COOS ESTUARY AND SHORELAND ATLAS

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COOS ESTUARY AND SHORELAND ATLAS

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Prepared for:
South Slough National Estuarine Research Reserve

Partnership for Coastal Watersheds
Coos County

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CHAPTER 1: OVERVIEW

This report presents an Estuary and Shoreland Atlas for the Coos Estuary. The Estuary and Shoreland Atlas provides data and maps that show current conditions and uses within the estuary. This Atlas provides updated information on physical and biological resources in the Coos estuary.

Designated as a Deep Draft estuary by the Oregon Estuary Classification system, the Coos estuary is the sixth largest on the U.S. west coast[1]. The estuary's abundance, diversity, and quality of natural resources as well as its economic and cultural values make the estuary a key regional asset. Statewide Planning Goals 16 and 17 require that local governments adopt policies to manage aquatic and shoreland estuarine resources. Coos County adopted the Coos Bay Estuary Management Plan (CBEMP) in the 1980s based upon information from a 1978 inventory of physical and biological resources. In 2016, the Community Service Center (CSC) Coos Bay Goal 16 Estuary Management Plan Assessment concluded that the plan is complex and out of date and made several recommendations regarding the legal framework, usability, and structure of the document. This Atlas provides information that will support a future update of the CBEMP.

The CSC prepared the Land Inventory Atlas to classify and document estuary features as outlined in federal, state, and local land use policies. Specific areas of interest include, identifying the development status and constraints of the land within the study area that have the potential to impact future development. The inventory identifies the environmental features that contribute to the estuary's ecological importance. The intent of this inventory is to aid in Coos County's development of more modern management policies and practices to reflect the needs of the communities within the region.

ORGANIZATION OF THE COOS ESTUARY AND SHORELAND ATLAS

The atlas is comprised of six chapters and an appendix:

Chapter 1 describes the background of the project within the larger context of the CBEMP update.

Chapter 2 lists the methods and rationale for developing the study area used in the inventory.

The remainder of this atlas is organized within four primary chapters around categories identified in Statewide Planning Goals 16 and 17.

Chapter 3 presents county and city zoning and CBEMP Management Unit designations.

Chapter 4 describes by tax parcels the land use, ownership and improvement status of lands within the study area.

Chapter 5 describes the physical features within the study area that may affect future development given physical or natural hazards present.

Chapter 6 describes areas of focus defined by criteria determined through stakeholder workshops and consultation with Oregon Department of Land Conservation and Development (DLCD) and Partnership for Coastal Watersheds (PCW).

Appendix A describes the greater methodology used to conduct the inventory, data sources used, and glossary.

Appendix B includes maps described in Chapters 3 through 6.

BACKGROUND AND CONTEXT

The South Slough National Estuarine Reserve (SSNERR) received grant funding from the National Estuarine Research Reserve System Science Collaborative (a program funded by the National Oceanic and Atmospheric Administration and managed by the University of Michigan Water Center) for an estuarine and shoreland zoning analysis, and an integrated assessment to help determine the highest and best uses of the estuarine lands. Additionally, Coos County has identified the need to update the CBEMP to reflect the current economic, environmental, and socio-cultural drivers in the community that have changed since the plan was adopted in the 1980s. Part of the process to update includes examining environmental changes and management of key natural resources within the CBEMP. While this inventory is not an update of the CBEMP, the results will help to inform residents, stakeholders, and decision-makers of the economic, environmental, and socio-cultural features of the estuary and create a dialogue about updating the plan.

The Partnership for Coastal Watersheds (PCW), in collaboration with Coos County and SSNERR, developed three main objectives for the Integrated Assessment Project:

1. Assist the County's Planning Department to create an inventory by collecting and analyzing current information: current land ownerships, designated land

[1] Oregon Coastal Atlas. "Coos Bay Estuary." Oregon Coastal Atlas: http://www.coastalatlas.net/ (retrieved August 17, 2017).

uses, and regulatory policies not clearly articulated in the current CBEMP; formatted for improved clarity and accessibility by CBEMP users.

2. Develop and report land use recommendations as proposed by local stakeholders that address three viewpoints: (1) economic development needs; (2) natural resource conservation and restoration needs; and 3) socio-cultural interests.
3. Develop a series of scenarios that integrate current development, social, and conservation criteria, and other potential land use or development opportunities to provide the County Planning Department a basis for public involvement during the anticipated CBEMP revision process[2].

The atlas (Objective 1) will provide Coos County with current estuarine and shoreland information for use in a future revision of the CBEMP. The integrated assessment will include a broader look at how the county manages the lands in the estuary, including determining allowable uses. That process will include consideration of economic, socio-cultural, and natural resource values. In short, the integrated assessment is a key first step in the process to update the CBEMP. Ultimately, any modifications to the CBEMP will be made through a local government land use process led by Coos County that will include ample opportunity for public input as well as required public hearings.

Policy Context

Management of lands within the estuary and adjacent shoreland are governed by a complex set of federal, state, and local policies. The following is a high-level description of key policies. Any update of the CBEMP will be required to comply with applicable federal and state policy.

Federal Policy

The Coastal Zone Management Act of 1972 created the National Estuarine Research Reserve System (NERRS) as part of the Federal Coastal Management Program. As indicated in the NERRS regulations, 15 C.F.R. Part 921.1(a), the National Estuarine Research Reserve System mission is to provide "the establishment and management, through federal-state cooperation, of a national system of Estuarine Research Reserves representative of the various regions and estuarine types in the United States[3]". Established to provide opportunities for long-term research, education, and interpretation to promote informed management of the Nation's estuaries and coastal habitats, Estuarine Research Reserves are a network of 29 coastal sites that consist of a partnership between the National Oceanic and Atmospheric Administration (NOAA) and coastal states. The South Slough National Estuarine Research Reserve (NERR) was designated in 1974 as the first site in the NERR system. It is the only NERR in Oregon and its state partner and administrative agency is the Oregon Department of State Lands[4]. The South Slough NERR is also subject to oversight from the Reserve Management Commission.

Oregon Planning Context

Goal 16 (Estuarine Resources) of Oregon's Statewide Planning Program requires counties with estuaries to develop management plans for those estuaries. Adopted to satisfy the requirements of Goal 16, the Coos Bay Estuary Management Plan (CBEMP) last underwent review in 1984. The intent of this project is to develop data that the county will use to update the CBEMP.

Goal 16: Estuarine Resources

Goal 16 is one of four Coastal goals and requires that appropriate local, state, and federal agencies develop comprehensive management strategies to meet the stated purpose of the goal:

To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and

To project, maintain, and where appropriate, develop and restore the long-term environmental, economic, and social values, diversity, and benefits of Oregon's estuaries.

Goal 16 requires inventories to "provide information on the nature, location, and extent of physical, biological, social, and economic resources in sufficient detail to establish

[2] Patnership for Coastal Watersheds. "Coos Estuary Land Use Inventory Project." Partnership for Coastal Watersheds: http://www.partnershipforcoastalwatersheds.org/coos-estuary-land-use-analysis-project/ (retrieved August 17, 2017).

[3] National Oceanic and Atmospheric Administration. "National Esturine Research Reserves." NOAA: https://coast.noaa.gov/nerrs/. (retrived August 17, 2017).

[4] South Slough Reserve. "South Slough National Estuarine Research Reserve Management Plan: 2017-2022." South Slough Reserve: http://www.oregon.gov/dsl/SS/Documents/SouthSloughReserve2017- 2022ManagementPlan.pdf (retrieved August 17, 2017).

[5] Oregon's Statewide Planning Goals & Guidelines. "Guidelines Goal 16: Estuarine Resources OAR 660-015- 0010(1)." Oregon Statewide Planning Goals & Guidelines: http://www.oregon.gov/LCD/docs/goals/goal16.pdf

a sound basis for estuarine management and to enable the identification of areas for preservation and areas of exceptional potential for development."[5]

Statewide Planning Goal 17: Coastal Shorelands

Goal 17 requires planning and management of lands adjacent to the estuary shoreline within the coastal shoreland boundary. The CBEMP boundary is the coastal shoreland boundary for Coos Bay. The estuary shoreline is the "area of non-aquatic vegetation or the area of mean higher high water, whichever is higher".[6]
The coastal shoreland boundary must extend a minimum of 50 feet upland of the estuary shoreline and includes areas subject to ocean flooding, geologic instability, riparian resources/vegetation, significant shoreland and wetland biological habitats, areas needed for water dependent and water-related uses, including dredged material disposal and mitigation sites, areas of exceptional aesthetic or scenic quality, and coastal headlands.[7]

Goal 17 require inventories to include hazard areas, existing land uses and ownership patters, economic resources, development needs, public facilities, topography, and hydrography, areas of aesthetic and scenic importance, wetlands, area of public access and recreation areas, riparian areas, sedimentation sources, archaeological and historical sites, and coastal headlands.[8]

Local Management

While the Oregon Land Use system provides state guidance, land use planning occurs at the local level. Local land use plans (including estuary management plans) are required to be consistent with state regulations and be acknowledged by the Oregon Land Conservation and Development Commission (LCDC). The CBEMP was acknowledged in the early 1980s.

The CBEMP includes an inventory consistent with Goal 16 and Goal 17 requirements. The CBEMP also includes identification of areas for preservation and areas of exceptional potential for development (OAR 660-015-0010 (1)). The Coos Bay Estuary is a deep-draft development estuary (OAR 660-017-0015) and is managed to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses consistent with Goal 16 requirements (OAR 660-017-0025).

PURPOSE AND METHODS

This project aims to inform land use decisions in the county; however, this atlas will not lead to an updated CBEMP. The CSC conducted an audit in 2016, the Coos Bay Goal 16 Estuary Management Plan Assessment, on the usability and legal framework of the current plan and created a set of recommendations intended to increase functionality of the structure and content of the CBEMP. The key conclusion of the audit was that the CBEMP needs to be modernized and simplified. The audit examined the CBEMP for consistency with changes to federal and state regulations since the plan's adoption. Additionally, the audit examined the usability of the plan and made recommendations for increased usability, including revision the plan structure in a future update. In summary, the audit provides guidance for local governments to consider during the update the CBEMP.

CSC prepared this land inventory atlas to build a geographic picture of land, land uses, and physical features in a defined study area. The land inventory atlas used available data sources; primarily geographic information system (GIS) data derived from a variety of sources.

This inventory provides data applicable to Goals 16 and 17 and:

- Defines a study area;
- Classifies land within the study area by zoning and use categories;
- Identifies areas of existing public access, recreation, and subsistence gathering;
- Identifies, at the tax parcel level, areas of improved and unimproved economic status (see Glossary in Appendix A);
- Identifies land with physical, environmental, or policy constraints (see Glossary in Appendix A); and
- Displays the results in a series of tables and maps (each Map includes only maps that display relevant data for the section subject).

Appendix A provides a more detailed discussion of data sources and methods used to compile this atlas.

[6] Department of Land Conservation and Development. "The Oregon estuary plan book." 1987. http://hdl.handle.net/1957/42391

[7] Oregon's Statewide Planning Goals & Guidelines. "Guidelines Goal 17: Coastal Shorelands OAR 660-015- 0010(2)." Oregon Statewide Planning Goals & Guidelines: http://www.oregon.gov/LCD/docs/goals/goal17.pdf

[8] Ibid.

