases the soils underlying dikes in Clatsop County may be interstratified with unconsolidated silt and clay, the soils are mostly compressible and not well suited for supporting structures such

as dike foundations or for use as filled earth embankments. In addition to the character of soil materials underlying Clatsop County dikes and used in the dike embankments contributing to dike subsidence and degradation of the dike slopes, these flood control structures are subject to erosion caused by river current and tidal action, wave action (wind generated and vessel wakes), livestock, damage from floating debris and other negative effects of human activities. The structural integrity of the dikes is also jeopardized by holes created by burrowing animals and voids resulting from decaying organic materials within the dikes. Further, the dikes are aged, narrow (and therefore have less capacity to withstand subsidence and erosion) and increasingly difficult to maintain.

FREQUENCY OF DIKE MAINTENANCE

Responsibility for maintenance of dikes in Clatsop County generally lies with individual diking districts. In several cases, however, maintenance of flood control structures is the responsibility of entities other than chartered diking districts. The City of Warrenton is responsible for maintenance of levees comprising the Warrenton Diking District (formerly Warrenton Diking Districts No. 1, 2 and 3). In addition, several areas (Svenson Island, the Walluski River and portions of the Lewis and Clark River and the Youngs River) are maintained by the efforts of individual property owners, since particular diking districts have become defunct and because some areas were never included in diking districts (Attachment 1). In any case, it is difficult to ascertain the frequency of dike maintenance vents and the volume of materials handled during each maintenance activity due to the absence of record keeping. Each diking district is directed by elected officers and documentation of maintenance is incomplete due to frequent changes in diking district leadership. Individual property owners often maintain dikes under their control in a piecemeal fashion and records, if such information is kept for periods exceeding two to three years, are generally unavailable. The Corps of Engineers began documentation of dredge and fill activities pursuant to federal regulatory requirements in 1968, but, in many instances federal, permits authorizing dredging activities are issued while the permitted dredging is never performed, or is carried out in reduced scope. Thus, the record of federal permit actions certifying dredging activities does not relate directly to the periodicity of dredging for dike maintenance and it is difficult to ascertain the frequency of dike maintenance events from diking district and private sources due to the absence of adequate records and documentation.

Attachment 2, recording expenditures by individual diking districts during the period 1970-1981, is submitted as an account of dike maintenance activities in Clatsop County. Each chartered diking district is authorized to raise, through taxation of property owners within the district, funds necessary for maintenance of flood control structures. Tax funds are collected by the Clatsop County Treasurer and held for payment to contractors engaged by individual diking districts. County treasurer records of payments to contractors are not itemized, however, and it is not possible to distinguish between outlays of diking district funds for maintenance activities such as mowing of dikes, refitting of tidegates, etc., and actual dredging expenses. Attachment 2 expenditure entries have been checked with local diking and drainage district superintendents, the Clatsop County office of the Soil Conservation Service and Corps of Engineers permit records in order to identify specific maintenance events. After verification of maintenance records, it is evident that major expenditures to accomplish dredging for dike maintenance have not been frequent in Clatsop County. Diking districts have undertaken dredging of aquatic areas to obtain fill materials for use in the maintenance of dikes on five occasions in the past ten years. Information obtained from landowners maintaining private flood control structures ~ these dredging activities are not recorded in Attachment 2 - indicates that dredging to obtain fill material for dike maintenance

has taken place three times in the past ten years (two instances near River Mile 3.5-5.5 on the Lewis and Clark River and a single dredging for dike maintenance event near River Mile 2 on the Walluski River).

Therefore, dredging to obtain fill materials for dike maintenance has occurred at least eight times in Clatsop County in the period 1970 through 1981. Dredging has taken, place in four areas - the John Day, Youngs, Walluski and Lewis and Clark Rivers. The frequency of dredging and dike maintenance activities represented in Attachment 2 agrees with the experience of local diking district officials and representatives of the Soil Conservation Service, in that dike maintenance may be expected in areas of dike subject to erosion at intervals of either to ten years, while dikes susceptible to subsidence may require special rehabilitation efforts followed by maintenance at similar intervals. Diking District No. 14 is indicative of the former, while maintenance on Youngs River (Diking District No. 9) dikes and at private dikes along the Lewis and Clark River have required reconstruction, which must then be followed by normal maintenance efforts.

LOCATIONAL FACTORS, DIKE STRUCTURE AND DREDGING OF SUBTIDAL AQUATIC AREAS TO OBTAIN FILL FOR DIKE MAINTENANCE

As indicated by Attachments 1 and 2, and information gathered from individual dike owners dredging as source of fill for dike maintenance during the period 1970-1981 has been limited to areas where dikes do not have road access. More specifically, approximately 62% of the dike footage in Clatsop County (protecting 32% of the total amount of diked farmland) does not have dike top road access (Attachment 1). The premise of this exception narrative is that dredging of subtidal aquatic areas for maintenance fill of dikes located in remote areas (i.e., distant from suitable fill sources) and without dike top road access may be justified due to the absence of alternative, feasible dike maintenance methods. Analysis of alternative dike maintenance opportunities is included in the following section. In instances where dike location and structure require dredging to obtain fill material, aquatic areas secliments are excavated from the river bottom by means of barge-mounted clamshell equipment and deposited on the dike top. Generally, a dredging contractor is hired to fill a prescribed length of dike, with dredging costs computed based on the equipment used, the number of operators at the site, and the length of time required to complete the activity. Dredging equipment commonly used in Clatsop County includes a clamshell of 1.5 to 4 cubic yards capacity manipulated by a barge-mounted crane, with a boom reach of 100-120 feet to each side of the barge. Based on compiled permit information, fill requirements for dike maintenance average 0.75 to 1.5 cubic yards of dredged material for each foot of dike, depending on the increase in height and width of dike required. The environmental consequences of dredging to obtain fill for dike maintenance in relation to the frequency of dredging events noted above will be described in the Environmental Consequences section below.

ALTERNATIVE MEANS OF MAINTAINING DIKES

Dike maintenance is required on a periodic basis because of degradation of the dike structures due to subsidence and erosion. Maintenance of earthen, flood control structures is generally accomplished by depositing fill on the top and slopes of dikes. Since the dikes in Clatsop County are constructed of estuarine, river terrace and floodplain materials, fill rehabilitation of the dikes is performed rather than installation of impervious wood, metal or concrete additions or structures. Fill material necessary to rehabilitate dike structures may be obtained from two principal sources. The most commonly used source of fill

material is sediments dredged from the adjacent river bottom. Alternatively, fill material may be transported from off-site locations. Off-site material is generally obtained from upland quarry sources or consists of aquatic area sediments which have been dredged from other locations and either transported directly to the dike maintenance site or stockpiled at upland dredged material disposal areas. The following describes and contrasts the utility and cost of these alternate sources of dike maintenance fill material.

1) Use of adjacent aquatic area sediments as a source of fill material.

Historically, dredging of adjacent sediments, located in estuarine aquatic areas and swampy lowlands, has been the means of obtaining materials for construction and maintenance of dikes in Clatsop County. Maintenance dredging is carried out by dredging contractors engaged by particular diking districts or individual dike owners. Dredging equipment consists of a barge-mounted crane, fitted with a clamshell bucket, and a small tender vessel (the barge is generally towed to the work area by a larger vessel or tug, while the barge is maneuvered at the dredging site by the tender or using crane and barge winches). The dredging operation commonly requires two men - crane operator and oiler/tender operator. Under normal working conditions dredging equipment of this sort can excavate and deposit 700-1000 cubic yards of aquatic area sediments atop dikes in an 8-hour work period. Materials may be excavated up to 150 feet from the dike crest. Average dredging costs at $1.25 to $1.75 per cubic yard of material handled. Costs vary with the total amount of time required for maintenance activities, including time required for mobilization and transport of equipment to the site, on-site maneuvering, total amount of fill required, tidal and river conditions and sediment characteristics.

2) Transport of fill materials from off-site locations.

Areas requiring dike rehabilitation and maintenance may receive fill materials hauled to the work area by truck. Such an operation requires several types of land based equipment. First, material must be excavated and loaded onto trucks at the fill material or quarry site. Fill material transported to the dike maintenance site must then be unloaded, distributed and placed along the dikes. At a minimum, one quarry loader, two transport trucks and a loader or dozer at the dike site would be required, necessitating four equipment operators. Under normal operating conditions, land-based equipment may transfer 500-700 cubic yards of material per 8-hour shift. Average dike maintenance costs using such land-based equipment are $4.00 to $5.50 per cubic yard of material handled. As with dredging equipment, the time required to complete the fill affects the project cost, determining the cost per cubic yard of fill material placed at the dike. Project cost is dependent on the price of fill material excavated at the quarry or fill supply source, the haul distance between the quarry and fill sites, total amount of fill required and the effort required to receive and distribute the material at the dike location.

Fill projects accomplished by upland means are three to three and one-half times more costly to undertake than water based operations. Much of the difference in project opportunity cost results from the greater productivity of dredging equipment. However, three additional dike maintenance considerations favor the use of dredging equipment over land based operations. First, deposition of dredged aquatic area sediments as fill material is a more effective means of dike maintenance. Dredging equipment delivers sediments and interstitial water to the fill area, with saturated material dropped from heights of four to ten feet to the dike fill areas. The impact of water laden fine sediments on the dike serves to

penetrate the dike surface, filling crevices and animal burrows. Maintenance fill may be performed in stages, with layers of fill deposited over previously placed and dewatered sediments, adding to the height and. structural integrity of the dike. In contrast, fill arriving at the dike maintenance site by truck is relatively dry and, once dumped at the fill site, must be distributed over the dike top. This consumes valuable machine and labor time and does not fill and patch the dike surface as uniformly or effectively as dredged fill material. Second, Clatsop County dikes are aged and in most cases were not constructed of sufficient width or bearing capacity to allow modern heavy vehicle access along the dike tops. Barge-mounted dredging equipment is capable of approaching nearly all reaches of dikes for thorough maintenance, excepting areas fronted by broad fringing marsh and intertidal areas. Land based equipment is generally too heavy and wide to transit dike tops and is often denied access to dikes through pasture areas since the load bearing capacity of diked lowland soils is insufficient to support the equipment. Also, drainage channel systems within the dikes areas limit heavy equipment access and may require bridging. Third, the timing of dike fill activities is facilitated by the use of dredging equipment. Material may be deposited on dikes in most weather conditions, however, large projects require dewatering of sediments for repeated spoiling and would be limited to non-winter months. Conversely, heavy earth moving equipment cannot operate in pasture areas during rainy conditions and would be prevented from overland dike access for extended periods of time.

The Goal 16 exception proposed by this narrative is situational in scope and applies to dredging necessary to obtain fill materials for maintenance of dikes as the most practical and effective means of accomplishing dike maintenance. Dredged fill material is the most feasible dike maintenance alternative available to diking districts and private dike owners in remote areas of Clatsop County, especially in cases where the dike structures are narrow and without dike top access roads. This includes many of the districts described in Attachments 1 and 2. Approximately 62% of the dike footage in Clatsop County (protecting 36% of the total amount of diked farmland) is without direct dike top road access. Diking Districts No. 8 (Lewis & Clark River), No. 9 (Youngs River), No. 11 (Lewis & Clark River), No. 13 (Walluski River) and No. 14 (John Day River) are comprised of dikes inaccessible by heavy vehicles. In addition, several miles of privately owned dikes along the Walluski and Lewis and Clark Rivers are not accessible by land-based equipment. In these areas dike rehabilitation and fill activities by dredging of aquatic area sediments is, at present, the only feasible means of dike maintenance. The remaining 38% of combined, dike length in Clatsop County, protecting 61% of the County's diked agricultural land, is accessible by road and therefore potentially serviceable by land-based equipment. Dikes with road access have, generally, received more continuous maintenance, obviating the necessity of large-scale rehabilitation. For small-scale dike maintenance efforts along dikes with roads, involving dike top fill volumes of 500-600 cubic yards for example, land based equipment is often used due to the relatively higher cost of mobilizing barge-mounted equipment for handling of small volumes of materials. As indicated in Attachment 2, the roadless dikes are the principal areas where dredging activities have taken place within the last ten years.

ENVIRONMENTAL CONSEQUENCES

In certain areas of Clatsop County the remote location and structure (i.e., dike material composition and narrow cross section) of dikes combine to make dredging of adjacent subtidal aquatic areas to obtain fill materials the most effective and feasible means of accomplishing needed dike maintenance. Discussion above, outlining the frequency of dike maintenance dredging activities in Clatsop County during the period of 1970 to 1981, identifying the location of these

dredging events, and analyzing alternative methods of dike maintenance, describes the situational aspect of this activity in Clatsop County.

Dredging of subtidal aquatic areas proposed by this exception applies only to dredging necessary to fill areas of dike requiring maintenance where alternative methods of dike maintenance have been demonstrated as infeasible. Dredging in all cases will be limited to that necessary to maintain the structural integrity of dikes and no dredging of emergent vegetation, intertidal flats, or other intertidal estuarine resources is proposed by this exception. Estuarine resources affected by the proposed exception will be limited to subtidal aquatic areas near the centerline of tributary rivers, and subtidal areas greater than 80ft distant from the foot of dikes in reaches of the estuary exceeding 200ft in width. Dredging to obtain dike fill material is restricted to these conditions since: (1) excavation near the base of dikes encourages sloughing along the outer slope of the dike and a maximum amount of shallow water and berm should be maintained adjacent to dikes providing protection from erosion, and (2) excavation of dike fill material from the deepest subtidal aquatic area within reach of dredging equipment will reduce disturbance of valuable intertidal and shallow subtidal (i.e., the portion of the water column subject to effective light penetration) aquatic area resources.

PHYSICAL CONSEQUENCES OF DIKE MAINTENANCE DREDGING

Dredging as a source of fill material for dike maintenance, therefore, will occur only in subtidal aquatic areas near the centerline of narrow waterways or in the deepest subtidal area available to float mounted dredging equipment, areas at least 80ft from MLLW at the dike foot, in cases where dredging takes place in waterways greater than 200ft in width (measured from bank to bank at MLLW). Dredging would, in all cases, be limited to subtidal areas deeper than the level of effective light penetration (greater than 6ft to 14ft MLLW, depending on the location of the dredging activity in the estuary). As discussed above, dike maintenance may require dredging of 0.75 to 1.5 cubic yards of sediment for each foot of dike maintained. Aquatic area impacts due to excavation of sediments for dike maintenance must be considered, in relation to the linear aspect of dike maintenance dredging. Dredging of aquatic areas adjacent to particular length of dike results in a linear dispersion of excavation impacts. Float mounted dredging equipment commonly used in Clatsop county has an effective working radius of up to 100ft to 120ft. Therefore, it is possible to spoil dredged sediments along approximately 200ft of dike top before moving dredging equipment to the next adjacent area of dike maintenance. While moored at a single station, up to 300 cubic yards of sediment would be excavated for maintenance of 200ft of dike. Sediments would not be excavated from a confined area of the river bottom since efficient, operation of dredging equipment necessitates minimization of dredging cycle time (i.e., the time elapsed between successive dredge bucket excavations). As a result, the distance between the dike top spoil location and the excavation area is minimized during dredging operations. Therefore, an area approximately 100ft in length near the waterway centerline or in subtidal area 80ft from the dike foot would be excavated. Each dike maintenance station would receive spoils excavated from a longitudinally oriented aquatic dredging site, avoiding dredging of deep holes or significantly upsetting the existing contour of the river bottom. Further, areas of sediment excavation would be dispersed among dredging stations situated along the length of dike requiring maintenance. There physical dredging impacts would be temporally separated by periods of eight to ten years (refer to discussion of frequency of dike maintenance in needs section above and Attachment 2).

BIOLOGICAL CONSEQUENCES OF DIKE MAINTENANCE DREDGING

In general, dredging as a source of fill for dike maintenance has occurred in waterways tributary to the estuary, areas minimally affected by salinity intrusion (e.g., the John Day, Youngs, Walluski and Lewis and Clark Rivers). Dredging limited to subtidal aquatic area, in water depths exceeding the level of effective light penetration, would affect epibenthic and benthic organisms, including insect larva, amphipods, sand shrimp, polychaetes, epibenthic zooplankton, bivalves and resident and migratory fish species. The biological effects of dredging for dike maintenance fill include removal of epibenthic and benthic organisms in the excavated sediments and suspension of and, silt, clay and organic sediment constituents. Impacts expected from removal of life forms from limited areas of subtidal substrate will be negligible since excavated areas may be quickly repopulated from adjacent undisturbed areas. Suspension of fine sediments will be localized and temporary, and impacts due to reduction of light penetration, physiological damage to filter feeders, reduction of oxygen levels, and sediments settling on adjacent bottom dwelling communities are expected to be minimal. Excavation will be lineally dispersed and suspended materials will be removed from the area by tidal exchange and river discharge. Biological impacts will be limited in extent by the small amount of dredged sediments required (approximately 300 cubic yards of sediment for maintenance of 200ft of dike) and dispersed along the entire length of dike receiving sediments. Adverse effects due to suspended sediments will be limited to short time periods by tidal exchange and river discharge. Maintenance events are generally limited to eight to ten-year intervals, preventing potential chronic biological disturbance.

In all instances, dredging operations necessary as a source of fill for dike maintenance will be coordinated with state and federal resource agencies, local governments and private interests to determine project timing and dredging conditions ensuring protection of estuarine resources (e.g., fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

SOCIO-ECONOMIC CONSEQUENCES

Thorough maintenance of exiting dikes and flood control structures will protect investments in agriculture and urban development areas in Clatsop County. Flood control will be more consistently attained, with agriculture and urban areas subjected less frequently to interruption of activities and damage due to high water. Positive economic benefits are expected as a result of the proposed exception.

ENERGY CONSEQUENCES

The net impact of the proposed exception on economic and efficient utilization of all forms of energy is expected to be positive. Maintenance of existing dikes and flood control structures will enhance the productive use of agricultural and urban development areas of Clatsop County. Protection from flooding events will reduce the need to expend energy resources to control flooding behind dikes and eliminates commitment of nonrenewable resources to reconstruct and rehabilitate flood, damaged areas. It is anticipated that these savings will exceed the energy resources consumed by dredging of aquatic area sediments to obtain fill needed for maintenance of dikes.

COMPATIBILITY

The situational and limited dredging activities proposed by this exception narrative are intended to be compatible to the maximum extent feasible with the preservation and protection of fish and wildlife habitat and essential properties of the estuarine resource (e.g., dynamic geological process, continued biological productivity, unique or endemic communities of organisms, species diversity) in areas designated as aquatic natural and aquatic conservation management units. Limited and temporary estuarine perturbation due to dredging as a source of fill for dike maintenance proposed by this exception is consistent with preservation and protection of natural resource values and the long-term use arid conservation of renewable estuarine resources. Further, dredging to obtain fill material for maintenance of particular areas of existing dikes is essential to the protection of adjacent agricultural and urban developed areas protected by dikes. The low frequency, periodic aspect of the activity proposed by this exception does not introduce the potential for cumulative adverse effects on fish and wildlife habitat and essential properties of the estuarine resource. Dredging necessary to obtain fill for maintenance of particular areas of existing dikes is not expected to adversely impact estuarine aquatic resources in management units adjacent to dredging operations. Notwithstanding this proposed exception, dredging as a source of fill material for dike maintenance must meet the other dredging requirements of Goal 16: (1) demonstration of public need, and (2) minimization of adverse estuarine impacts. The foregoing discussion of need, alternatives and environmental consequences is intended as a general expression of the appropriateness of the dredging activity proposed by this exception with respect to these Goal 16 requirements. Dredging activities necessary as a source of fill material for dike maintenance will in all cases be coordinated with state and federal resource agencies, local governments, and private interests to ensure adequate protection of estuarine resources.

EXCEPTION

ALLOWING RESIDENTIAL, DEVELOPMENT NORTHSIDE OF NW WARRENTON DRIVE

EXCEPTION

An 8-acre area on the North side of N. W. Warrenton Drive, in close proximity to the Columbia River will be designated for single-family residential use. The western boundary (N.W. 17th) of the involved parcel is about 1500ft to the East of the Warrenton/Hammond City limit line and the eastern, boundary (N.W. 16th) is about 1500 feet to the West of Tansy Point. In order to allow for non-water-dependent residential use, an exception is taken to Goal #17 (Coastal Shorelands) requirement that shorelands in urban and urbanizable areas especially suited for water-dependent use shall be protected for water-dependent recreational, commercial and industrial uses.

BACKGROUND INFORMATION

In considering the proposed exception, it may be beneficial to understand the history of the City's involvement in the zoning and ownership of the involved parcel of land. A brief review will follow:

> During the adoption, of the original comprehensive plan designations for the City in 1974, the involved property (and adjoining property to the East between N. W. 16th and N. W. 14th) was designated for residential use. When the comprehensive plan and zoning ordinance were being reviewed and amended in 1975-76, property to the southeast of Tansy Point was designated for Marine Industrial use. During this same time period, negotiations occurred which resulted in deeding the property between N. W. 14th and N. W. 17th to the City of Warrenton. Deed restrictions were placed upon the gift property which provided for the following uses:
>
> Parcel #1 (roughly between N. W. 16th and N. W. 17th) for residential purposes.
>
> Parcel #2 (roughly between N. W. 15th and N. W. 16th) as a waterfront park.
>
> Parcel #3 was reserved for Marine Industrial use.

Stipulations in the deeded gift provided for the property to revert back to the original owner if the land were used for purposes other than those outlined, in the deed restrictions. The content of the deed restrictions and the corresponding industrial rezoning of the property at Tansy Point were finalized after lengthy negotiations between the City, the Port of Astoria and the property owner. Jack Lesch, Clatsop-Tillamook Intergovernmental Council director (and the City's Planning Consultant at that time), acted as an arbitrator between the involved parties, drafting an outline for the deed restrictions. For additional details on the negotiation process, refer to article in Daily Astorian of 8/14/75.