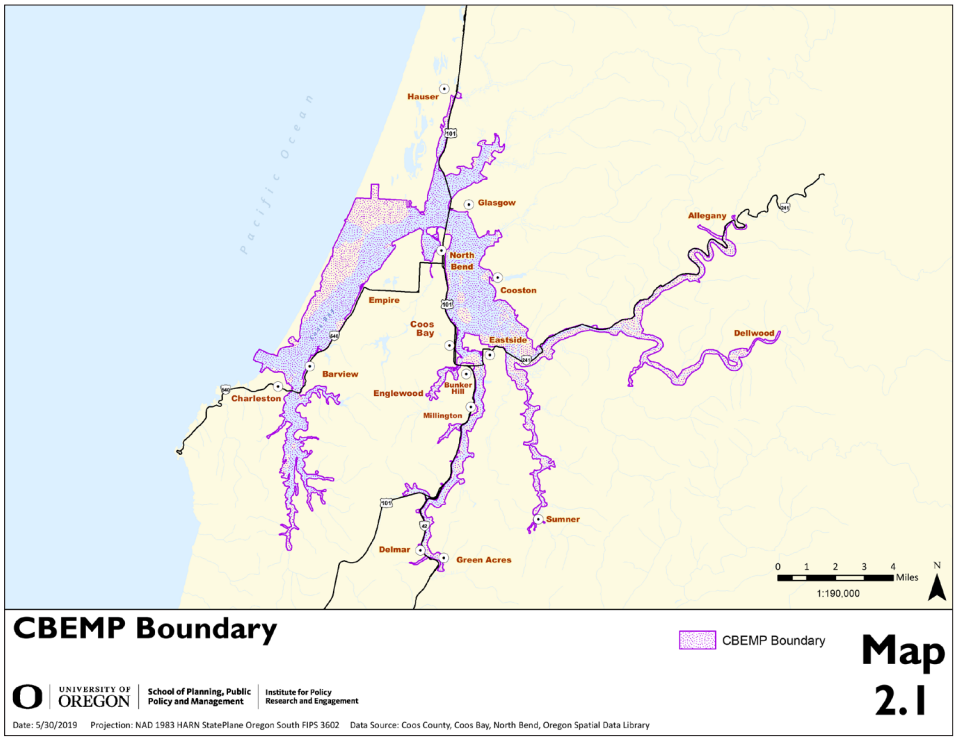
CHAPTER 2: STUDY AREA

The first step in the atlas was to define a study area boundary. Coos County currently has an adopted estuary management plan boundary covering the water and land governed by Goal 16 (Estuarine Resources) and Goal 17 (Coastal Shorelands). The atlas uses a broader study area boundary that extends onto adjacent lands. This chapter presents the definition and rationale of the study area used in this report.

DEFINING THE STUDY AREA

The CBEMP boundary defines the areas governed by Statewide Planning Goals 16 and 17. In short, the CBEMP zoning and land use requirements only apply within the plan boundary. The CBEMP boundary is defined by the submerged, intertidal, and upland areas that are regulated by Statewide Planning Goals 16 and 17.[9]

The atlas study area was expanded beyond the existing CBEMP boundary in order to: (1) provide a broader context of potentially impacting land uses and features within, and adjacent to, the CBEMP boundary (estuary and shorelands), and (2) provide context for lands that are potentially at risk of flooding due to sea level rise projections and/or tsunami inundation.



Map 2.1: *CBEMP Boundary*

The Oregon Department of Geology and Mineral Industries (DOGAMI) has been mapping tsunami inundation along the Oregon Coast since the mid-1990s. The tsunami inundation maps assist counties, cities, and other jurisdictions to plan for, and mitigate the risk from, the potential disastrous impacts of tsunami. DOGAMI has mapped five scenarios that are labeled as "T-Shirt sizes" (S, M, L, XL, and XXL) that reflect the range of tsunami impacts that are possible in the future.

The XXL inundation zone marks the upper elevations where tsunami could potentially impact the estuary and adjacent lands. The XXL inundation zone also encompasses lands that are vulnerable to flooding due to sea level rise and includes lands adjacent to the CBEMP boundary. As such, the boundary for this study area encompasses the entire estuary (including aquatic and terrestrial areas), as well as the adjacent XXL Tsunami Zone. The boundary includes lands within the urban growth boundaries and city limits of both Coos Bay and North Bend.[10]

Map 2.1 shows the CBEMP boundary

Map 2.2 shows the XXL tsunami inundation zone

Map 2.3 shows the study area boundary and tax parcels

Map 2.4 shows the study area and Coos watersheds

For more information on the XXL tsunami inundation zone, visit the DOGAMI Oregon Tsunami Clearinghouse: http://www.oregongeology.org/tsuclearinghouse/default.htm

[9] CBEMP, Vol. II, Part 2, Section 3.1.

[10] Oregon Department of Geology and Mineral Industries. "Oregon Tsunami Clearinghouse." Oregon Department of Geology and Mineral Industries: http://www.oregongeology.org/tsuclearinghouse/pubs.htm (retrieved August 17, 2017).

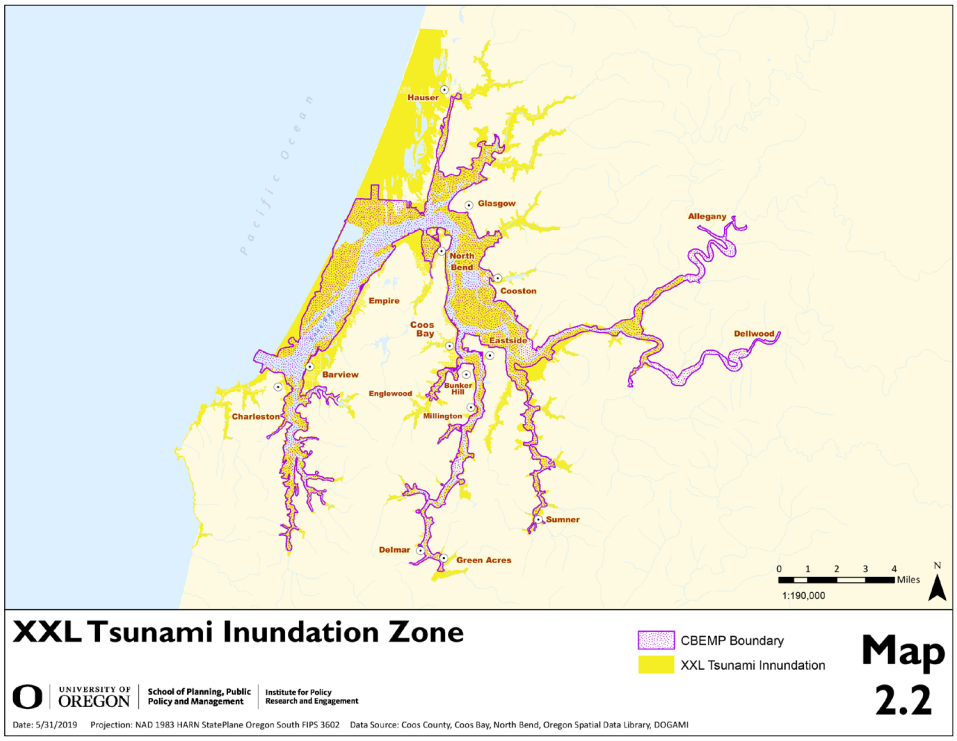
ESTUARY AND SHORELAND INVENTORY

Chapter 3 through 6 identify the economic, environmental, and physical features of the estuary and surrounding areas. The inventory includes zoning, land use, and ownership within the study area. The inventory examines assessed improvements within the study area, including the improvement status and improvement to land value ratios of tax parcels. The chapter concludes with an inventory of environmental and physical constraints within the study area. This inventory uses tax parcels as the unit of analysis and classifies all land into the jurisdictions of Coos County and cities of Coos Bay and North Bend.

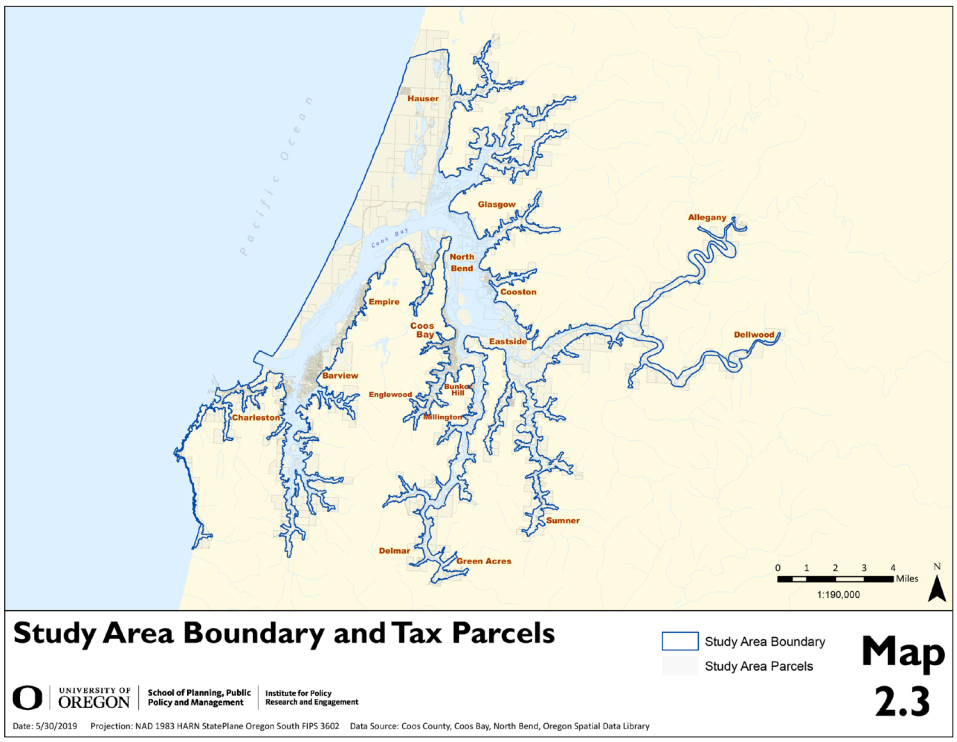
Organization of the Inventory

The following section divides the components of the inventory into four chapters that meet Goal 16 and 17 requirements for completing an inventory of estuarine resources.

- Chapter 3 shows zoning and CBEMP Management Units
  - Map 3.1: Generalized Zoning
  - Map 3.2: Management Units
  - Map 3.3: Property Use Classification
- Chapter 4 describes the land use patterns (including lands with businesses), ownership, and improvement status of tax parcels
  - Map 4.1: Improvement Status
  - Map 4.2: Improvement Value Ratio
  - Map 4.3: Public Ownership
  - Map 4.4: Active and Inactive Diking Districts
  - Map 4.5: Fire Districts
  - Map 4.6: School Districts



Map 2.2: *XXL sunami Inundation Zone*

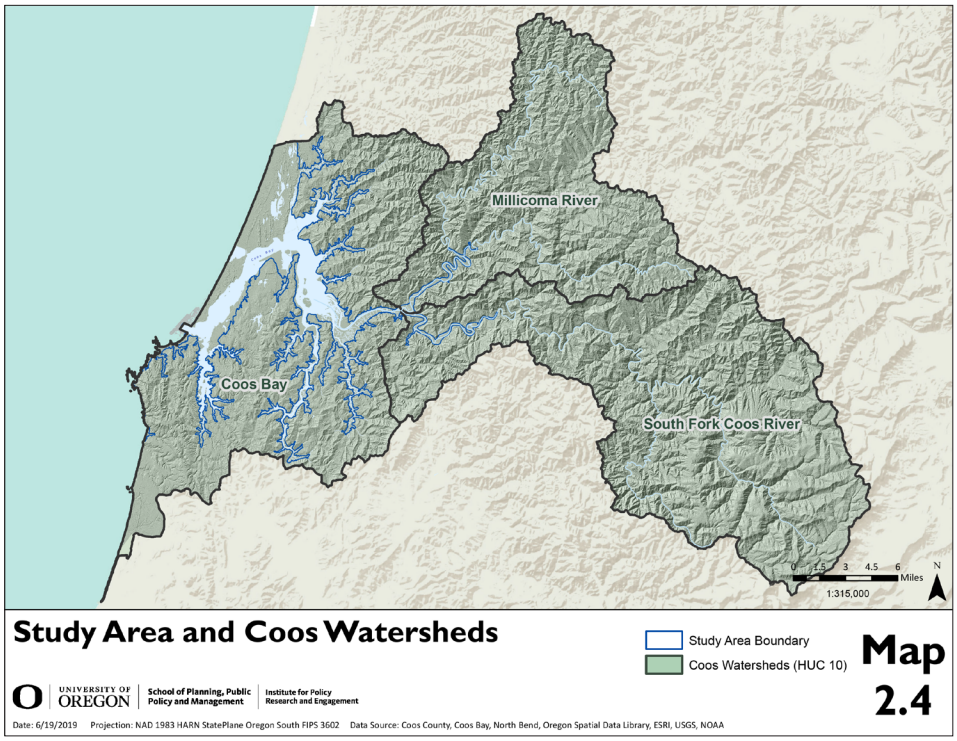


Map 2.3: *Study Area Boundary and Tax Parcels*

- Map 4.7: Coos Bay-North Bend Water Board
- Map 4.8: Employment Density

- **Chapter 5 shows environmental features, natural hazards, and physical features**
  - Map 5.1: Eelgrass and Snowy Plover
  - Map 5.2: Oyster Beds and Clam Beds
  - Map 5.3: Flood Zones
  - Map 5.4: Landslide Susceptibility
  - Map 5.5: Slope
  - Map 5.6: National Wetlands Inventory
  - Map 5.7: Local Wetlands Inventory
  - Map 5.8: Sea Level Rise (2100)
  - Map 5.9: Tsunami Inundation
  - Map 5.10: Estuary Features
  - Map 5.11: CMECS Aquatic
  - Map 5.12: CMECS Biotic
  - Map 5.13: CMECS Physical (Geoform)
  - Map 5.14: CMECS Geologic Substrate