The final settlement was viewed as a compromise that allowed for the development of a sizable Marine Industrial site and an adjoining small residential tract on the deeded property. During the current comprehensive plan

revision process, the City has designated a large (30-acre) Marine Industrial tract to the South of N. W. 14th. This land could be used as a back-up land in conjunction with the development of the City-owned industrial tract at Tansy Point.

NEED

A residential designation for the 8-acre parcel should be provided for the following reasons:

1) The City of Warrenton recognized the need to maintain the diverse environmental, economic and social values of the Columbia River shorelands. On one hand an effort must be made to reserve adequate shoreland areas for water-dependent, commercial and industrial uses which will benefit the local economy. On the other hand, social values such as the aesthetic and scenic qualities of the waterfront must be recognized and protected. A blending of land uses will maintain and utilize the diverse values of these *coastal* shorelands.

2) The proposed action would promote a diversity of uses along the Columbia River waterfront and break the monotony of prospective continuous industrial development along the entire Columbia shoreline from Hammond to Tansy Point.

3) There is no need to reserve additional lands within the City for water-dependent commercial and/or industrial development. A sufficient amount of land has been reserved for these uses (Note: further discussion in Socio-Economic section).

4) The involved parcel provides a superb site for a small-scale residential development. The land is composed of solid foundation soils with sufficient elevation to allow development without filling. As soon as construction is completed on a planned sanitary sewer line along N. W. Warrenton Drive, complete municipal services will be available to the site. Residences could utilize the property's scenic riverfront view of the Columbia River.

5) The combined qualities of this site make it unique to the residential land stock within the City of Warrenton. The overwhelming majority of residential land within the City is flat, low land with natural development limitations, such as high surface water levels, weak foundation soils and/or within designated floodplain areas. The limited stable dune ridges near the City center have been extensively developed.

6) The property would add increased flexibility to the local housing by providing residential sites which would be conducive to a higher quality in dwellings. The available range of residential home sites would be broadened, by the inclusion of this property within a residential designation.

ALTERNATIVES

1) There are other lands along the Columbia riverfront to the immediate East and West that have similar characteristics to the involved parcel. Both of these alternative sites would also require a goal exception to allow non-water-dependent use. The land to the West has been reserved for Marine Industrial uses due, in part, to the existence of functioning industrial uses. The property on the East has been reserved for water-dependent uses to allow for a waterfront park and for future development at Tansy Point.

2) There are no other potential residential sites within the City with the combined scenic attraction, soil bearing capacity and public facility characteristics that are found at the involved site. Some dune ridge areas to the West of the present City center would provide solid foundation soils and an attractive residential setting, but these would be sensitive to disturbances in vegetative cover and would have limited access to developed public facility systems.

SOCIO-ECONOMIC CONSEQUENCES

1) The action would make an additional eight (8) acres available for residential development within the City of Warrenton. The site could be developed to accommodate 15 to 25 single-family residential dwellings.

2) The action would not significantly affect the total amount of land within the City that will be made available for water-dependent commercial and/or industrial use. The involved property has an area of about eight (8) acres with 560ft of frontage on the Burlington Northern Railroad right-of-way, which adjoins the Columbia River. The City has taken action to reserve over 400 acres of land within the City for water-dependent commercial and industrial use. These ESWD shorelands include almost four (4) miles of frontage adjoining deep-draft channels along the Columbia and Skipanon Rivers. The City also has designated additional commercial lands adjoining the Skipanon River within a tourist commercial zone with the intent of encouraging a mixture of water-dependent and water-oriented commercial uses. Through these actions the City has reserved ample land for potential water-dependent use.

3) The proposed residential use would not restrict future industrial development to the East at Tansy Point. A proposed waterfront park site adjoining the involved property to the East will form the western boundary for any future Tansy Point industrial development. The involved residential site is not contiguous to the industrial site to the East but is separated by the park site. The City has designated 30 plus acres to the South of N. W. 14th, which can be combined with the 20 plus acres to the North to create a 50 plus acre contiguous industrial tract at Tansy Point with access to the Columbia River channel.

4) The proposed designation will provide for a refreshing mixture of residential, park and water-oriented industrial uses along Warrenton's Columbia River waterfront. This mixture would represent the only non-industrial use along Warrenton's extensive Columbia River, Young's Bay and Lewis & Clark River waterfront areas.

5) In continuing to maintain the land use designations as outlined in the gift of deed, the City is, in essence, attempting to protect the public's best interest. As the owner of the land, the City can fully promote the future industrial development of this site. If the City were to violate the provisions of the deed of gift, the property would then revert to private ownership and the development potential of the site would most likely be severely reduced. This would represent a public loss both in terms of property ownership value and in terms of loss of future lease revenues. The City would also lose its lease control upon future export operations, which might be eligible for exemption from real property taxes.

ENVIRONMENTAL CONSEQUENCES

1) The action would result in minimal environmental impact. The involved land is not recognized to be an environmentally sensitive area but is a relatively high, level, well drained site, covered with scattered underbrush and trees.

2) Comparatively, the potential for future adverse environmental impacts from development on the site would be greater for an industrial use than for a residential use.

ENERGY CONSEQUENCES

Since the involved site is served by existing municipal streets and water lines, and will soon have access to the sanitary sewer system, development would be timely and would require no major public facility extensions. In this manner, potential development would be more energy efficient than other developments which would require facility extensions.

COMPATIBILITY

1) The proposed residential usage would be compatible with the existing pattern of development to the immediate West. This area has been developed with a mixture of single-family residential dwellings, interspersed with a low profile, industrial, machine shop use.

2) The proposed residential usage would blend in well with the anticipated waterfront park to the immediate East. The park would provide a natural buffer between any future development at Tansy Point and the involved residential area.

EXCEPTION
ALLOWING DREDGING FOR CERTAIN NON-WATER-DEPENDENT USES

DESCRIPTION

The Estuarine Resources Goal #16 requires that dredging in estuaries be only for navigation or other water-dependent uses. The goal can be applied except in three (3) instances: 1) when clean sand-fill material is needed for shoreland construction activities and no economically feasible alternative exists, 2) when the material is needed for dike maintenance and other sources are not economically feasible, damage is minimized, etc., and 3) when the area in front of tide boxes or gates has shoaled in, preventing proper operation of the tidegate and the associated land drainage network behind the dikes. All such dredging activities will be evaluated on a case-by-case basis.

NEED

Dredging of estuarine areas to obtain material for fill or construction, maintain dikes and clear tidegate channels is needed for the following reasons:

1) Clean fill material with a good load bearing capacity is needed to raise shoreland development areas above the 100-year flood level, thereby reducing potential hazards to life and property. Much of the area designated for residential, commercial or industrial development in the CREST plan is in the flood plain. In some cases, alternative sources of fill material may be prohibitively expensive or not feasible because of site access limitations.

2) Dikes protect approximately 20,000 acres of shoreland which otherwise would be inundated periodically by tidal and river waters. These dikes protect most of the farmland in the estuary area, much of which is zoned for exclusive farm use (EFU), as well as certain areas of urban development in Warrenton, Miles Crossing and elsewhere. Constructed early in this century, nearly all of these dikes are below Corps of Engineers standards. Many are in need of maintenance and some are in total disrepair. Winter floods regularly overtop some dikes and sometimes tide gates and areas of dikes have been ripped out. Regular maintenance of dikes and upgrading of certain areas is needed. Access to dikes on the land side is sometimes poor and suitable fill material from the upland sources is sometimes unavailable.

3) The elevation of wetland areas in front of tidegates must be such that the tide gate can open and shut properly and the areas must have drainage channels away from the tide gate. Shoaling will sometimes create bars and prevent the proper operation of tide gates. This has the effect of making the entire drainage network of ditches and sloughs behind dikes non-functional. Dredging shoal areas in front of tidegates is needed to keep these drainage systems in good working order and protect life and property in areas served by dikes.

ALTERNATIVES

Alternatives to dredging as a source of material for fill or dike maintenance are: 1) use of upland material or 2) use of dredged material from an authorized dredging project at the time of dredging for clearing of shoaled areas in front of tide gates. It is important to note that both alternative sources of material for fill or dike maintenance are preferred alternatives to dredging for

the material. In all cases, an applicant, will have to show that these alternative sources are not available or not economically feasible.

FILL MATERIAL

Fill material must be such that it will have an adequate load bearing capacity for buildings and other proposed, structures. Coarse sand or gravel makes good fill for construction and is available at certain upland sources such as gravel pits and stockpiles of dredged material. Clean sand dredged from the deep channel areas of the river also makes excellent fill material for construction. This sandy material does not make for productive agricultural land, however, because of a lack of organic material, nutrients and inability to hold sufficient water to nourish vegetation.

DIKE MAINTENANCE

Material to maintain dikes will normally need to be fine clay and silt which compact or stick together preventing erosion by tidal waters and rain. Sandy material, even when stabilized by vegetation and riprap, tends to be more erodable. Sources of fine, compactable material for dike maintenance are often available from upland sources, often at a more economically feasible cost and should be used. However, dredging of fine material from adjacent mud flats is sometimes the only feasible alternative. This material is also the proper consistency for dike maintenance.

ENVIRONMENTAL CONSEQUENCES

1) FILL FOR CONSTRUCTION: The removal of course, sandy material from channel shoal areas of the river has few adverse environmental effects. Few benthic dwellers inhabit areas of coarse sediments because currents and sediment transport create an unstable environment. Consequently, few benthic organisms are disturbed, though a pipeline suction dredge probably draws in some fish and invertebrates. Since filling and overall shoaling in the estuary is occurring at an abnormally high rate, removal of the less productive sandy sediments and depositing in shoreland areas may actually have a favorable impact in that this filling trend is retarded. Filling of low shoreland areas and subsequent development may result in loss of agricultural land, wildlife habitat and have environmental impacts attendant with urbanization.

2) DIKE MAINTENANCE: Dredging of shallow, often productive areas adjacent to dikes may have significant adverse environmental effects on aquatic life, periodic dredging of certain of these areas will destroy benthic dwellers such as amphipods and cape pods. These areas are important to small fish and juvenile salmon as feeding and resting areas. Dredging may leave potholes where these fish could be stranded at low water (a dredging standard exists to minimize this) and turbidity and release of toxics and organics caused by dredging will spread the adverse effects away from the immediate dredged area. Temporary water quality degradation will occur and it will be difficult to control effluent from the material placed on dikes. Fringing tidal marshes, moving sediment from the river and its tributaries, which are shoaling at a more rapid rate than might naturally be expected.

3) TIDEGATE CHANNELS: Dredging for tidegate channels will usually be in areas of fine sediments. Impacts will be similar to those for dike maintenance above, though creation of an existing channel will ensure fish stranging is minimized.

SOCIAL, ECONOMIC AND ENERGY CONSEQUENCES

1) Shoreland development on fill material obtained from dredging for other sources) will be protected from flood hazards. Where such fill is on agricultural land, productivity will be lost.

2) Maintenance of dikes and tide gate drainage will protect existing investments in agriculture and urban development in low-lying areas. Exclusive farm use resource lands will be protected. Dredging for this purpose will, in some cases, allow maintenance to be economically feasible, where it would not be otherwise. Flood control will be provided.

3) When dredging is more economically feasible for dike maintenance, or as a source of fill for construction, the primary savings is likely to be in fuel costs for truck or other transportation. Since fossil fuels are a non-renewable resource, energy use impact will be favorable.

COMPATIBILITY

1) Dredging from channel areas as a source of fill material does not have a significant impact on other uses since it is temporary and has few environmental impacts. Navigation may be temporarily impaired. Placement of the dredged material on shoreland areas may or may not be compatible with adjacent uses, depending on the location.

2) Dredging shallow, productive areas for dike maintenance and tidegate drainable will be incompatible with aquatic resource areas, often designated "Conservation" or "Natural." The low frequency, periodic nature of this dredging, however, does not create a serious problem most areas. Dike maintenance and tidegate drainage are not only compatible, but essential for protection of agricultural and urban developed areas protected by dikes.

EXCEPTION TO GOAL 16
PLACING A SMALL AREA NEAR TANSY POINT IN THE DEVELOPMENT MANAGEMENT UNIT.

BACKGROUND

This exception to Goal 16 changes the designation of a small aquatic area near Tansy Point from Aquatic Conservation to Aquatic Development. The exception is to the Goal 16 management unit requirements for conservation management units, and to Goal 16 aquatic area designation criteria. It will allow dredging necessary for construction of a barge moorage in an intertidal and shallow subtidal area. The barge moorage is planned as part of a larger water-dependent industrial development at Tansy Point. The moorage is permitted in Warrenton's Aquatic Conservation Zone, but about 1/2 acre of new dredging needed for the moorage is not permitted in the Conservation management unit. The change to Aquatic Development will be limited to the area needed for barge moorage, including side slopes. The proposed Development designation will also be limited in scope: the only new activity allowed will be the necessary dredging.

Factors that must be addressed for the exception are described in Oregon Administrative Rules, Chapter 660, Division 4, Sections 020 and 022. The specific exception criteria are listed in the following paragraphs, followed by appropriate findings.

FINDINGS

A. "Reasons justify why the state policy embodied in the applicable goals should not apply" [OAR 660-04-020(2a)].

New dredging for a barge moorage is permitted in Development management units, but not in Conservation management units. This policy protects estuarine resources in Conservation management units from adverse impacts associated with major estuarine alterations. It should not apply in this situation because the planned dredging will not result in major alterations, nor will it result in substantial adverse impacts. Additionally, the project site lacks many of the characteristics protected by the Conservation management unit.

Barge moorage construction will not result in major estuarine alterations. The single largest identifiable alteration will be increasing water depths to about -10ft MLLW. The moorage area itself will include less than 40,000 square feet.

The moorage's north end is already deep enough: dredging will only be needed at the south end. Estimated dredging, including 3:1 (horizontal to vertical) side slopes will remove between 5,000 and 10,000 cubic yards of material. Average annual maintenance dredging needs will probably range from 1,000 to 2,000 cubic yards. These volumes are relatively small compared to other dredging projects. For example, full water-dependent development at Tansy Point will probably require about 250,000 cubic yards of dredging initially. Water-dependent development on the east bank of the Skipanon River may generate about 500,000 cubic yards of new dredging. A barge slip at Tongue Point for oil module transport required about 40,000 cubic yards of initial dredging. The Corps remove about 500,000 cubic yards annually from Flavel Shoal, near Tansy Point. These projects, all in Development management units, are much larger, in terms of material removed, than the proposed dredging. Projects potentially

requiring large amounts of dredging in the Conservation management unit include boat ramps and marinas.

Expected adverse impacts from the proposed dredging are not significant. Dredged material will be placed at an upland location, and used for site leveling. The moorage itself will consist of seven dolphins with a narrow connecting walkway, thus minimizing shading. Aquatic vegetation and intertidal habitat in Alder Cove is not expected to be affected by the project. The Tansy Point bankline adjacent to the moorage site is riprapped, and there is no riparian vegetation present. The project site has a sandy unvegetated bottom, and is subject to strong river currents and wakes from passing ships. The site is in an area that has been heavily impacted by development. It is immediately adjacent to upland industrial development on Tansy Point, and to a dock used by commercial fishing boats (the Pacific Shrimp dock).

Goal 16 describes areas appropriate for the Conservation management unit as:

> "... areas needed for maintenance and enhancement of biological productivity, recreational and aesthetic uses, and aquaculture. They shall include tracts of significant habitat smaller or of less biological importance than those in {Natural management units)

The barge moorage site has not been the subject of any detailed biological studies. It is not known to have any recreational significance. There are no aquaculture facilities in the area, nor are there any site characteristics that suggest its special suitability for aquaculture. Site characteristics suggest that it may have minimal habitat value, although shallow nearshore areas such as this one are often used by juvenile salmon for feeding and for shelter. Taking into account both the resources present at the project site, and the types of areas appropriate for the Conservation management unit, it appears that the site may not be suited for inclusion in the Conservation management unit. The area may have been excluded from the Tansy Point Development management unit because the Pacific Shrimp dock was seen as a convenient dividing line.

For these reasons, Warrenton concludes that the Goal 16 policy prohibiting dredging in Conservation management units should not apply in this case.

B. "Areas which do not require a new exception cannot reasonably accommodate the proposed use" [OAR 660-04-020(2b)].

Several alternative sites and configurations were considered before settling on the proposed location. On-site alternatives not requiring an exception are:

1) Tansy Point, downstream from the Pacific Shrimp dock in the existing Aquatic Development area;

2) Tansy Point, downstream from the Pacific Shrimp dock, excavated out of the existing upland; or

3) Utilize the existing Pacific Shrimp dock.

Alternatives 1), 2), and 3) are shown on the attached site map. Off-site alternatives not requiring an exception include:

4) Utilize existing nearby barge moorages (Port of Astoria, West bank of the Skipanon river);

5) Develop new off-site barge moorage in Develop Management Unit; or

6) Utilize truck or rail transport.

These alternatives and the reasons for their rejection are described below:

1) The Columbia River downstream from the Pacific Shrimp dock was considered as a potential site for the proposed barge moorage. It was rejected because swift near shore currents in this area, coupled with strong winds, make barge handling difficult, and because this area is more appropriately reserved for deep draft vessels.

Average ebb tide currents in the main navigation channel near Tansy Point are about 2.5 knots, or about 4.2ft per second. Peak ebb currents, especially during high river flow conditions, are considerably faster. Moving barges into and out of the slip would expose them to hazardous cross currents during strong ebb tides. The problem with currents is manifested in two different ways. Maneuvering barges into and out of the slip would be difficult and, at times, impossible when swift currents and strong winds are present. Chip barges are typically pushed rather than pulled up the river. Moving the barge from the moorage to the channel would require movement perpendicular to prevailing currents. The second current related problem occurs during barge loading. Chips are not always evenly distributed lengthwise in the barge during loading operations. The barge is slowly moved under the stationary hopper, filling the barge from one end to the other. The barge floats lower in the water at the heavy end. In strong currents, especially during choppy water conditions or with a standing wave, there is a chance that the barge could be swamped.

The aquatic area along the riverfront at Tansy Point is better reserved for deep draft vessel moorage than for barge moorage. Tansy Point is only ten river miles from the mouth of the Columbia River, making it an attractive location in terms of sailing time to west coast shipping lanes. Tansy Point also has close access to the main navigation channel as good as the access at the Port of Astoria. As channel maintenance costs rise. Tansy Point will become more and more competitive with upriver ports for deep draft vessel moorage. Development of the river frontage for deep draft vessel moorage would be the highest and best use of the sites.

2) This alternative – an excavated barge slip does not completely avoid the current problems described in alternative 2) above. Barges would be protected while in the slip, thus avoiding the swamping problem described above. They would, however, be exposed to strong cross currents while entering and leaving. This arrangement would also preclude full use of the Tansy Point river frontage for deep draft development.

3) Use of the existing Pacific Shrimp dock as a barge moorage was investigated. This alternative was rejected because the dock is poorly configured and located for the proposed use. Major alterations would be needed to adopt this dock for the proposed use.

The Pacific Shrimp dock surface is at about -i-16ft (MLLW). The equipment used to load wood chips typically consists of a large metal duct through which chips are blown. During low tides, when barges are low relative to the land, the ductwork mouth is lowered to the barge in order to prevent chip loss due to the wind. The relatively high Pacific Shrimp dock would require extensive modifications essentially a complete rebuilding to accommodate the chip loading operation. The Pacific Shrimp dock location is not as sheltered from river currents as the proposed site.

4) Existing barge moorages exist at the Port of Astoria (Pier 3), and at the Cavenham Forest Products facility on the west bank of the Skipanon River. Both sites are relatively near Tansy Point: Pier 3 is about 6 miles distant by road, and the Cavenham site is less than 3 miles from Tansy Point. Chips would conceivably be moved from Tansy Point to one of these sites by truck, and then barged to upriver destinations. These two off-site alternatives were rejected because they both would entail double-handling of the chips. Because chips are, relatively speaking, a low value commodity, transportation costs become a large part of their delivered cost. Transportation costs must be minimized to remain competitive. Moving the chips to an off-site shipping location would raise the handling component of transportation costs by about fifty percent.

The west bank site is owned by Cavenham Forest Products, Inc., and is generally used only for shipment of their products. It probably would not be available to a competitor. The Port of Astoria barge moorage at Pier 3 is a specialized moorage actually a graving dock designed for loading oil modules onto barges. It would not be suitable for the proposed use.

5) Other potential off-site alternatives involving construction of a new moorage are more difficult to evaluate, as there are only a few sites in the vicinity that are not presently developed. One undeveloped site is on east bank of the Skipanon River. Cavenham Forest Products already has a similar facility on the west bank, thus demonstrating the apparent feasibility of such an option. This alternative was rejected because it would result in expensive double handling of the chips (see analysis under Alternative 4).

6) Truck and rail transport have been investigated. Rail service is no longer available at Tansy Point. Truck transport is a viable option in fact, chips are presently moved by truck to upriver markets. For some destinations truck transport is the only option available; trucks will continue to be used to move chips to these markets. Other chip buyers have waterfront receiving facilities; chips can economically be shipped to these destinations by either barge or truck. Barge movement appears to be the least cost mode for sending chips from Tansy Point to paper mills at Wauna, Vancouver, and on the lower Willamette River. For wood products processing at Tansy Point to efficiently compete in these important markets, both truck and barge transport must be available.

The six alternative sites examined above would not require an exception, but their use does not appear to be feasible.

C. "The long-term environmental, economic, social and energy conseguences resulting from the use at the proposed site ... are not significantly more adverse than would typically result from the same proposal being located in other areas requiring a goal exception ..." [OAR 660-04-020(2c)].