- **Chapter 6 identifies CBEMP Focus Areas**
  - Map 6.1: Dredged Material Disposal Sites
  - Map 6.2: Mitigation Sites
  - Map 6.3: Tidal Wetland Landward Migration Zone (LMZ) Prioritization
  - Map 6.4: Urban Renewal Districts
  - Map 6.5: Economic Zones



Map 2.4: *Study Area and Coos Watersheds.*

CHAPTER 3: ZONING, MANAGEMENT UNITS, AND PROPERTY USE

Table 1: Generalized Zoning Designations

CSC DESIGNATIONS	COUNTY ZONES	COOS BAY ZONES	NORTH BEND ZONES
Agriculture and Forestry	EFU, F		
Employment	C, IND	C, I	M-H, C-G, C-L, M-L, A-Z
Mixed Commercial-Residential	CD, RD	MX	
Recreational	REC, Q-REC, BDR	UP, TL, W, W-H	
Residential	RR, UR	LDR, MDR	R-M, R-T, R-5, R-6,R-7, R-10
South Slough	SS, MES		
Airport	AO		

Source: Information retrieved from Coos County, Coos Bay, and North Bend Zoning Codes, categorized by the Community Service Center.

Zoning is a land use planning tool that allows jurisdictions to regulate how land is developed. CSC created seven generalized zoning designations for Coos County, Coos Bay, and North Bend to allow comparison across jurisdictions. Coos County has 14 unique zones within the study area (not including management units), Coos Bay has seven (7), and North Bend has 11 (Table 1). Table 1, Table 2, Map 3.1, and Map 3.2 present generalized zoning; however, the specific zoning category for each tax parcel is available in the attribute tables included within the geographic information system (GIS) geodatabase provided as an supplement to this report.

Zones within the CBEMP boundary are designated as Management Units, which are defined as, "A discrete geographic area, defined by biophysical characteristics and features within which particular uses and activities are promoted, encouraged, protected, or enhanced and others are discouraged, restricted, or prohibited."[11] The CBEMP includes three management units that apply to both aquatic and shoreland areas: Conservation, Development, and Natural. Table 3.2 shows the 12 county zones that relate to these generalized management unit classifications.

Table 2: Generalized Management Units

MANAGEMENT UNITS	COUNTY ZONES
Conservation	CA,CS
Development	DA, DS, UD, UDS, UW, WD
Natural	NA, NS, NWD, RS

Source: Information retrieved from Coos County, Coos Bay, and North Bend Zoning Coded, categorized by the Community Service Center.

Conservation Management Units

Conservation management units consist of Conservation Aquatic (CA), and Conservation Shoreland (CS), zones. These management units are defined as:

> *"[…] areas shall be designated for long-term uses of renewable resources that do not require major alteration of the estuary, except for the purpose of restoration. These areas shall be managed to conserve the natural resources and benefits. These shall include 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 the "Natural" management unit, and recreational or commercial oyster and clam beds not included in the "Natural" management unit. Areas that are partially altered and adjacent to existing development of moderate intensity which do not possess the resource characteristics of natural or development units may also be included in this classification."*[12]

Development Management Units

Development management units consist of Development Aquatic (DA), Development Shorelands (DS), Urban Development (UD), Urban Development Shorelands (UDS), Urban Water (UW), and Water Dependent (WD) zones. These management units are defined as:

> *"[…] areas shall be designated to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses consistent with the level of development or alteration allowed by the overall Oregon Estuary Classification. Such*

[11] Oregon Department of Land Conservation & Development. "Oregon's Statewide Planning Goals and Guidelines." Oregon Department of Land Conservation & Development: http://www.oregon.gov/LCD/docs/goals/oldgoal14definitions.pdf (retrieved August 17, 2017).

[12] Oregon Department of Land Conservation & Development. "Coos Bay Estuary Management Plan Vol. II, Section 3." Oregon Department of Land Conservation & Development: http://www.oregon.gov/LCD/OCMP/docs/Public_Notice/Coos_CBEMP_EPs.pdf (retrieved August 17, 2017).

areas shall include deep-water areas adjacent or in proximity to the shoreline, navigation channels, subtidal areas for in-water disposal of dredged material, and areas of minimal biological significance needed for uses requiring alterations of the estuary not included in "Natural and Conservation" management units." [13]

Natural Management Units

Natural management units consist of Natural Aquatic (NA), Natural Shorelands (NS), Natural Water Dependent (NWD), and Rural Shorelands (RS) zones. These management units are defined as:

"[…] areas shall be 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 shall be managed to preserve the natural resources in recognition of dynamic, natural, geological, and evolutionary processes. Such areas shall include, at a minimum, all major tracts of saltmarsh, tideflats, and seagrass and algae beds." [14]

MAP 3.1: GENERALIZED ZONING

This section shows generalized zoning within the study area. Land within the study area has been zoned (including aquatic and shoreland estuary management units) to define where specific uses are allowed. Generally, zoning is applied upon tax parcels, however, some aquatic management units within the estuary are in areas without tax parcels.

Map 3.1 (Appendix B) displays the tax lots and aquatic areas by generalized zone within the study area boundary. The data is reported for Coos County, Coos Bay Urban Growth Boundary (UGB), and North Bend UGB. Coos County data is limited to the areas outside of the city UGBs.

Management units are shown as a primary zone within the county. However, within the cities of Coos Bay and North Bend the management units are shown as zoning districts that overlap with the primary use zones of each city. Table 3 shows the primary use zones within the county and cities. Additional detail on management unit zoning designations is presented in Map 3.2: Management Units (Appendix B).

Data used for map and analysis:

- Coos County Zoning (Coos County)
- Coos Bay Zoning (Coos Bay)
- North Bend Zoning (North Bend)

Study Area

The study area includes 54,854 acres, 22,625 acres (41%) are within the CBEMP boundary and 32,229 acres (59%) is outside the CBEMP boundary. The area zoned for management units accounts for the largest area within the study area with 21,458 acres (39%). The agriculture and forestry zone accounts for the second largest area within the study area (17,808 acres, 32% of total acres).

Coos County

In Coos County, agriculture and forestry zones and management units account for the largest areas with 17,808 acres (37% of total acres) and 17,626 acres respectively (37% of total acres). Tax parcels account for 88% of the zoning area, while 12% is within the estuary waters that are not on tax parcels.

Coos Bay

In the Coos Bay UGB, management units have the largest acreage with 3,780 acres (76% of the acres within the Coos Bay UGB). Tax parcels account for 64% of the zoning area, while 36% is within the estuary waters that are not on tax parcels.

Note: Some tax parcels have both a primary zone and a secondary management unit zone designation. Table 4 shows detailed information for management units within the Coos Bay study area.

North Bend

In the North Bend UGB, employment zones account for the largest acreage with 857 acres (46% of the total acres within the North Bend UGB). Tax parcels account for 77% of the zoning area, while 23% is within the estuary waters that are not on tax parcels.

Note: Some tax parcels have both a primary zone and a secondary management unit zone designation. Table 4 shows detailed information for management units within the North Bend study area.

[13] Oregon Department of Land Conservation & Development. "Coos Bay Estuary Management Plan Vol. II, Section 3." Oregon Department of Land Conservation & Development: http://www.oregon.gov/LCD/OCMP/docs/Public_Notice/Coos_CBEMP_EPs.pdf (retrieved August 17, 2017).

[14] Oregon Department of Land Conservation & Development. "Coos Bay Estuary Management Plan Vol. II, Section 3." Oregon Department of Land Conservation & Development: http://www.oregon.gov/LCD/OCMP/docs/Public_Notice/Coos_CBEMP_EPs.pdf (retrieved August 17, 2017).

Table 3: Generalized Zoning in the Study Area, by Jurisdiction

ZONING DESIGNATION	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Agriculture and Forestry	**17,808**	**37%**	**0**	**0%**	**0**	**0%**	**17,808**	**32%**
Within CBEMP Boundary	0	0%	0	0%	0	0%	0	0%
Outside CBEMP Boundary	17,808	37%	0	0%	0	0%	17,808	32%
Recreational	**6,529**	**14%**	**155**	**3%**	**0**	**0%**	**6,684**	**12%**
Within CBEMP Boundary	0	0%	38	1%	0	0%	38	0%
Outside CBEMP Boundary	6,529	14%	117	2%	0	0%	6,646	12%
South Slough NERR	**2,166**	**5%**	**0**	**0%**	**0**	**0%**	**2,166**	**4%**
Within CBEMP Boundary	0	0%	0	0%	0	0%	0	0%
Outside CBEMP Boundary	2,166	5%	0	0%	0	0%	2,166	4%
Management Units	**17,626**	**37%**	**3,780**	**76%**	**51**	**3%**	**21,458**	**39%**
Within CBEMP Boundary	17,626	37%	3,780	76%	51	3%	21,458	39%
Outside CBEMP Boundary	0	0%	0	0%	0	0%	0	0%
Employment	**555**	**1%**	**549**	**11%**	**857**	**46%**	**1,961**	**4%**
Within CBEMP Boundary	0	0%	293	6%	581	31%	874	2%
Outside CBEMP Boundary	555	1%	256	5%	276	15%	1,087	2%
Airport	**0**	**0%**	**0**	**0%**	**663**	**36%**	**663**	**1%**
Within CBEMP Boundary	0	0%	0	0%	236	13%	236	0%
Outside CBEMP Boundary	0	0%	0	0%	427	23%	427	1%
Mixed Use	**0**	**0%**	**56**	**1%**	**0**	**0%**	**56**	**0%**
Within CBEMP Boundary	0	0%	0	0%	0	0%	0	0%
Outside CBEMP Boundary	0	0%	56	1%	0	0%	56	0%
Residential	**3,262**	**7%**	**404**	**8%**	**277**	**15%**	**3,943**	**7%**
Within CBEMP Boundary	0	0%	15	0%	4	0%	19	0%
Outside CBEMP Boundary	3,262	7%	389	8%	273	15%	3,924	7%
Mixed Commercial-Residential	**114**	**0%**	**0**	**0%**	**0**	**0%**	**114**	**0%**
Within CBEMP Boundary	0	0%	0	0%	0	0%	0	0%
Outside CBEMP Boundary	114	0%	0	0%	0	0%	114	0%
Total	**48,060**	**100%**	**4,944**	**100%**	**1,848**	**100%**	**54,854**	**100%**
Total within CBEMP Boundary	17,626	37%	4,126	83%	872	47%	22,625	41%
Total outside CBEMP Boundary	30,434	63%	818	17%	976	53%	32,229	59%
Total (on tax parcels)	42,518	88%	3,152	64%	1,414	77%	47,084	86%
Total (not on tax parcels)	5,542	12%	1,792	36%	434	23%	7,768	14%

Source: Tax lot and zoning data provided by Coos County, Coos Bay, and North Bend; analysis by the Community Service Center.

Notes: Each zoning designation acreage total includes only the total of each primary zone and does not include totals for management units that act as overlays. More detailed accounting for zones that have both a zoning designation and management unit designation is included in section 3.2: Management Units.

MAP 3.2: MANAGEMENT UNITS

This section displays the management units within the study area boundary[15]. Map 3.2 displays the aquatic and terrestrial management units, which include: natural, conservation, and development categories. Management units are defined as, "a discrete geographic area, defined by biophysical characteristics and features, within which particular uses and activities are promoted, encouraged, protected, or enhanced, and others are discouraged, restricted, or prohibited."[16]

Most management units are within tax parcels in the study area; however, some aquatic management units within the estuary waters are not broken into parcels. For these management units, the CSC calculated the acres and management unit type within each jurisdiction.

The CSC calculated the acreage totals for management units by jurisdiction of Coos County and the cities of Coos Bay and North Bend. Coos County designates management units as their own zones, while the cities display management units as zoning districts that overlap with the use zones of each city. To account for this discrepancy, the CSC lists both the total number of acres of management unit designations and the number of acres of management units that overlap other zones. The total number of management units includes both independently designated management units and those that overlap other zoning designations.

Table 4 lists the acreage and percentage of management units within the study area by jurisdiction. All percentage totals for each jurisdiction are calculated from the total number of acres within each jurisdiction. This includes the acres of areas both on and off tax parcels.

Data used for map and analysis:

- Coos County Zoning – Management Units (Coos County)

Table 4: Management Units on Tax Parcels, Acreage Totals and Percent of Total Study Area

MANAGEMENT UNITS	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Conservation Aquatic	2,006	11%	530	13%	201	23%	2,737	12%
With another primary zo	-	-	0	0%	189	22%	189	1%
Conservation Shoreland	1%	8%	283	7%	4	0%	1,721	8%
With another primary zo	-	-	29	1%	4	0%	33	0%
Development Aquatic	1,117	6%	414	10%	158	18%	1,689	7%
With another primary zo	-	-	0	0%	33	4%	33	0%
Development Shoreland	2,294	13%	320	8%	118	14%	2,732	12%
With another primary zo	-	-	314	8%	115	13%	429	2%
Natural Aquatic	5,947	34%	2,577	62%	388	45%	8,912	39%
With another primary zo	-	-	0	0%	374	43%	374	2%
Natural Shoreland	4,829	27%	3	0%	0	0%	4,832	21%
With another primary zo	-	-	3	0%	0	0%	3	0%
Total	17,627	100%	4,127	100%	869	100%	22,623	100%
With another primary zo	-	-	329	8%	407	47%	736	3%

Source: Tax lot and zoning data provided by Coos County, Coos Bay, and North Bend; analysis by the Community Service Center.

Table notes: The top listing for each management unit type includes the total number of acres of management units. This includes zones that are solely zoned as a management unit and those that have both a zoning designation and management unit designation. The second listing is an itemized account for how many acres of the total management unit acres have an additional zoning designation (e.g. a residential zone that also includes a management unit designation).

These numbers are not included in the total to avoid double counting.

[15] Appendix A includes the uses and activities for each management unit type found in the Coos County Development Code.

[16] Oregon Department of Land Conservation and Development. "Oregon's Statewide Planning Goals and Guidelines." Oregon Department of Land Conservation and Development: http://www.oregon.gov/LCD/docs/goals/oldgoal14definitions.pdf (retrieved August 17, 2017).

Study Area

Natural Aquatic management units are the largest category in the study area with 8,912 acres (39% of the total study area), which includes management units both on and off tax parcels. Of the total management units in the study area, about 3% have another primary zone designations in addition to the management unit designation.

Coos County

Natural Aquatic management units are the largest category within the Coos County portion of the study area with 5,947 acres (34% of total acres within the county study area), followed by Natural Shoreland with 4,829 (27% of the total acres within the county study area). None of the total management units in the Coos County study area have another primary zone designation.

Coos Bay

Natural Aquatic management units are the largest category within the Coos Bay UGB with 2,577 acres (62% of the total acres within the Coos Bay UGB study area). Of the total management units in the Coos Bay study area, about 8% have another primary zone designations in addition to the management unit designation.

North Bend

Natural Aquatic management units are the largest category within the North Bend UGB with 388 acres (45% of the total acres within North Bend study area). Of the total management units in the North Bend study area, about 47% have another primary zone designation in addition to the management unit designation.

MAP 3.3: PROPERTY USE CLASS

This section shows generalized property use within the study area. The original system of property classification consists of numeric codes in ten categories: 000-miscellaneous, 100-residential, 200-commercial, 300-industrial, 400-tract, 500-farm, 600-forest, 700-multi-family, 800-recreation, and 900-exempt. The CSC generalized property use classes into five categories (1) residential, (2) commercial, (3) industrial, (4) resource, and (5) exempt, as shown in Table 5.

Table 5: Generalized Property Use Class

DESIGNATION	PROPERTY CLASS
Residential	100, 700
Commercial	200
Industrial	300
Resource	400, 500, 600
Exempt	900

Source: Coos County Assessor; analysis by Community Service Center
Note:Property class categories not within the study area (000, 800) are excluded.

Map 3.3 displays the existing property use classes based on the tax assessor property classification. The land use map displays the current use of the property and not the zoned use. However, zoning and land use in many cases match within the study area. Detailed information about each property class is available in the geodatabase.

The CSC calculated, by jurisdiction, the acreage coverage of each land use designation within the study area that are located on tax parcels (Table 6).

Data used for map and analysis:

- Coos County Assessor's Tax Lot Data (Coos County)

Table 6: Generalized Property Use Class, by Jurisdiction

PROPERTY USE DESIGNATION	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Residential	2,006	11%	530	13%	201	23%	2,737	12%
Commercial	-	-	0	0%	189	22%	189	1%
Industrial	1%	8%	283	7%	4	0%	1,721	8%
Resource	-	-	29	1%	4	0%	33	0%
Exempt	1,117	6%	414	10%	158	18%	1,689	7%
Total	17,627	100%	4,127	100%	869	100%	22,623	100%
With another primary zo	-	-	329	8%	407	47%	736	3%

Source: Coos County, Coos Bay, and North Bend, analysis by Community Service Center

Study Area

Within the study area, resource land account for 21,970 acres (46% of tax parcel acres). Exempt land accounts for 18,579 acres (39% of tax parcel acres), residential land for 3,931 acres (8% of tax parcel acres), industrial land for 1,989 acres (4% of tax parcel acres), and commercial land for 855 acres (2% of tax parcel acres).

Coos County

The largest property use class within the county study area is resource land with 21,552 acres (50% of county tax parcel acres). Exempt land within the county accounts for 15,570 acres (36% of county tax parcel acres).

Coos Bay

The largest property use class within the Coos Bay UGB study area is exempt land at 2,133 acres (67% of the total study area Coos Bay UGB acres). Resource land and residential land account for 368 acres (12%) and 323 acres (10%) respectively.

North Bend

The largest property use class within the North Bend UGB study area is exempt land at 876 acres (61% of the total study area North Bend acres). Industrial, residential, and commercial land account for 196 acres (14%), 184 acres (13%), and 135 acres (9%) respectively.

CHAPTER 4: ECONOMIC LAND USE, OWNERSHIP, AND IMPROVEMENT STATUS

This chapter is divided into the policy and market conditions that may prohibit or impact development within the study area.

Economic, land use, ownership, and improvement status are shown on eight series of maps:

- Map 4.1 displays improvement status based on the property class (PCLS) field.
- Map 4.2 displays the improvement value ratio (IVR) of Real Market Value to Improvement Ratio for tax lot parcels within the study area.
- Map 4.3 shows public ownership within the study area.
- Map 4.4 shows active and inactive diking districts within the study area.
- Map 4.5 shows fire districts within the study area.
- Map 4.6 shows school districts within the study area.
- Map 4.7 shows the Coos Bay-North Bend water board within the study area.
- Map 4.8 shows employment density for the study area

MAP 4.1: IMPROVEMENT STATUS

Map 4.1 displays the improvement status of tax parcels in the study area. Properties are considered either improved or unimproved by the County Assessor's office.

Using Coos County Assessor's data, the CSC calculated the improvement status using the third digit of the Property Class (PCLS) field. A value of one (xx1) indicates that the property is improved while a value of zero (xx0) indicates that the property is unimproved/vacant. Additionally, all properties that had less than $10,000 worth of improvements were considered to be "unimproved." The improvement status map identifies areas with a concentration of unimproved properties surrounded by improved parcels.

The CSC calculated, by jurisdiction, the unimproved and improved parcel coverage within the study area, and the number of acres and the total percentage for unimproved and improved tax lots within the study area (Table 7).

Data used for map and analysis:

- Coos County Assessor's Tax Lot Data (Coos County)

Study Area

Within the study area, there are 17,263 improved tax parcel acres and 30,061 unimproved tax parcel acres. The unimproved tax parcels include areas within the county are natural resources lands, parks, or recreation areas.

Coos County

The study area tax parcel acreage within the County is 42,701 acres, of which 26,946 acres (63% of the county study area parcel acres) is unimproved. Most unimproved areas are natural resource lands, parks, and recreation areas. This analysis and Map was produced from economic data from the county assessor, as such, protected areas that have over the $10,000 improved value threshold, such as the South Slough Interpretive Center, are deemed improved.

Coos Bay

Of the study area tax parcels inside the Coos Bay UGB, 597 acres (19% of the Coos Bay study area acres) are improved. The remaining 2,585 acres are unimproved (81% of the Coos Bay study area acres). A large portion of the unimproved lands on tax parcels are natural resource areas within the estuary.

North Bend

Of the lands inside the North Bend UGB, 911 acres (63% of the North Bend tax parcels within the study area) are

Table 7: Improved and Unimproved Tax Parcel Acreages, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Improved	15,755	37%	597	19%	911	63%	17,263	36%
Unimproved	26,946	63%	2,585	81%	530	37%	30,061	64%
Total	42,701	100%	3,182	100%	1,441	100%	47,324	100%

Source: Assessor's data provided by Coos County; analysis by the Community Service Center.
Note: Aquatic areas within the study area that is not on tax parcels was not included in this analysis.

improved. The remaining 530 acres are unimproved (37% of the North Bend study area acres). This high percentage of improved acres is due to the amount of developed tax parcels and private lands within the UGB.

MAP 4.2: IMPROVEMENT VALUE RATIO

Map 4.2 displays the ratio of the value of improvements to the market land value (IVR) for tax lots within the study area. CSC calculated the IVR using the Real Market Improvements (RMI) divided by the Real Market Assessed Value (RMAV).

Data provided by the Coos County Assessor's office include RMI and RMAV. IVRs are an important tool in identifying underutilized properties. An IVR less than 0.1 indicates minimal or no improvements have been completed on that tax parcel. The IVR information used in conjunction with constrained property data provides information on the value.

The CSC calculated, by jurisdiction, the number of acres and the total percentage for each IVR category within the study area (Table 8).

Data used for map and analysis:

- Coos County Assessor's Tax Lot Data (Coos County)

Study Area

Most protected areas, such as parks and the South Slough NERR lands, have zero improvement value. As such, a large percentage of tax parcels within the study area, approximately 65% of tax parcels within the study area, has an IVR less than 0.1. The largest ratios, those having a value greater than 10, are largely lands zoned for Agriculture and Forestry. Other common zone designation examples for this category include city use and a wide range of management units.

Coos County

Like the entire study area, the county has a large number of tax parcels with low IVRs. About 65% of tax parcels within the county study area, excluding cities, have an IVR less than 0.1 and 77% have a ratio of 1-to-1 or less.

Coos Bay

Eighty-one percent of tax parcels within Coos Bay UGB study area exhibit IVRs of 0.1 or below. This is due to several large tracts of land bordering the estuary itself. Tax parcels within the urbanized areas have much smaller acreages but higher IVRs.

North Bend

Within the North Bend UGB, 76% of tax parcels have an IVR of 1 or less. While large areas, 38% of the total, have an IVR of less than 0.1, 29% have values between 0.6 and 1, indicating higher percentages of lands with improvements within the UGB.

Table 8: Improvement Value Ratio Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Less than 0.1	27,559	65%	2,585	81%	547	38%	30,691	65%
0.1 - 0.5	2,791	7%	56	2%	169	12%	3,016	6%
0.6 - 1.0	2,213	5%	95	3%	411	29%	2,719	6%
1.1 - 1.5	1,421	3%	120	4%	116	8%	1,657	4%
1.6 - 3.0	4,093	9%	220	7%	59	4%	4,372	9%
3.1 - 10	3,648	9%	94	3%	92	6%	3,834	8%
Greater than 10	976	2%	12	0%	47	3%	1,035	2%
Total	42,701	100%	3,182	100%	1,441	100%	47,324	100%

Source: Assessor's data provided by Coos County; analysis by the Community Service Center.
Note: Aquatic areas within the study area that is not on tax parcels was not included in this analysis.