1} Environmental Consequences. The major identifiable environmental consequences of the proposed dredging are the elimination of some intertidal benthic organisms; temporary, localized disruption of fauna in the water column; temporary, localized turbidity; and potential degradation of Alder Cove water quality resulting from the chip loading operation. Environmental consequences will be less significant at the proposed site than they would be at a location further in to Alder Cove.

Intertidal benthic organisms in the area to be dredged will be eliminated by the proposed dredging. This habitat will be replaced by the proposed mitigation area and, to a much lesser extent, by the newly-created subtidal area. The numbers and species of benthic fauna at the project site are not known. CREDDP data for similar sites (brackish salinity regime, scoured bottom conditions, medium grain sand) indicate that the following organisms might be expected:

Paraphoxus milleri	Nemerteans	Eohaustorius estuaris
Eogammarus confervicolus		
Corophium salmonis		
Neanthes limnicola		
Oligochaetes		

The project will have a negative impact on plants and animals living in the water column. This effect will be temporary, however. Water column organisms are expected to re-establish themselves after the initial dredging work is completed.

Turbidity will increase during the dredging operation in the immediate project vicinity. Existing background turbidity levels are not well documented for this area, but they are believed to be similar to other sites in the vicinity that would require an exception. Because the site is so well flushed relative to other potential sites, changes in turbidity resulting from the dredging are expected to be short-lived.

A concern has been raised that the proposed use of the barge moorage will result in some chips being blown into Alder Cove by the strong prevailing winds in this area, thus reducing water quality and possibly other habitat values in the Cove. Methods used for loading barges are designed to minimize chip loss. The chips being loaded are typically of a size and mass that would be largely unaffected by the winds. Despites these factors, some chips will probably be blown into Alder Cove. The Cove's configuration and profile is such that it is completely flushed by nearly every tide. There are no known water quality problems in Alder Cove because of its large flushing capacity. Alder Creek and Tansy Creek enter Alder Cove and carry potentially large amounts of urban runoff with no apparent negative water quality impacts. Warrenton's sewage treatment plant discharges treated wastewater into the Cove. A large lumber mill and log storage operation on the Cove's east side may also contributes run-offs to the Cove. Despite these inputs, Alder Cove has no significant documented water quality problems. Any incidental input of chips into the Cove would presumably have a negligible effect on water quality parameters.

The environmental consequences resulting from use of the proposed site are not substantially different from those that might be expected at other sites requiring an exception.

2) Economic Consequences. The major identifiable economic consequences of using the proposed site are identified below:

Dredging costs are primarily a function of the volume of material to be removed, the method used to remove the material, and the distance the material is moved. The volume of material removed will be minimized at those areas with the greatest existing depths. The proposed moorage site should yield between 5,000 and 10,000 cubic yards initially. Shallower sites could have a dredging requirement as large as 20,000 cubic yards (same configuration as proposed, 3:1 side slopes, and initial depth at -3' MLLW). The project site can be dredged to a large extent from the shore, which is typically the least costly alternative for a small project such as this one. Other sites could also be dredged from the shore, if they were near

enough and the shoreline was firm enough for heavy equipment. The dredge material from the proposed moorage would be utilized on site for leveling. Other sits might require the more expensive option of truck or barge transport to a designated dredged material disposal site.

Forest products processing at Tansy Point has increased heavy truck traffic on the State Highway used to reach the site. Development of on-site barge loading ability will tend to reduce truck traffic on the State Highway, thus decreasing maintenance costs. An off-site barge moorage for chips originating at Tansy Point would not reduce highway truck traffic, because of the double-hauling requirement. Hiqhway maintenance costs are borne largely by users, in the form of fuel taxes.

Mitigation costs for this project are relatively small because of the availability of on-site mitigation. Alternative sites requiring dredging do not all have suitable on-site mitigation options. In the case of this project, the available on-site mitigation opportunity is less costly than other off-site mitigation.

Economic consequences arising from the use of this site as a barge moorage are not significantly different from the consequences expected from use of other sites requiring an exception.

3) Social Consequences. The social consequences of using the proposed site are difficult to identify. They are in many ways equivalent to the value of the social costs and benefits that might result from this site's use as a barge moorage. There do not appear to be any identifiable social benefits or costs associated with this site that could not also be found at other sites in similar quantities. Some of these include aesthetic features associated with an undeveloped shoreline, noise associated with chip trucks, and recreational fishing opportunities. If the social consequences are equivalent to the loss or gain of any social benefits, and the avoidance or realization of any social costs, this site is similar to other site with respect to social consequences.

4) Energy Consequences. The energy-related consequences of using this site are similar to those anticipated at other sites requiring an exception. The major energy expenses are associated with transportation.

The fuel costs of barging chips from the site to upriver destinations, plus the fuel costs associated with trucking logs to Tansy Point for chipping, are not significantly higher for Tansy Point as opposed to other estuary moorage sites. Energy is consumed moving the log from the forest to upriver chip users. As long as the truck/barge transfer and the chipping operation occur at the same location, and as long as that location is generally between the forest and the chip user, fuel use associated with transportation is minimized.

The long term environmental, economic, social and energy consequences resulting from the project as proposed are not significantly more adverse at the proposed site than they would be at other possible project locations requiring an exception.

D. "The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impacts" [OAU 660-04-020(2d)3].

The proposed use of the exception area is for a barge moorage. Adjacent uses include a few residences and the Tansy Point Industrial Park on the shore, and the main navigation channel in the River.

There are no issues of compatibility between the moorage and the industrial park, as the moorage is planned as part of the industrial park. The nearby residences will be impacted by operations at the industrial park, such as noise and traffic. The proposed barge moorage may add slightly to these impacts: noise generated by tug boats will probably reach these residences. Tugboat traffic will replace some truck traffic in the Tansy Point area. To the extent that increased tugboat movements in this area help reduce chip truck traffic around Tansy Point, there may be no net increase in noise associated with the moorage. Additionally, ordinance standards for conditional uses and for Industrial and Port facilities require that adverse impacts be minimized.

The Columbia River main navigation channel is near the exception area. River traffic in the Tansy Point area includes deep draft: vessels, commercial and recreational fishing boats and tug/barge movement. The project site is not in the channel, and is far enough south of it to eliminate the possibility of interference with navigation. Channel markers at Tansy Point will not be blocked or shielded by the proposed moorage.

The proposed barge moorage is generally compatible with surrounding uses. Additional noise created by tug boats at the moorage will be offset by the reduction in truck traffic.

ATTACHMENT 1
CLATSOP COUNTY DIKING DISTRICTS

DISTRICT	ACRES PROTECTED	LINEAR FEET OF DIKE	MILES OF DIKE	NUMBER OF TIDEGATES	DIKE-TOP ROAD ACCESS
Drainage District No. 1 (Brownsmead)	1,391	35,400	6.7	8	Yes
Diking District No. 2 (Miles Crossing)	248	6,120	1.1	2	Yes
Diking District No. 3 (Cook and Nolan Slough)	485	3,280	0.6	2	Yes
Diking District No. 4 (Blind Slough) a	90	Gnat Creek Wetlands			
Diking District No. 5 (Jeffers Gardens)	535	6,320	1.2	7	Yes
Diking District No. 6 (Tenasillahe Island) a	1,709	34,350	6.5	9	None
Diking District No. 7 (Blind Slough)	928	3,900	0.7	8	Yes
Diking District No. 8 (Lewis & Clark River) a	1,133	36,780	7	18	None
Diking District No. 9 (Youngs River)	2,528	79,050	14.9	31	None
Diking District No. 10 (Karlson Island) a	370	17,600	3.3	3	None
Diking District No. 11 (Lewis & Clark River)	373	7,620	1.4	5	None
Diking District No. 12 (Knappa)	69	1,200	0.2	2	None
Diking District No. 13 (Walluski River) a	610	39,850	7.5	23	None
Diking District No. 14 (John Day River)	246	18,210	3.5	16	None

Diking District No. 15 (Westport) c	259	9,840	1.9	(2 wiers)	Yes

ATTACHMENT 1
CLATSOP COUNTY DIKING DISTRICTS

DISTRICT	ACRES PROTECTED	LINEAR FEET OF DIKE	MILES OF DIKE	NUMBER OF TIDEGATES	DIKE-TOP ROAD ACCESS
Svenson Island Improvement District b	326	25,200	4.8	4	Yes
Warrenton Diking District (formerly Warrenton 1, 2 and 3)	3,856	36,100	6.8	21	Yes

Note:

a) Defunct diking district include:
Diking District No. 4 - Blind Slough
Diking District No. 6 - Tenasillahe Island
Diking District No. 8 - Lewis & Clark River
Diking District No. 10 - Karlson Island
Diking District No. 13 - Walluski River

b) Svenson Island is privately maintained and details relating to dikes surrounding the Island are imprecise.

c) Westport Diking District No. 15 is entirely included in Crown Zellerbach ownership and is undergoing extensive renovation at present.

ATTACHMENT 2

COSTS OF VARIOUS DIKE MAINTENANCE ACTIVITIES IN CLATSOP COUNTY, OREGON

	71-72	72-73	73-74	74-75	75-76	5 yr Total	76-77	77-78	78-79	79-80	80-81	5 yr Total	10 yr Total
Drainage District No. 1 (Brownsmead)			d 1452	d 1347	d 1446	4245					e 3898	3898	8143
Diking District No. 2 (Miles Crossing)	334	482	226	800	191	2033	180	b 2228			195	2603	4636
Diking District No. 3 (Cook & Nolan Slough)				101		101				b 2400		2400	22501
Diking District No. 5 (Jeffers Gardens)	714	487	112	a 3096	c 1646	6055	b 1415			346		1761	7816
Diking District No. 7 (Blind Slough)	330			1009		1339		a 2234	b 1924		d 1083	5241	6580
Diking District No. 9 (Youngs River)	b 1785	933	D 7109	b 3626	b 1485	14938	b 2683		D 5100	c 3300	c & D 13703	24786	39724
Diking District No. 11 (Lewis & Clark River)	422	a 2043	a & d 1026	351	c 1012	4854	730	354	200	240		1524	6378
Diking District No. 14 (John Day River)	D 1437		c 1592	252	436	3717		320	371	D 1540	a 2345	4576	8293

D - Indicates dredging as a source of fill material for Dike Maintenance
a - Tidegate installation and/or replacement of existing tidegate
b - Riprap of existing tidegate and/or maintenance of tidegate flaps and walls
c - Riprap of dike slope

d - Landside dike maintenance (fill excavated from landward drainages, moving and spraying of dikes)
e - Pump installation

NOTE:

1) Defunct diking districts include: Diking District No. 4 (Blind Slough), Dike District No. 6 (Tenashillahe Island), Diking District No. 8 (Lewis & Clark River), Diking District No. 13 (Walluski River) and Diking District No. 10 (Karlson Island).

2) Svenson Island is privately maintained and information detailing activities of the Svenson Island Improvement District are lacking.

3) Westport Diking District No. 15 is entirely included in Crown Zellerbach ownership, dike maintenance information is not available.

4) Knappa Diking District NO. 12 does not assess a diking district maintenance tax.