Table 9: Public Ownership Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
County and Cities	769	2%	294	6%	714	52%	1,777	4%
Coquille Indian Tribe Trust	542	1%	59	1%	18	1%	619	1%
Tribes of Coos	2	0%	2	0%	0	0%	4	0%
Federal	7,321	18%	6	0%	11	1%	7,338	16%
State	1,946	5%	410	9%	9	1%	2,365	5%
Special Districts*	191	0%	89	2%	41	3%	321	1%
Port of Coos Bay	1,322	3%	1,295	28%	2	0%	2,619	6%
South Slough	3,297	8%	0	0%	0	0%	3,297	7%
Total	15,390	37%	2,155	47%	795	58%	18,340	39%

Source: Assessor's data provided by Coos County; analysis by the Community Service Center.
*Note: * = Special Districts are comprised of rural fire protection districts, diking districts, school districts, and water boards, shown in Map 4.4 through 4.7.*

MAP 4.3: PUBLIC OWNERSHIP

Map 4.3 displays the public ownership of land within the study area. Public ownership of land is defined as land owned by: Coos County, Coos Bay, North Bend, Tribal Organizations, Federal Organizations, State Organizations, Port of Coos Bay, South Slough NERR, or are within a special district.

The CSC used the ownership field within the Tax Assessor's data to determine ownership. The public ownership data and maps identify the extent of the public ownership categories in the study area.

The CSC calculated, by jurisdiction, the number of acres and the total percentage for each public ownership category within the study area (Table 9).

Data used for map and analysis:

- Coos County Assessor's Tax Lot Data (Coos County)

Study Area

The largest public ownership category; federal, accounts for 7,338 acres, which is 16% of the total study area. In total, public ownership categories account for 18,340 acres, which is 39% of the total tax parcels within the study area.

Coos County

Eighty-four percent of the Federal land within the study area exists outside the UGBs of the two cities. The largest public land owner in the county portion of the study is Federal, accounting for nearly half of all public land (7,321 acres). The South Slough NERR owns the second largest amount of land; 3,297 acres which is 8% of the total study area acreage.

Note: SSNERR owns and/or manages additional land that is outside of the study area (see Map 4.3).

Coos Bay

Within the Coos Bay UGB, the Port of Coos Bay represents the largest public land owner. The port owns 28% of all tax parcels within the Coos Bay study area, totaling 1,295 acres.

North Bend

Fifty-eight percent of the tax parcels within the North Bend UGB are publicly owned, amounting to a total of 795 acres; 714 acres are owned by either the county or the city.

MAP 4.4 TO 4.7: SPECIAL DISTRICTS

Map 4.4 to 4.7 display the acres of land owned by select special districts within the study area. The special district maps for this study are more general than the ORS definition. The Special District Maps include the following:

- 4.4: Active and Inactive Diking Districts
- 4.5: Fire Districts
- 4.6: School Districts
- 4.7: Coos Bay-North Bend Water Board

Data Used for Maps:

- Diking Districts (Oregon Spatial Data Library)
- Fire Districts (Oregon Spatial Data Library)
- School Districts (Oregon Spatial Data Library)
- Water Boards (Oregon Spatial Data Library)

MAP 4.8: EMPLOYMENT DENSITY

Map 4.8 identifies employment density within the study area.

The CSC generalized the employment sector using the North American Industry Classification System (NAICS) Code into four categories (Table 10):

1. Commercial and Services
2. Manufacturing
3. Public Administration
4. All Other

The commercial and services category includes businesses within the following sectors:

- Business services
- Health services
- Education services
- Business administration
- Information services

In addition to calculating the number of businesses by type and jurisdiction within the study area, the CSC calculated the number of employers and total employees based upon businesses that employ:

- Fewer than 10 employees
- Between 10 and 49 employees
- Greater than 50 employees

The employee size classification categories use the average number of employees within a business in the 2015 calendar year; these represent the average number of employees throughout the year.

Data used for map and analysis:

- QCEW Employment Data (Oregon Employment Department)

For detailed information on map and table methodology see Appendix A.

Table 10: Employers and Employees, by Jurisdiction

EMPLOYER SECTOR/SIZE	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Commercial and Services								
<10	33	75	191	681	95	344	319	1,100
10 to 49	9	194	88	1,781	47	860	144	2,835
> 50	ND	ND	8	909	8	1,084	16	1,993
Manufacturing								
<10	6	24	9	31	ND	ND	15	55
10 to 49	6	175	6	138	ND	ND	12	313
> 50	ND	ND	ND	ND	ND	ND	ND	ND
Public Administration								
<10	ND	ND	6	25	ND	ND	6	25
10 to 49	ND	ND	ND	ND	ND	ND	ND	ND
> 50	ND	ND	ND	ND	ND	ND	ND	ND
All Other Sectors								
<10	46	134	95	229	19	62	160	425
10 to 49	9	145	25	474	7	181	41	800
> 50	ND	ND	ND	ND	ND	ND	ND	ND

Source: Employment data provided by Oregon Employment Department; analysis by the Community Service Center.
Note: ND – Not discloseable due to confidentiality restrictions.

CHAPTER 5: PHYSICAL FEATURES

This chapter discusses the environmental, physical, and natural conditions that may prohibit or impact development on a site within the study area. The factors chosen for analysis were the result of consultation of Statewide Planning Goal 5 (Natural Resources), Goal 7 (Natural Hazards), and Goal 16 (Estuarine Resources) as well as from input given by the Partnership for Coastal Watersheds (PCW).

Regulatory Constraints are shown on the following Map:

- Map 5.1: Eelgrass and Snowy Plover
- Map 5.2: Oyster Beds and Clam Beds
- Map 5.3: Flood Zones
- Map 5.4: Landslide Susceptibility
- Map 5.5: Slope
- Map 5.6: National Wetlands Inventory
- Map 5.7: Local Wetlands Inventory
- Map 5.8: Sea Level Rise (2100)
- Map 5.9: Tsunami Inundation
- Map 5.10: Estuary Features
- Map 5.11: CMECS Aquatic
- Map 5.12: CMECS Biotic
- Map 5.13: CMECS Physical (Geoform)
- Map 5.14: CMECS Geologic Substrate

MAP 5.1: EELGRASS AND SNOWY PLOVER

Map 5.1 displays the eelgrass and snowy plover coverage within the study area. Eelgrass is an important component of the estuary environment, it provides habitat and food for a variety of marine life and it helps reduce coastal erosion.[17] Due to the ephemeral nature of eelgrass populations (i.e., changes in year-to-year distribution and density), eelgrass data were combined into an eelgrass maximum extent layer to indicate areas of potential eelgrass habitat.

The Pacific Coast population of the western snowy plover was listed as a threatened species under the Endangered Species Act of 1973 and the Oregon Endangered Species Act. As such, special considerations must be given to protect their habitat areas. Presence of either eelgrass or snowy plover populations within the study area are noted in the maps and analysis to provide information for the PCW committee to discuss further. This data was provided to the CSC by the South Slough National Estuarine Research Reserve.

The CSC calculated, by jurisdiction, the number of acres and percent cover for both eelgrass and snowy plover habitat within the study area (Table 11).

Data used in the analysis include:

- Eelgrass Cover (EPA)[18]
- Snowy Plover Cover (US Fish and Wildlife)

Study Area

Eelgrass beds account for 1,076 acres, which is 2% of the total study area. Snowy plover habitat accounts for 278 acres, less than 1% of the study area.

Note: Eelgrass bed size and distribution vary by year, therefore the locations on the map should not be considered permanent, actual distribution may include areas that are not mapped.

Table 11: Eelgrass Cover and Snowy Plover Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Eelgrass	840	2%	207	4%	29	2%	1,076	2%
Snowy Plover	278	1%	0	0%	0	0%	278	1%

Source: Data provided by the EPA and US Fish and Wildlife; analysis by the Community Service Center.

[17] National Oceanic and Atmospheric Administration Fisheries. "The Importance of EelGrass." NOAA Fisheries: http://www.westcoast.fisheries.noaa.gov/stories/2014/04_11072014_eelgrass_mitigation.html

[18] Clinton, P. J., D. R. Young, D.T. Specht, and H. Lee. (2007), "A Guide to Mapping Intertidal Eelgrass and Nonvegetated Habitats in Estuaries of the Pacific Northwest USA", U.S. Environmental Protection Agency, Washington, D.C., EPA/600/R-07/062 (retrieved January 2017).

Coos County

Eelgrass beds account for 840 acres, which is about 2% of the county study area. Snowy Plover habitat accounts for 243 acres, which is less than 1% of the county study area.

Coos Bay

Eelgrass beds account for 207 acres, which is 4% of the total Coos Bay UGB study area. There is no Snowy Plover habitat within the Coos Bay UGB.

North Bend

Eelgrass beds account for 29 acres, which is 2% of the total North Bend UGB study area. There is no Snowy Plover habitat within the North Bend UGB.

MAP 5.2: OYSTER BEDS AND CLAM BEDS

Map 5.2 shows the oyster lease coverage and important areas where recreational clams are found within the study area. Oysters are an important component of the estuary habitat, they provide habitat for a range of species and help filter waste from estuary waters. A smaller oyster population means increased loss of habitat and reduced jobs in the oyster industry.[19]

While the map shows commercial oyster zones in the estuary, the Coos estuary also supports a stable population of native Olympia oysters. Areas shown in the map are intertidal regions that support native oysters. A 2006 survey from the Journal of Shellfish Research indicated that native Olympia oyster populations appear stable and increasing.[20]

In 2009, the Oregon Department of Fish and Wildlife (ODFW) completed the Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR) project for the Coos estuary, which displays the clam beds in the lower Coos estuary and South Slough.[21] The project's primary focus was to determine where recreationally important bay clams are found and what their abundance is. Recreational clamming is one of Oregon's most popular outdoor activities.[22] The presence of clam populations within the study area is noted in this section's maps.

The CSC calculated by jurisdiction the number of acres and the total percentage for both Commercial Oyster Beds within the study area (Table 12). Clam beds are not analyzed in this table, however, their distribution is shown within Map 5.2.

Data used for map and analysis:

- Commercial Oyster Beds (South Slough NERR)
- Commercial Oyster Plats (South Slough NERR)
- Native Oysters (South Slough NERR)

Study Area

Commercial Oyster Beds and Plats account for 1,723 acres, which is 3% of the total study area. Oyster Plats account for 228 acres, which is less than 1% of the total study area tax parcels. Oyster Plat data is only available in the South Slough area.

Table 12: Commercial Oyster Beds and Recreational Clam Beds Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Oyster Plats	228		0		0			
(SSNERR)		< 1%		0%		0%	228	< 1%
Olympia Oysters	157	< 1%	93	2%	19	1%	269	< 1%
Other Beds	1,077	2%	149	3%	0	0%	1,226	2%
Total	1,462	3%	242	5%	19	1%	1,723	3%

Source: Data provided by South Slough NERR and ODFW; analysis by the Community Service Center.

[19] "Oysters Are Habitat, Too!," last modified November 19th, 2012, http://www.habitat.noaa.gov/abouthabitat/oysters.html

[20] Groth, S. and S. Rumrill. (2009). History of Olympia oysters (Ostrea lurida Carpenter 1864) in Oregon estuaries, and a description of recovering populations in Coos Bay. Journal of Shellfish Research 28(1): 51-58.

[21] Cornu, C., Larson, E., and Johnson, C., "Clams and Native Oysters in the Coos Estuary," Partnership for Coastal Watersheds, 2006, accessed August 15, 2017, http://www.partnershipforcoastalwatersheds.org/clams- and-native-oysters-in-the-coos-estuary/

[22] Oregon Department of Fish and Wildlife. "Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR)." Oregon Department of Fish and Wildlife: http://www.dfw.state.or.us/mrp/shellfish/seacor/index.asp (retrieved September 5, 2017).

Coos County

Commercial Oyster Beds account for 1,462 acres, which is 2% of the county study area. Oyster Plats account for 228 acres, which is less than 1% of the county study area. Additionally, there are 45 SEACOR clam sites that lie outside the UGB boundaries. They are located near the unincorporated communities of Barview and Charleston, north of the SSNERR.

Coos Bay

Commercial Oyster Beds account for 242 acres, which is 3% of the Coos Bay UGB study area.

North Bend

Commercial Oyster Beds account for 19 acres, which is 1% of the North Bend UGB study area.

MAP 5.3: FLOOD ZONES

Map 5.3 details the 100-year (1% annual chance) and 500-year (0.2% annual chance) flood zone hazards. FEMA developed Flood Insurance Rate Maps (FIRMs) that are used by jurisdictions to locate areas subject to floodplain regulations.

According to the DLCD, "The flood hazard information contained on these maps is based on historic flooding, hydraulic and hydrologic data, flood control projects, and other factors that impact flooding".[23] Presence of flood zones within the study area are noted in the maps and analysis.

The CSC calculated, by jurisdiction, the number of acres and the total percentage within the 100- year and the 500-year flood zones within the study area (Table 13).

Data used for map and analysis:

- Flood Zones (Oregon Spatial Data Library)

Study Area

The study area has 23,319 acres within the 100-year floodplain, which is 43% of the study area tax parcels acres; an additional 251 acres (23,570 total acres) are within the 500-year floodplain. The areas most at risk from the 500-year flood zone include parts of the Southwest Oregon Regional Airport (North Bend) and several industrial parcels south of downtown Coos Bay. Constrained areas center around the estuary, rivers, and streams.

Coos County

Coos County has 17,933 acres within the 100-year flood plain, which is 30% of the county study area tax parcel acres; an additional 71 acres (18,004 total acres) are within the 500-year flood plain. Constrained areas are primarily adjacent to the estuary, rivers, and streams.

Coos Bay

Coos Bay has 4,362 acres within the 100-year flood plain, which is 66% of the Coos Bay study area tax parcel acres; an additional 35 acres (4,397 total acres) are within the 500-year flood plain. Most of the Coos Bay tax parcels within the study area are located near the estuary, leading to a high percentage of tax parcels at risk.

North Bend

North Bend has 1,024 acres within the 100-year flood plain, which is 41% of the North Bend study area tax parcel acres; an additional 145 acres (1,169 total acres) are within the 500-year flood plain. The North Bend tax parcels surrounding the Pony Slough, adjacent to the estuary and near the airport are at risk of flooding. North Bend tax parcels further inland are less likely to be impacted by flooding.

Table 13: Flood Zones Acreage, by Jurisdiction

	COOS COUNTY			COOS BAY UGB			NORTH BEND UGB			STUDY AREA		
	Acres	Percent Change	Percent	Acres	Percent Change	Percent	Acres	Percent Change	Percent	Acres	Percent Change	Percent
100 Year Flood (1%)	17,933	-	30%	4,362	-	66%	1,024	-	41%	23,319	-	43%
500 Year Flood (0.2%)	18,004	0.4%	30%	4,397	1%	67%	1,169	14%	52%	23,570	1%	43%

Source: Data retrieved from the Oregon Spatial Data Library Data Library; analysis by the Community Service Center.

[23] DLCD Natural Hazards. "Floods: Property Owners and Developers." DLCD Natural Hazards: http://www.oregon.gov/LCD/HAZ/Pages/propowndev.aspx (retrieved August 15, 2017).

MAP 5.4: LANDSLIDE SUSCEPTIBILITY

Map 5.4 shows the degree of risk to which lands are susceptible to landslides. Precipitation, earthquakes, and other factors trigger landslides.

As cities expand into landslide prone areas, developments and infrastructure are at higher risk of landslide susceptibility. There are four (4) classes of landslide susceptibility: Low, Moderate, High, and Very High. Lands within the study area are divided into these categories to assist in identifying areas that may be prone to landslides. This data is elevation-based and uses slopes, geology, and mapped historical landslides to create a 10-meter raster from LiDAR imagery. This data was acquired by the CSC from Oregon Spatial Data Library Data Library and was created by the Oregon LiDAR Consortium (OLC) data and U.S. Geological Survey National Elevation Dataset (NED) data where OLC data was not present.

Data used for map and analysis:

- Landslide Susceptibility (DOGAMI)

Study Area

The low-lying lands nearest to the estuary have the lowest risk of landslide. These areas comprise most of the study area. Few points exhibit moderate or high risk for susceptibility within the area studied.

MAP 5.5: SLOPE

Map 5.5 displays the slope terrain of the study area.

Slope categories are generalized to three (3) categories including: less than 10%, 10% to 25%, and greater than 25%. Slopes are an important consideration that contribute to compliance with Statewide Planning Goal 7, Areas Subject to Natural Disasters. Slopes greater than 25% are considered undevelopable.[24] Presence of low slope and high slope within the study area is noted in the maps and analysis.

The CSC calculated, by jurisdiction, the number of acres and total percentage of the study area for each slope category within the study area (Table 14).

Data used for map and analysis:

- Digital Elevation Model (Oregon Spatial Data Library)

Study Area

Slopes greater than 25% represent the areas of concern due to development constraints. Areas of less than 10% slope amount to 98% of the land within the study area. Less than 1% of land has slopes greater than 25%.

Coos County

Areas of less than 10% slope amount to 98% of the land within the Coos County portion of the study area. Less than 1% of land has slopes greater than 25%.

Coos Bay

Areas of less than 10% slope amount to 100% of the land within the Coos Bay portion of the study area. None of the land within Coos Bay's study area contains slopes greater than 25%.

North Bend

Areas of less than 10% slope amount to 100% of the land within the North Bend portion of the study area. None of the land within North Bend's study area contains slopes greater than 25%.

Table 14: Slope Cover Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
< 10%	25,492	98%	2,921	100%	1,179	100%	29,592	98%
10% to 25%	555	2%	9	< 1%	2	< 1%	566	2%
Slope > 25%	28	< 1%	0	0%	0	0%	28	< 1%
Total	26,075	100%	2,930	100%	1,181	100%	30,186	100%

Source: Data retrieved from Oregon Spatial Data Library Data Library; analysis by the Community Service Center.

[24] DLCD. "Analysis of Land Use Efficiency in Oregon Cities." DLCD: http://www.oregon.gov/LCD/docs/rulemaking/UGB_RAC/UO_Report_LandUseEfficiency_FINAL.pdf (retrieved

MAP 5.6: NATIONAL WETLANDS INVENTORY

Map 5.6 highlights areas constrained by inventoried national wetlands. Wetland areas provide significant habitat value and hydrologic and water quality benefits.

Statewide Planning Goals 5 (Natural Resources), 16 Estuaries, and 17 (Coastal Shorelands) include wetlands as a resource that must be inventoried and protected.[25] In addition, the Coos County Comprehensive Plan says that the riparian corridor boundary shall be 50 feet from the upland edge of significant wetlands.[26]

The CSC calculated, by jurisdiction, the number of acres and the total percentage of wetlands within the study area (Table 15).

Data used for map and analysis:

- National Wetlands Inventory (Oregon Spatial Data Library)

Study Area

The study area has 25,312 acres of NWI wetlands, which amounts to 46% of the study area tax parcels.

Coos County

Coos County has 20,377 acres of NWI wetlands, which amounts to 42% of the county tax parcels within the study area.

Coos Bay

Coos Bay has 4,034 acres of NWI wetlands, which amounts to 82% of the Coos Bay tax parcels within the study area.

North Bend

North Bend has 901 acres of NWI wetlands, which amounts to 49% of the North Bend tax parcels within the study area.

Table 15: National Wetlands Inventory Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Estuarine and Marine Deepwater	6,179	13%	2,471	50%	539	29%	9,189	17%
Estuarine and Marine Wetland	2,704	6%	1,255	25%	283	15%	4,242	8%
Freshwater Emergent Wetland	7,418	15%	198	4%	45	2%	7,661	14%
Freshwater Forested/Shrub Wetland	2,418	5%	92	2%	22	1%	2.532	5%
Freshwater Pond	278	1%	11	0%	5	0%	294	1%
Lake	383	1%	0	0%	0	0%	383	1%
Riverine	997	2%	7	0%	7	0%	1,011	2%
Total	20,377	42%	4,034	82%	901	49%	25,312	46%

Source: Data provided by South Slough NERR; analysis by the Community Service Center.

MAP 5.7: LOCAL WETLANDS INVENTORY

[25] Oregon Department of State Lands. "Waterways & Wetlands Planning." Oregon Department of State Lands: http://www.oregon.gov/dsl/WW/Pages/WetlandConservation.aspx (retrieved August 15, 2017).

[26] Coos County. "Comprehensive Plan 4.10.030." Coos County: http://www.co.coos.or.us/Portals/0/Planning/AM- 14-10/Chapter%20IV.pdf (retrieved August 15, 2017).

Map 5.7 highlights areas constrained by inventoried local wetlands. Wetland areas provide significant habitat value and hydrologic and water quality benefits.

Statewide Planning Goals 5 (Natural Resources), 16 Estuaries, and 17 (Coastal Shorelands) include wetlands as a resource that must be inventoried and protected.[27] In addition, the Coos County Comprehensive Plan says that the riparian corridor boundary shall be 50 feet from the upland edge of significant wetlands.[28]

The CSC calculated, by jurisdiction, the number of acres and the total percentage of wetlands within the study area (Table 16).

Data used for map and analysis:

- Local Wetlands Inventory (Coos County)

Study Area

The study area has 3,612 acres of LWI wetlands, which amounts to 7% of the study area tax parcels.

Coos County

Coos County has 3,612 acres of LWI wetlands, which amounts to 8% of the county tax parcels within the study area.

Coos Bay

No identified LWI wetlands.

North Bend

No identified LWI wetlands.

Table 16: Local Wetlands Inventory Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Cranberry Bogs	45	0%	0	0%	0	0%	45	0%
Farm Ponds, Mill Ponds, Other Man- Made Water Bodies	4	0%	0	0%	0	0%	4	0%
Wet Meadows in Current Agricultural Use	1,850	4%	0	0%	0	0%	1,850	3%
Wetlands with Hydric Soils and Wetland Plants	1,710	4%	0	0%	0	0%	1,710	3%
Wetlands Formerly in Agricultural Use; Potential Reclamation	3	0%	0	0%	0	0%	3	0%
Total	3,612	8%	0	0%	0	0%	3,612	7%

Source: Data provided by South Slough NERR; analysis by the Community Service Center.

[27] Oregon Department of State Lands. "Waterways & Wetlands Planning." Oregon Department of State Lands: http://www.oregon.gov/dsl/WW/Pages/WetlandConservation.aspx (retrieved August 15, 2017).

[28] Coos County. "Comprehensive Plan 4.10.030." Coos County: http://www.co.coos.or.us/Portals/0/Planning/AM- 14-10/Chapter%20IV.pdf (retrieved August 15, 2017).

[29] NOAA Technical Report NOS CO-OPS 083. Global and Regional Sea Level Rise Scenarios for the United States." 2017.

Table 17: Sea Level Rise Inundation, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Potential Sea Level Rise Inundation 2 ft.	927	2%	14	0%	43	2%	984	2%
Potential Sea Level Rise Inundation 4 ft.	14,513	30%	4,035	82%	874	47%	19,422	35%
Potential Sea Level Rise Inundation 6 ft.	15,780	33%	4,149	84%	1,123	61%	21,052	38%

Source: Data provided by NOAA; analysis by the Community Service Center.

Table 18: Sea Level Rise Low Areas Affected, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Potential Sea Level Rise Low Areas Affected 2 ft.	927	2%	14	0%	66	4%	1,007	2%
Potential Sea Level Rise Low Areas Affected 4 ft.	977	2%	9	< 1%	124	7%	1,110	2%
Potential Sea Level RiseLow Areas Affected 6 ft.	1,186	2%	12	< 1%	87	5%	1,285	2%

Source: Data provided by NOAA; analysis by the Community Service Center.

MAP 5.8: SEA LEVEL RISE

Map 5.8 details scenarios of expected seal-level rise by the year 2100. The sea level rise scenarios were developed by the National Oceanic and Atmospheric Administration.[29] Oregon law does not prevent or limit development within sea level rise zones. However, sea level rise is important to consider especially around coastal areas. Development at low elevations located close to the ocean is the most susceptible to sea level rise.

The CSC calculated, by jurisdiction, the number of acres and total percentage impacted by the four- foot sea level rise scenario (high scenario by 2100) within the study area (Table 17). The sea level rise scenario uses the 2000 mean higher high tide as the baseline sea level. Table 18 shows the acres of low lying lands that are potentially impacted by each sea level rise scenario.

Data used for map and analysis:

- Sea Level Rise Inundation Data (NOAA Coastal Services Center)

Study Area

The four-foot sea level rise scenario potentially inundates 19,422 acres, which is 35% of the study area. In general, land nearest to the estuary is low lying and at risk to sea level rise.

County

The four-foot sea level rise scenario potentially inundates 1,752 acres of the county, which is about 30% of the county study area. Notable areas of concern for this series include some industrial and recreational areas on the North Spit.