CITY OF WARRENTON
COMPREHENSIVE PLAN

APPENDIX II

ORDINANCE NO. 1058-A
(AS AMENDED BY ORDINANCE NO. 1153-A)

ADOPTED ON JANUARY 25, 2011

APPENDIX II
DREDGED MATERIAL MANAGEMENT PLANNING

INTRODUCTION

In 1979 the Columbia River Estuary Study Taskforce (CREST) completed a Dredged Material Management Plan for the Columbia River Estuary. The purpose of the plan is to establish policies and standards for regulating dredging and disposal in the estuary and to identify an adequate number of sites with sufficient capacity to meet projected disposal needs over a 20-year period. The original plan established priorities for their use, and recommended techniques for their protection and control.

In 1986 CREST re-evaluated and updated the plan to produce the Columbia River Estuary Dredged Material Management Plan (DMMP). Since 1986, there have been changes in the dredged material disposal needs, limitations, and opportunities in the Columbia River Estuary. Some identified sites are not developed with permanent structures in place; other sites have received more material than was outlined in the DMMP, are currently at capacity, are no longer used or are not practical for dredged material placement. Updating the policies and disposal site inventory to reflect the changes that have occurred over the past 14 years will ensure that the DMMP remains useful. The purpose of this revised DMMP is to refine the dredging and disposal policies and to inventory an adequate number of disposal sites with sufficient capacity to accommodate projected disposal needs for at least a 5-year period.

The plan recognizes that the vast majority of dredging and disposal policies in the estuary are related to the federal deep draft navigation channel. The Army Corps of Engineers completed a Dredged Material Management Plan (USACE 1998) for channel maintenance in 1998. The plan identified dredged material disposal needs for a 20-year period. The updated site inventory incorporates Corps disposal sites identified in their DMMP.

The designations of "site priority" was removed from the plan. Most of the sites designated "Priority 2" in the previous plan were not required to meet the dredged material disposal needs of the past 15 years. Dredging project proponents indicated that they would not be required for projected dredging needs either. Likewise, the sites presented as "Additional Dredged Material Disposal Sites" were removed from the inventory due to significant environmental, land use or engineering issues related to those sites.

Flow-lane disposal is the preferred alternative of the Port of Astoria and the Corps of Engineers for dredging projects. Consequently, many of the smaller sites that had not received dredged material in many years and/or were no longer required for any of the projected dredging projects were removed from the site inventory.

OBJECTIVES

The Plan is also intended to serve as a guide to dredging project proponents and regulatory agencies in planning and reviewing dredging projects. In order to be useful, it focuses on disposal sites that are both in the proximity of dredging areas and appear approvable under existing regulatory and zoning requirements. In this way, the plan can be used to expedite the

dredging project proponents' search for appropriate disposal sites and regulatory agencies' permit review process.

Dredged material disposal activities in Warrenton shall comply with applicable state and federal requirements as well as the following:

1) Provides the opportunity for the beneficial use of dredged material.

2) Important fish and wildlife habitat or areas with scenic, recreational, archaeological, or historical values that would not benefit from dredged material disposal and sites where the present intensity of type of use is inconsistent with dredged material disposal shall be avoided.

3) The use of shoreland water-dependent development sites for dredged material disposal shall occur only when the dredging project proponent can demonstrate that the dredged material placed on the site will be compatible with current or future water-dependent development. Dredged material disposal shall not occur in any significant Goal 17 resource areas, without an exception to this goal.

4) Wetlands will not be impacted.

5) Placement of dredged material will help restore degraded habitat.

6) Dredged spoils containing organic, chemical, and/or other potentially toxic or polluted materials will be properly contained, presenting minimal health and environmental hazards due to leaching or other redistribution of contaminated materials.

7) The potential for the site's final use will benefit from deposition of dredged materials.

8) Engineering factors to be considered in site selection shall include: size and capacity of the site; dredging method; composition of dredged materials; distance from dredging operation; control of drainage from the site; elevation; and costs of site acquisition, preparation and revegetation.

9) Flow land disposal site shall only be allowed in development designate areas within or adjacent to the Federally Authorized Navigation channel where: sediments can reasonably be expected to be transported without excessive shoaling; interference with recreational and commercial fishing operations will be minimal or can be minimized by applying specific timing restrictions; adverse hydraulic effects will be minimal; adverse effects on estuarine resources can be shown to be minimal; the disposal site depth is between 20 and 65 feet below MLLW; and the disposal site does not create a hazard for safe navigation.

DREDGING AND DREDGE MATERIAL DISPOSAL

1) Dredging - Today dredging in the Northwest includes pipeline dredges, sea-going hopper dredges, clamshell and barge dredges, and land-based equipment such as drag lines and back hoes. The pipeline and hopper dredges are commonly used for port development and maintenance in larger dredging projects such as navigation channel maintenance by the ACOE. Clamshell and barge equipment is typically involved in smaller port and private dredging jobs but is sometimes used in larger navigation channel maintenance jobs. Land-based equipment is usually used for very small projects such as maintenance dredging at boat ramps.

2) Dredge Material Disposal -

a) Upland Disposal - The major factors controlling choice of upland (including shoreland) sites are cost, land use, and availability. Increased distance from a dredging operation and extensive site preparation both increase costs. The sediment to be deposited must be compatible with the future use of the site; for example, fine sediments will not always produce stable land for industrial development while coarse sands may not enhance productive farmland or be useful for levee maintenance.

The primary engineering consideration is the degree of confinement that the site and the proposed deposition will require. The ACOE has developed specific guidelines for designing containment areas at the disposal site that both maximize the site's capacity and control effluent quality. The guidelines address technical issues, such as, possible geochemical changes subsequent to disposal that causes the release of contaminents and effective dewatering of sediments. In general, diking around the site offers maximum confinement while berming (the creation of mounds of sediment during deposition) may suffice for certain sediments.

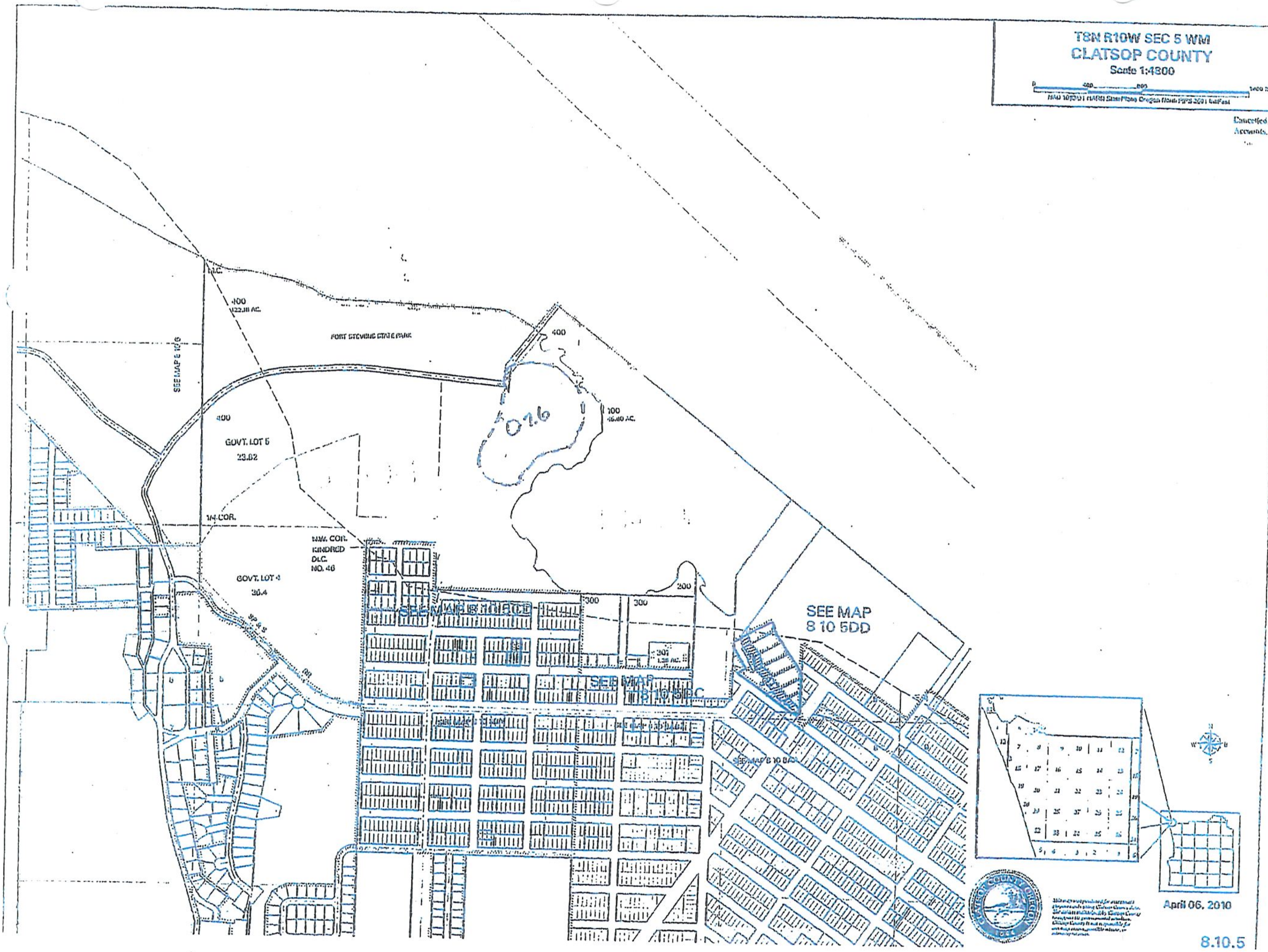
b. Levee Disposal - Dredged material disposal on levees may prove cost effective for the combined goals of levee maintenance and disposal of otherwise unused dredged materials. The major environmental consideration is that the material be disposed in such a way that it not run-off into productive aquatic areas. The major engineering issues are effective dewatering of the sediments and careful levee stabilization, preferably through revegetation, after disposal.

c. In-water Disposal - Regardless of the type of in-water disposal, placing dredged materials in the aquatic area raises several key concerns, including sediment and water quality, sediment transport, water circulation, impacts to fisheries, and impacts to biological communities, especially endangered/threatened species. Sediments placed in-water must meet sediment quality regulations outlined in the Dredged Material Evaluation Framework. The majority of sediment disposed in the estuary's aquatic area consists of coarse, clean sand dredged from maintained navigation channels. This material must meet the water and sediment quality standards.

ATTACHMENT 1 to APPENDIX II

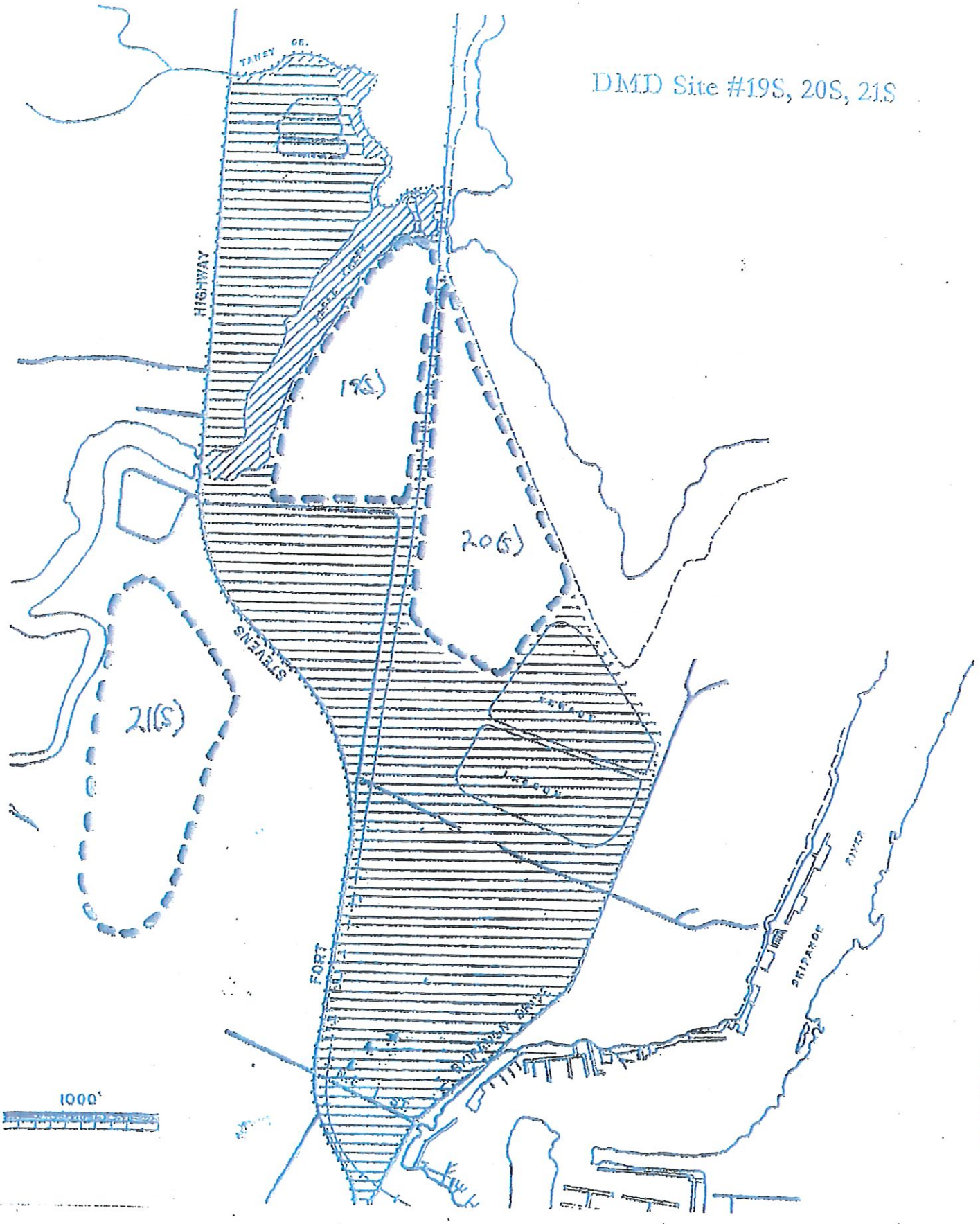
DREDGED MATERIAL DISPOSAL SITES

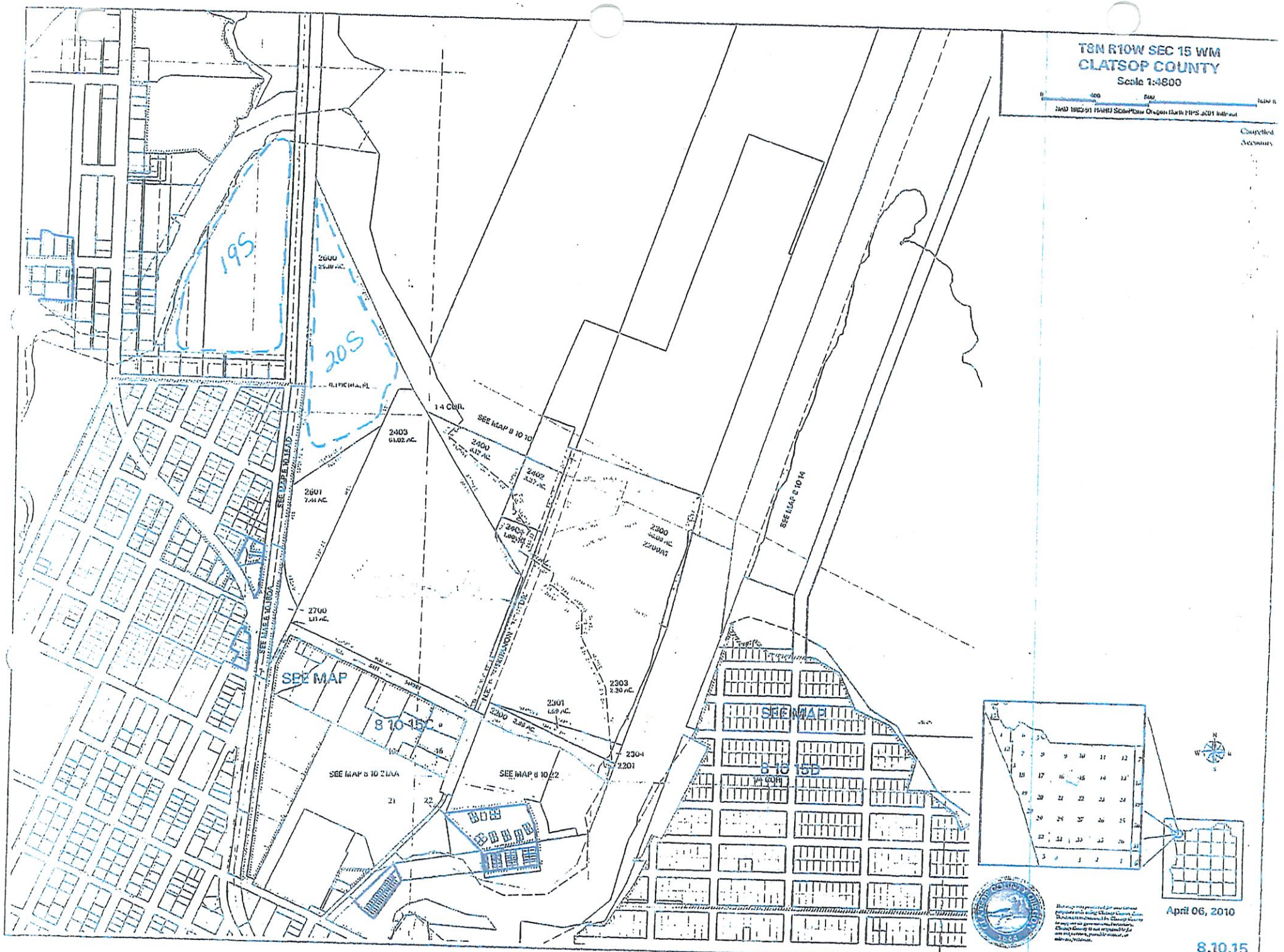
PROJECT	AMOUNT DREDGED	SITE IDENTIFICATION	ACREAGE/CAPACITY
Outer Channel (Mile 0 to 1.0 at minus 16-18' MLLW)	110,000 cy/yr 550,000 cy/5yr 2,200,000 cy/20yr	Estuary Disposal (11E) or Ocean Disposal	
Inner Channel (Mile 1.0 to 2.0 at minus 16-18' MLLW)	800,000 cy/20yr	19(S)	19 acres/306,000 cy
Warrenton Lumber Company Deep-draft log and lumber facility, North Tip of West Skipanon Peninsula	200,000 cy initial construction 75,000 cy/yr maintenance 375,000 cy/5yr 1,500,000 cy/20yr	20(S) 19(S)	32 acres/516,000 cy 31 acres/500,000 cy
Other dredged material disposal sites in the vicinity of the Skipanon Waterway and near the development sites associates with the Skipanon Peninsulas		21(S) 27(S)	18 acres/290,000 cy 9 acres/145,000 cy
On the northwest side of the Hammond Marina	~100,000cy	O-7.6	9.5 acres/150,000 cy/10'above elevation 6.0 acres/145,000 cy/15' above elevation