Coos Bay

The four-foot sea level rise scenario potentially inundates 4,035 acres, which is 82% of the Coos Bay UGB study area. Much of the land within Coos Bay's downtown business district is low lying and very close to sea level, this makes it subject to significant sea level rise that may occur.

North Bend

The four-foot sea level rise scenario potentially inundates 874 acres, which is 47% of the North Bend UGB study area. Particularly vulnerable areas include the airport and Pony Village.

Table 19: Tsunami Inundation by Cover Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Small Scenario	12,988	27%	3,952	80%	1,092	59%	18,033	33%
Medium Scenario	17,193	36%	4,098	83%	1,193	65%	22,485	41%
Large Scenario	22,159	46%	4,286	87%	1,365	74%	27,811	51%
XL Scenario	28,241	59%	4,493	91%	1,601	87%	34,336	63%
XXL Scenario	29,415	61%	4,618	93%	1,628	88%	35,663	65%

Source: Data retrieved from Oregon Spatial Data Library Data Library; analysis by the Community Service Center.

MAP 5.9: TSUNAMI INUNDATION

Map 5.9 details the five Tsunami inundation scenarios. The Oregon Department of Geology and Mineral Industries (DOGAMI) has been mapping tsunami inundation along the Oregon Coast since the mid-1990s. The tsunami inundation maps assist counties, cities, and other jurisdictions to plan for, and mitigate the risk from, the potential disastrous impacts of a tsunami. DOGAMI has mapped five scenarios that are labeled as "T-Shirt sizes" (S, M, L, XL, and XXL) that reflect the range of tsunami impacts that are possible in the future. [31]

Note: DOGAMI expects to complete a Multi-Hazard Risk Report in 2018, when complete the report will include tsunami inundation information: http://www.oregongeology.org/pubs/ims/p-ims.htm.

Each scenario is calculated from a timeframe of fault slip; S: 300 years; M: 425-525 years; L: 650-800 years; XL: 1,050-1,200 years; XXL: 1,200 years. The map also shows the regulatory tsunami inundation line (SB 379 line). The tsunami regulatory line and maps (Oregon Senate Bill 379) limit the construction of certain critical and essential facilities in the tsunami inundation zone.[32]

The CSC calculated by jurisdiction the tsunami inundation by acreage and the total percentage for the S, M, L, XL, and XXL scenarios within the study area (Table 19). As previously discussed in Chapter 1: Purpose and Methods, the XXL layer is used in conjunction with the study area as it is a "catch-all" for future land use decisions.

Data used for map and analysis:

- Tsunami Inundation (DOGAMI)

Study Area

The XXL Tsunami layer represents the acknowledged "worse case" scenario for the region and places a constraint on 35,663 acres, which is 65% of land within the study area.

County

The XXL Tsunami Inundation scenario covers 29,415 acres (61% of the study area tax parcels).

Coos Bay

The XXL Tsunami Inundation scenario covers 4,618 acres (93% of the study area tax parcels).

North Bend

The XXL Tsunami Inundation scenario covers 1,628 acres (88% of the study area tax parcels).

MAP 5.10: ESTUARY FEATURES

Map 5.10 details estuary features within the study area. The estuary features maps provide an in- depth look at different features located within the estuary, including: tide gates, levees, levee protected lands, state parks, and boat launches.

Levee protected lands are lands next to levees, dikes, roads that act like levees, and jetties and rip rap that protect land from flooding.[32] The levee protected land layer was developed inventorying any tax parcels adjacent to a levee structure

[30] Oregon Department of Geology and Mineral Industries. "Oregon Tsunami Clearinghouse." Oregon Department of Geology and Mineral Industries: http://www.oregongeology.org/tsuclearinghouse/pubs.htm

[31] Oregon Tsunami Clearinghouse. "Tsunami Regulatory Maps (Oregon Senate Bill 379) for the State of Oregon." Oregon Tsunami Clearinghouse: http://www.oregongeology.org/tsuclearinghouse/pubs-regmaps.htm

[32] Oregon Spatial Data Library Library. "Estuarine Levee Protected Lands." Oregon Spatial Data Library Library: http://spatialdata.oregonexplorer.info/geoportal/details;id=c448ffe2e1dc4ca78506e64d83285a76 (retrieved August 15, 2017).

or parcels within a fully diked set of parcels. Tide gates and boat launch data identify the respective point location of each feature within the study area.

Table 20, identifies the acres of each state park within the study area.

Table 20: State Parks

STATE PARKS	ACRES
Conde B. McCullough	25
Cape Arago	154
Shore Acres	722
Sunset Bay	395
Yoakam Point	28

Source: Data provided by South Slough NERR; analysis by the Community Service Center.

In addition, there are several other parks shown on Map 5.10 including: Barview State Wayside (Historic), Ferry Road Park, Simpson Park, Bastendorff Beach County Park, 10th Street Park, Airport Heights Park, and the Eastside Boatramp. Approximately ten parks within the study area also contain RV and/or other camping amenities.

The CSC calculated, by jurisdiction, the acreage impacted by levee-protected lands, the number of tides gates, the number of boat launches, and the state park acreage within the study area (Table 21).

Data used for map and analysis:

- Oregon State Parks (Oregon Spatial Data Library)
- Levee Protected Lands (Oregon Spatial Data Library)
- Levee Inventory (Oregon Spatial Data Library)
- Tide gates (Oregon Spatial Data Library)
- Boat Launches (South Slough NERR)

Study Area

Within the study area there are 466 tide gates and 12 boat launches. The levee protected lands account for 18,208 acres, which is 33% of the total study area tax parcels. The five (5) state parks account for 1,324 acres. The state parks are all located in the county. Much of the state park land within the study area is located in the southwest at Cape Arago.

County

There are eight (8) boat launches and 134 tides gates located within the study area county tax parcels. A total of 16,054 acres are levee-protected lands, which is 33% of the county tax parcel acres within the study area.

Coos Bay

Coos Bay has three (3) boat launches and four (4) tides gates within the study area tax parcels. A total of 1,556 acres are levee-protected lands, which is 31% of the Coos Bay tax parcel acres within the study area.

North Bend

North Bend does not have any tide gates located within the study area tax parcels. North Bend has one (1) boat launch (California Ave.) located within the study area tax parcels. A total of 598 acres are levee-protected lands, which is 32% of the North Bend tax parcel acres within the study area.

MAP 5.11-14: CMECS MAPS

Coastal and Marine Ecological Classification Standard (CMECS) provides a national standard for consistent descriptions of coastal and marine ecological features developed by NOAA. In Oregon, the Department of Land Conservation and Development has produced estuary and

Table 21: Levee Protected Lands Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Levee Protected Lands	16,054	33%	1,556	31%	598	32%	18,208	33%

Source: Data provided by South Slough NERR and the Oregon Spatial Data Library Data Clearinghouse; analysis by the Community Service Center.

shoreland habitat maps using the CMECS standard for all of Oregon's major estuaries. The presence and type of these features within the study area have been provided both in maps and analysis.

Maps 5.11-14 identify the CMECS types within the study area, including:

- Aquatic
- Biotic
- Physical (Geoform)
- Geologic Substrate

The CSC calculated, by jurisdiction, the number of acres of all CMECS types within the study area.

Data used in the analysis include:

- CMECS Classifications (DLCD, Oregon Coastal Atlas)

MAP 5.11: CMECS AQUATIC

Map 5.11 details the aquatic CMECS types within the study area.

The subcomponents of the aquatic data identify the salinity, temperature, hydro form, and biogeochemical features to classify the aquatic features into three categories (Table 22):

- Estuarine Coastal: accounts for 15,450 acres of CMECS aquatic data (76%).
- Estuarine Coastal (Diked): accounts for 3,714 acres of CMECS aquatic data (18%).
- Estuarine Open Water: accounts for 1,036 acres of CMECS aquatic data (5%).

Additionally, to better understand the physical features of the land and water within the CBEMP the CSC performed analysis for aquatic CMECS at the management unit level. Table 23 displays the aquatic CMECS categories by management unit types.

- Estuarine Coastal: accounts for 14,065 acres, with 8,636 acres within Natural Aquatic management units.

Table 22: Aquatic CMECS Component Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Estuarine Coastal	11,023	72%	3,628	92%	799	89%	15,450	76%
Estuarine Coastal Diked	3,708	24%	6	0%	0	0%	3,714	18%
Estuarine Open Water	652	4%	290	7%	94	11%	1,036	5%
Total	15,383	100%	3,924	100%	893	100%	20,200	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Table 23: Aquatic CMECS Component Acreage, by Management Unit Type

	TOTAL		AQUATIC						SHORELAND					
	Management Unit		Conservation		Development		Natural		Conservation		Development		Natural	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Estuarine Coastal	14,065	72%	2,452	92%	945	57%	8,636	98%	614	100%	454	89%	964	37%
Estuarine Coastal (Diked)	1,693	24%	6	0%	0	0%	9	0%	1	0%	54	11%	1,623	63%
Estuarine Open Water	1,037	4%	200	8%	700	43%	137	2%	0	0%	0	0%	0	0%
Total	16,795	100%	2,658	100%	1,645	100%	8,782	100%	615	100%	508	100%	2,587	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

- Estuarine Coastal (Diked): accounts for 1,693 acres, with 1,623 acres within Natural Shoreland management units
- Estuarine Open Water: accounts for 1,037 acres, with 700 acres within Development Aquatic management units.

MAP 5.12: CMECS BIOTIC

Map 5.12 identifies the biotic CMECS types within the study area.

The subcomponents of the biotic data identify the planktonic and benthic/attached biota to classify the estuary into 10 types (Table 24).

Table 24: Biotic CMECS Component Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Aquatic Bed	788	5%	217	6%	51	6%	1,056	5%
Emergent Wetland	3,258	22%	3	0%	0	0%	3,261	17%
Emergent Tidal Marsh	1,622	11%	41	1%	37	4%	1,700	9%
Brackish Marsh	869	6%	487	13%	66	8%	1,422	7%
Scrub-Shrub Wetland	102	1%	1	0%	0	0%	103	1%
Tidal Scrub-Shrub Wetland	217	1%	51	1%	13	1%	281	1%
Brackish Tidal Scrub-Shrub	4	0%	1	0%	0	0%	5	0%
Forested Wetland	51	0%	0	0%	0	0%	51	0%
Tidal/Forest Woodland	165	1%	2	0%	1	0%	168	1%
Unclassified	7,893	53%	3,029	79%	710	81%	11,632	59%
Total	14,969	100%	3,832	100%	878	100%	19,679	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Table 25: Biotic CMECS Component Acreage, by Management Unit Type

	Total		Aquatic						Shoreland					
	Management Unit		Conservation		Development		Natural		Conservation		Development		Natural	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Aquatic Bed	1,042	6%	37	1%	33	2%	938	11%	4	1%	12	3%	18	1%
Emergent Wetland	1,526	9%	2	0%	0	0%	7	0%	1	0%	41	10%	1,475	61%
Emergent Tidal Marsh	805	5%	42	2%	3	0%	125	1%	53	9%	91	21%	491	20%
Brackish Marsh	1,359	8%	60	2%	10	1%	966	11%	187	32%	45	11%	91	4%
Scrub-Shrub Wetland	20	0%	0	0%	0	0%	0	0%	1	0%	3	1%	16	1%
Tidal Scrub-Shrub Wetland	180	1%	4	0%	1	0%	10	0%	42	7%	92	22%	31	1%
Brackish Tidal Scrub-Shrub	6	0%	0	0%	0	0%	2	0%	1	0%	2	0%	1	0%
Forested Wetland	9	0%	0	0%	0	0%	0	0%	0	0%	1	0%	8	0%
Tidal/Forest Woodland	91	1%	12	0%	1	0%	16	0%	17	3%	6	1%	39	2%
Unclassified	11,428	69%	2,483	94%	1,585	97%	6,681	76%	283	48%	132	31%	264	11%
Total	16,466	100%	2,640	100%	1,633	100%	8,745	100%	589	100%	425	100%	2,434	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Additionally, to better understand the physical features of the land and water within the CBEMP, the CSC performed analysis for biotic CMECS at the management unit level. Because the management units include portions of the study area that are within estuary waters and not on tax parcels, the total acreage is higher than at the tax parcel level of analysis. Table 25 displays the biotic CMECS categories by management unit types.