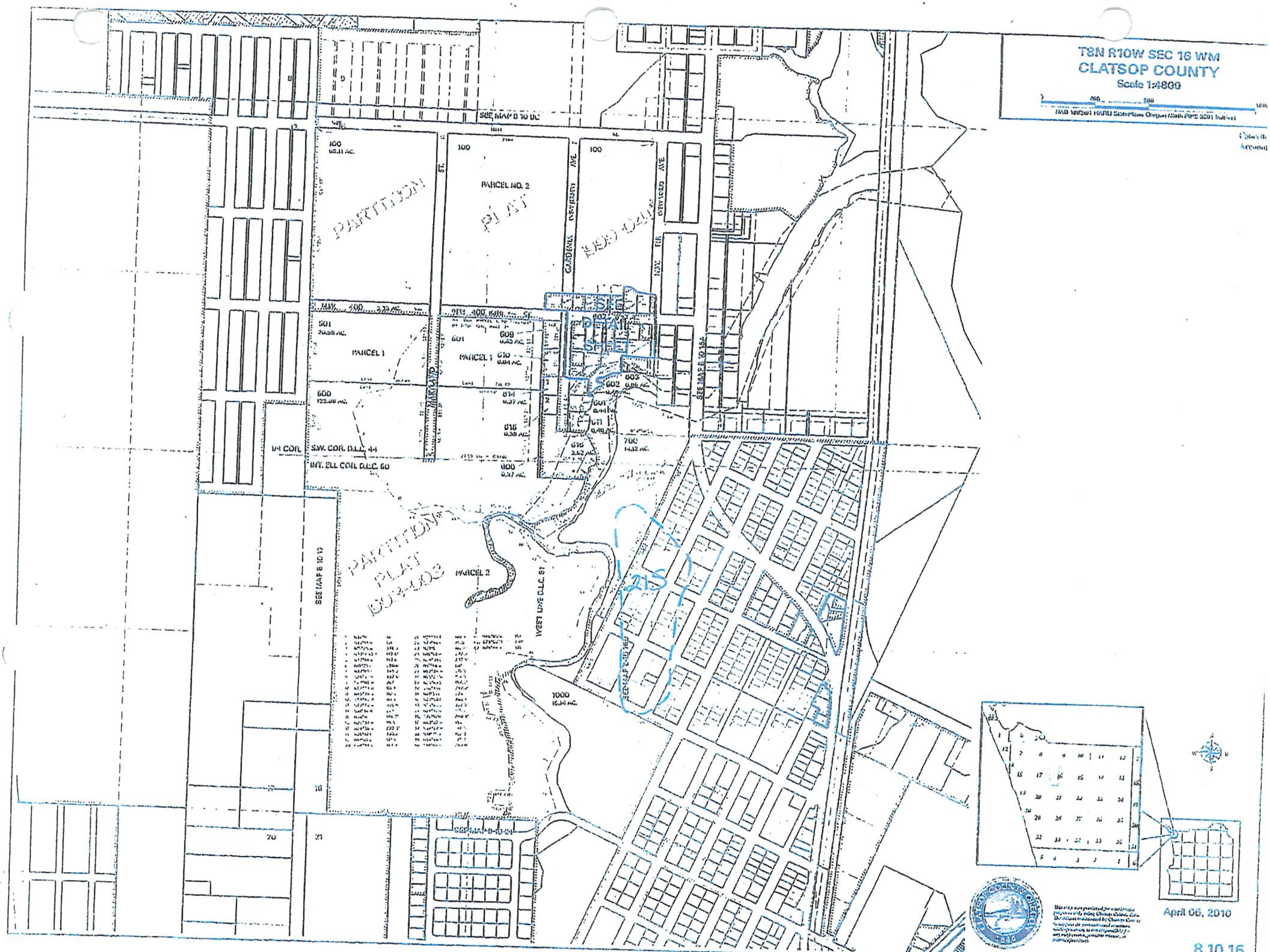


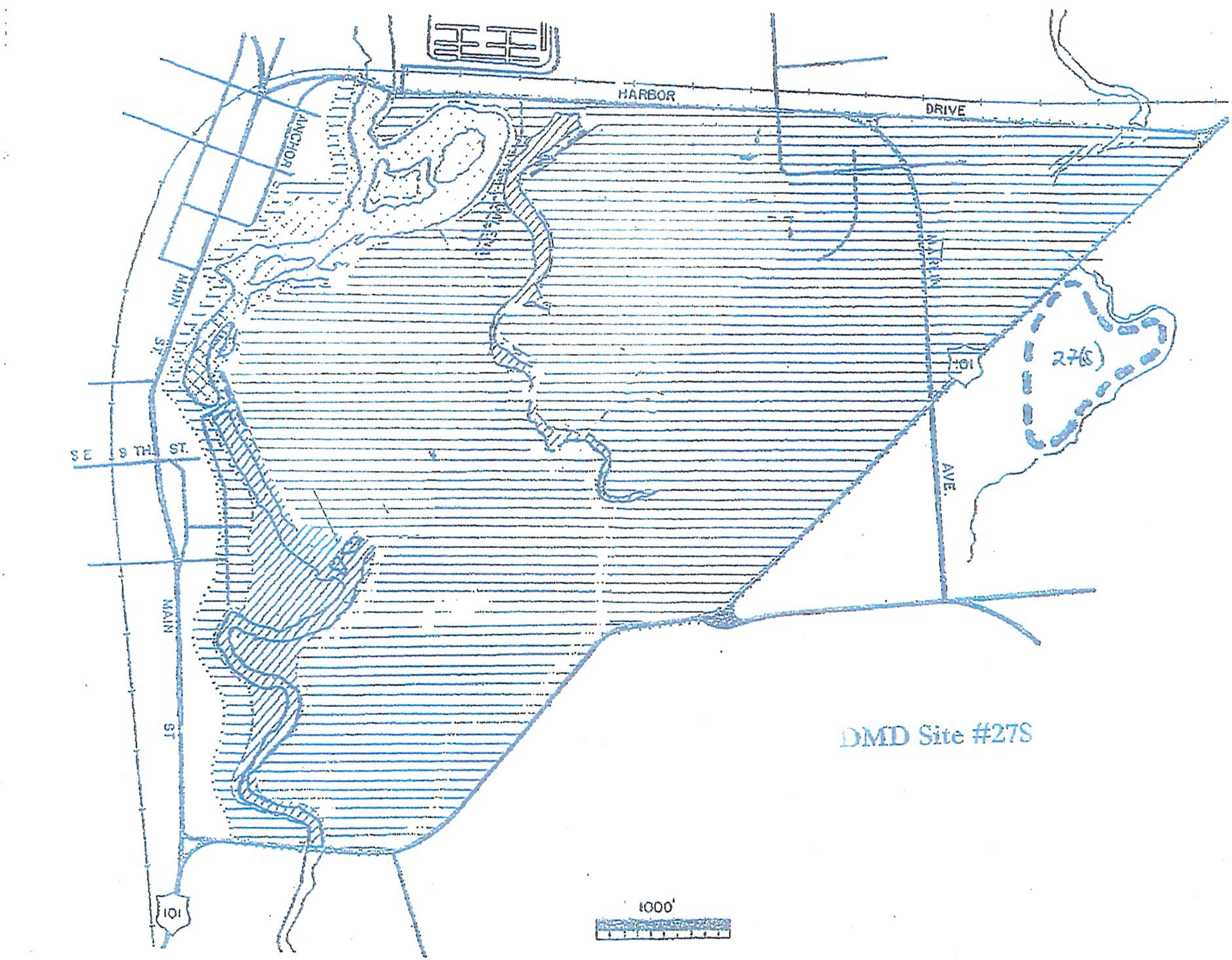
T8N R10W SEC 5 WM
CLATSOP COUNTY
Scale 1:4800
Cancelled Accounts.
FORT STEVENS STATE PARK
400
122.31 AC.
100
46.80 AC.
GOVT. LOT 5
23.82
GOVT. LOT 4
30.4
1/4 COR.
N.W. COR. KINDRED DLC. NO. 46
SEE MAP 8 10 5DD
SEE MAP 8 10 5DC
SEE MAP 8 10 5CD
SEE MAP 8 10 6
200
300
301
1.38 AC.
07.6
April 06, 2010
8.10.5

DMD Site #19S, 20S, 21S

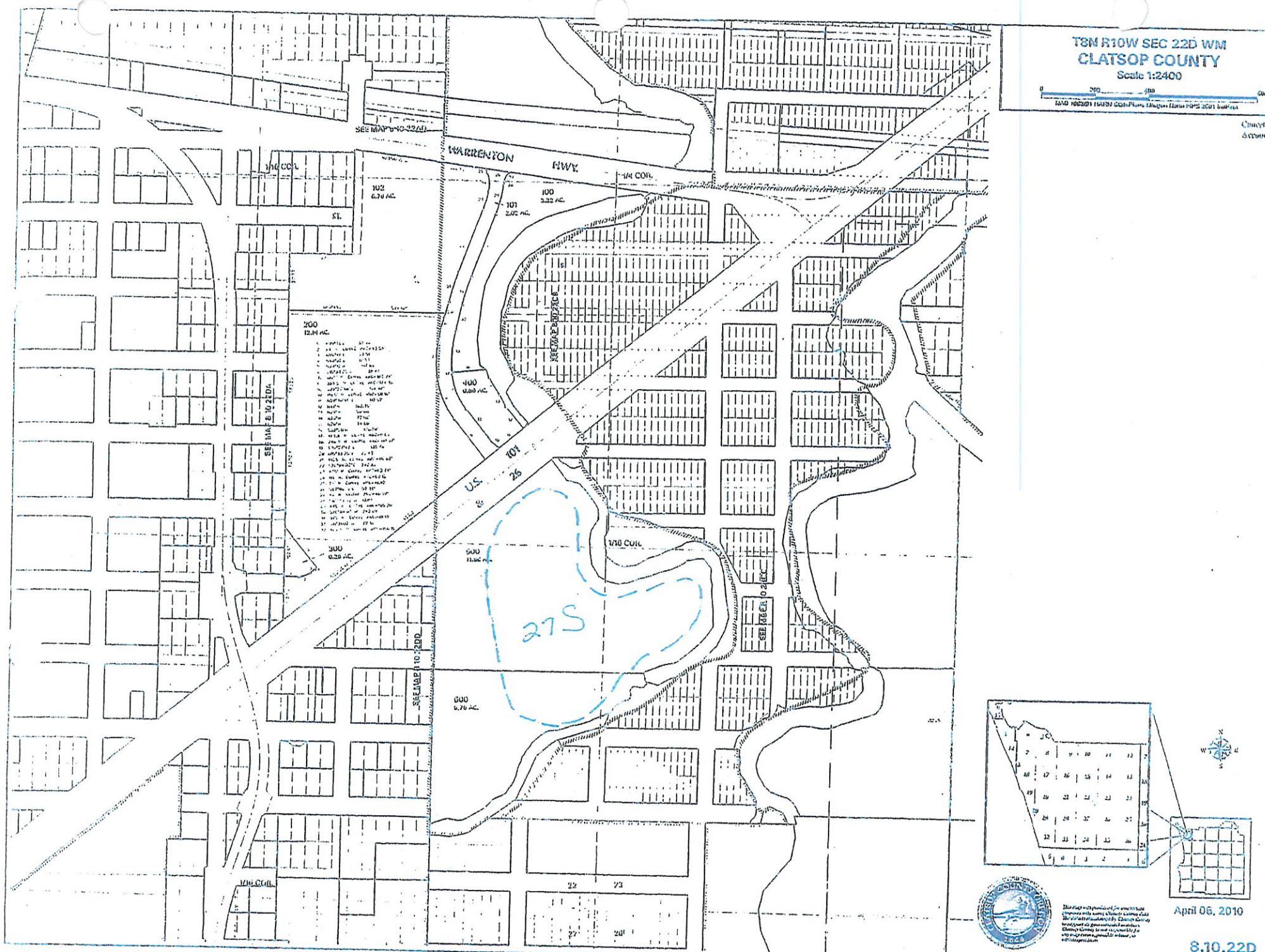



T8N R10W SEC 15 WM
CLATSOP COUNTY
Scale 1:4800
19S
20S
SEE MAP 8 10 10
SEE MAP 8 10 15C
SEE MAP 8 10 15D
SEE MAP 8 10 21AA
SEE MAP 8 10 22
SEE MAP 2 10 14
2600
2403
2400
2402
2401
2300
2700
2303
2301
2304
2201
April 06, 2010
8.10.15


T8N R10W SEC 16 WM
CLATSOP COUNTY
Scale 1:4800
SEE MAP 8 10 BC
PARCEL NO. 2
PARTITION
PLAT
PARCEL 1
SEE DETAIL SHEET
SEE MAP 8 10 17
PARCEL 2
WEST LINE D.L.C. 51
S.W. COR. D.L.C. 44
INT. ELL COR. D.L.C. 50
215
April 06, 2010
8.10.16



HARBOR
DRIVE
ANCHOR ST.
MAIN ST.
SE 9 TH ST.
MAIN
ST
AVE.
MARIN
101
27(S)
1000'
DMD Site #27S


T8N R10W SEC 22D WM
CLATSOP COUNTY
Scale 1:2400
WARRENTON HWY
U.S. 101
1/16 COR.
1/4 COR.
SEE MAP 8-10-22AD
SEE MAP 8-10-22DA
SEE MAP 8-10-22CB
SEE MAP 8-10-22CC
SEE MAP 8-10-22DD
102
6.70 AC.
101
2.05 AC.
100
3.32 AC.
200
12.14 AC.
100
0.80 AC.
300
0.29 AC.
500
11.66 AC.
600
6.76 AC.
27S
22
23
27
26
Compiled
Accounts
April 06, 2010
8.10.22D