MAP 5.13: CMECS PHYSICAL (GEOFORM)

Map 5.13 identifies the Physical (Geoform) CMECS types within the study area.

The subcomponents of the Physical (Geoform) data identify the tectonic and physiographic settings to classify the estuary into 17 types (Table 26).

Additionally, to better understand the physical features of the land and water within the CBEMP, the CSC performed analysis for Physical (Geoform) CMECS at the management unit level. Because the management units include portions of the study area that are within estuary waters and not on tax parcels, the total acreage is higher than at the tax parcel level of analysis. Table 27 displays the Physical (Geoform) CMECS categories by management unit types.

MAP 5.14: CMECS GEOLOGIC SUBSTRATE

Map 5.14 identifies the Geologic Substrate CMECS types within the study area.

CMECS Geologic Substrate classifies the geologic, biogenic, and anthropogenic substrates of the estuary for classification into 15 types (Table 28).

Additionally, to better understand the physical features of the land and water within the CBEMP, the CSC performed analysis for geologic substrate CMECS at the management unit level. Because the management units include portions of the study area that are within estuary waters and not on tax parcels, the total acreage is higher than at the tax parcel level of analysis. Table 29 displays the substrate CMECS categories by management unit types.

Table 26: Physical (Geoform) CMECS Component Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Other Water	4,383	29%	2072	53%	466	52%	6,921	34%
Channel	863	6%	231	6%	0	0%	1,094	5%
Slough	1493	10%	157	4%	72	8%	1,722	9%
Fan	15	0%	0	0%	0	0%	15	0%
Flat	1,201	8%	639	16%	203	23%	2,043	10%
Island	6	0%	29	1%	0	0%	35	0%
Marsh Platform	5,767	38%	542	14%	102	11%	6,411	32%
Natural Levees	6	0%	0	0%	1	0%	7	0%
Natural Levees Fill	7	0%	0	0%	0	0%	7	0%
Shore	372	2%	119	3%	9	1%	500	2%
Artificial Levee	106	1%	6	0%	0	0%	112	1%
Breached Dike	46	0%	1	0%	0	0%	47	0%
Dredge Deposit	21	0%	0	0%	0	0%	21	0%
Fill Area	214	1%	113	3%	21	2%	348	2%
Marina/ Boat Ramp	1	0%	0	0%	0	0%	1	0%
Unclassified	828	5%	29	1%	19	2%	876	4%
Total	15,329	100%	3,938	100%	893	100%	20,160	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Table 27: Physical (Geoform) CMECS Component Acreage, by Management Unit Type

	Total Management Unit		Aquatic						Shoreland					
			Conservation		Development		Natural		Conservation		Development		Natural	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Other Water	6,906	41%	1,359	51%	1,149	70%	4,336	49%	20	3%	35	7%	7	0%
Channel	1,065	6%	728	27%	35	2%	181	2%	11	2%	8	2%	102	4%
Slough	1,713	10%	267	10%	339	21%	1,046	12%	9	2%	26	5%	26	1%
Fan	50	0%	0	0%	34	2%	14	0%	2	0%	0	0%	0	0%
Flat	1,977	12%	115	4%	0	0%	1,722	20%	62	10%	17	3%	61	2%
Island	36	0%	0	0%	1	0%	10	0%	21	4%	3	1%	1	0%
Marsh Platform	3,698	22%	104	4%	13	1%	1,094	12%	240	40%	191	38%	2,056	80%
Natural Levees	8	0%	0	0%	1	0%	4	0%	0	0%	1	0%	2	0%
Natural Levees Fill	1	0%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Shore	490	3%	50	2%	58	4%	292	3%	35	6%	34	7%	21	1%
Artificial Levee	81	0%	7	0%	1	0%	3	0%	0	0%	9	2%	61	2%
Breached Dike	34	0%	4	0%	1	0%	11	0%	2	0%	3	1%	13	1%
Dredge Deposit	7	0%	0	0%	0	0%	1	0%	1	0%	1	0%	4	0%
Fill Area	189	1%	12	0%	8	0%	23	0%	15	3%	58	12%	73	3%
Marina/Boat Ramp	1	0%	1	0%	1	0%	0	0%	1	0%	1	0%	1	0%
Rip Rap Deposit	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Unclassified	506	3%	15	1%	4	0%	58	1%	177	30%	115	23%	137	5%
Total	16,763	100%	2,663	100%	1,645	100%	8,795	100%	596	100%	502	100%	2,565	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Table 28: Geologic Substrate CMECS Component Acreage, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Rock	4	0%	0	0%	0	0%	4	0%
Unconsolidated Mineral Substrate	7,935	51%	3,132	77%	741	82%	11,808	58%
Gravelly Muddy Sand	6	0%	0	0%	0	0%	6	0%
Gravelly Mud	19	0%	0	0%	0	0%	19	0%
Slightly Gravelly Sandy Mud	11	0%	0	0%	0	0%	11	0%
Muddy Sand	691	4%	6	0%	0	0%	697	3%
Sandy Mud	4,166	27%	54	1%	48	5%	4,268	21%
Mud	918	6%	15	0%	0	0%	933	5%
Biogenic Substrate	652	4%	512	13%	35	4%	1,199	6%
Anthropogenic Substrate	39	0%	1	0%	0	0%	40	0%
Anthropogenic Rock	389	3%	125	3%	24	3%	538	3%
Anthropogenic Rock Rubble	4	0%	1	0%	0	0%	5	0%
Anthropogenic Rock Hash	37	0%	85	2%	2	0%	124	1%
Construction Material	1	0%	1	0%	3	0%	5	0%
Unclassified	567	4%	113	3%	52	6%	732	4%
Total	15,439	100%	4,045	100%	905	100%	20,389	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

Table 29: Table 29: Geologic Substrate CMECS Component Acreage, by Management Unit Type

	Total		Aquatic						Shoreland					
	Management Unit		Conservation		Development		Natural		Conservation		Development		Natural	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Rock	4	0%	2	0%	0	0%	0	0%	2	0%	0	0%	0	0%
Unconsolidated Mineral	11,753	70%	2,483	15%	1,602	97%	7,352	84%	98	16%	78	14%	140	5%
Gravelly Muddy Sand	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%
Gravelly Mud	4	0%	0	0%	0	0%	1	0%	0	0%	0	0%	3	0%
Slightly Gravelly Muddy Sand	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%
Muddy Sand	575	3%	9	0%	8	0%	127	1%	68	11%	137	25%	226	9%
Sandy Mud	2,091	12%	31	0%	2	0%	153	2%	51	8%	100	18%	1,754	67%
Mud	225	1%	5	0%	1	0%	22	0%	10	2%	4	1%	183	7%
Biogenic Substrate	1,154	7%	43	0%	10	1%	878	10%	143	23%	33	6%	47	2%
Anthropogenic Substrate	20	0%	1	0%	1	0%	0	0%	2	0%	2	0%	14	1%
Anthropogenic Rock	327	2%	23	0%	9	1%	38	0%	18	3%	87	16%	152	6%
Anthropogenic Rock Rubble	6	0%	1	0%	0	0%	1	0%	1	0%	3	1%	0	0%
Anthropogenic Rock Hash	65	0%	1	0%	0	0%	5	0%	2	0%	34	6%	23	1%
Construction Materials	3	0%	1	0%	0	0%	1	0%	0	0%	1	0%	0	0%
Unclassified	659	4%	67	0%	13	1%	212	2%	215	35%	72	13%	80	3%
Total	16,888	100%	2,667	16%	1,646	100%	8,790	100%	610	100%	551	100%	2,624	100%

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

CHAPTER 6: FOCUS AREAS

This section discusses the components of focus areas within the study area that were chosen for analysis through consultation with members of the PCW, DLCD, and workshop participants.

The following series of maps are covered in this chapter:

Map 6.1 – Dredged Material Disposal Sites

Map 6.2 – Mitigation Sites

Map 6.3 – Landward Migration Zone Prioritization Areas

Map 6.4 – Urban Renewal Districts

Map 6.5 – Economic Zones

Note: The focus groups and Partnership for Coastal Watersheds have identified a need for cultural and historic mapping. At the time of this publication the data necessary for mapping cultural and historic areas was not available. A recommendation has been made to include this mapping in the future.

MAP 6.1: DREDGED MATERIAL DISPOSAL SITES

Map 6.1 identifies existing dredged material disposal (DMD) sites within and adjacent to the Coos Bay estuary. The CBEMP identifies disposal sites "that can practicably meet the dredging needs and are consistent with the management decisions of the Plan."[33] The CBEMP anticipated and identified sites to meet future management needs. This Atlas updates the inventory to account for sites that are full or no longer needed.

The dredge disposal sites are summarized in Table 30 showing sites that were determined to be "potential sites", "potential upland sites", "at capacity", and "old/not used".

The sites include those identified in the CBEMP's Dredged Material Disposal Plan (CBEMP Vol. II, Part 2, Section 7, Table 7.6 and Appendix A) and sites identified during focus groups.

Data used for map and analysis:

- CBEMP Mylars, georeferenced by SSNERR and CSC

Table 31 provides detail on each of the identified disposal sites.

MAP 6.2: MITIGATION SITES

Mitigation and restoration of intertidal and tidal marshlands to offset filling and dredging are requirements of Goal 16 and 17. Per the CBEMP the focus of the requirement "is on compensating for the effects that will result when approved dredging or filling activities occur. Mitigation can be accomplished through the restoration of a lost resource, the creation of a new resource, or the enhancement of an existing resource."[34] The CBEMP identifies sites based on whether mitigation is accomplished best through restoration, creation, or enhancement activities. Table 32 provides details for each mitigation site and includes comments on each sites mitigation suitability.

The following definitions apply to the mitigation sites:

Mitigation: The creation, restoring, or enhancing 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 (ORS 196.830). (CBEMP Vol. II, Part 1, Section 3)

Table 30: Dredged Material Disposal Sites, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA		OFFSITE
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres
Potential Site	369	1%	106	2%	118	6%	593	1%	171
Potential Upland	131	0%	0	0%	0	0%	131	0%	0
At Capacity	327	1%	177	4%	0	0%	504	1%	5
Old/Not Used	38	0%	0	0%	0	0%	38	0%	3
Total	865	2%	283	6%	118	6%	1,266	2%	179

Source: Data from Oregon Coastal Atlas; analysis by the Community Service Center.

[33] CBEMP, Vol. II, Part 2, Section 7

[34] CBEMP Vol. II, Part 2, Section 8, p. 8.2-4

Table 31: Dredged Material Disposal Sites, by Jurisdiction

EXISTING SITE NO.	PROPOSED SITE NO.	NEWLY IDENTIFIED (Y/N)	AT CAPACITY? (Y/N)	POTENTIALLY USED (Y/N)	UPLAND (Y/N)	LOCATION
1b	1	N	Y	N	N	Basentdorff Beach
Ocean	2	N	N	Y	N	Off Bar
3b	3	N	N	Y	N	Barview
-	4	Y	N	Y	Y	Barview
Inbay G	5	N	N	Y	N	Coos Head
4a	6	N	N	Y	N	North Spit
-	7	Y	N	Y	Y	North Spit
4c	8	N	Y	N	N	North Spit
4x	9	N	Y	Y	N	Henderson Marsh
-	10	Y	N	Y	Y	West of Jordan Cove
9x	11	N	N	Y	N	West of Airport
Inbay 8.4	12	N	N	Y	N	Airport
9y	13	N	N	Y	N	Airport Interior
15a	14	N	N	Y	N	East Bay Drive at Kentuck Inlet
18a	15	N	N	Y	N	East of Boynton Point
18b	16	N	N	Y	N	Marshfield Channel
19b	17	N	N	Y	N	South of Marshfield Channel
30b	18	N	N	Y	N	North of Christensen Road
25a	19	N	N	Y	N	Lower Isthmus (West)
25	20	N	N	Y	N	Lower Isthmus (East)

Source: Data from CBEMP and PCW Workshops; analysis by the Community Service Center.
See CEBMP Vol. II, Part 2, Section 7, Appendix A, pp. 9 – 26 for detailed information on each site existing at time of adoption of the CBEMP.

Creation: The creation of wetlands and/or other aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Enhancement: The improvement of conditions in an area which remains under estuarine influence but has experienced past degradation or reduction in productivity due to obstruction of flow, sedimentation, log debris, et cetera. (CBEMP Vol. II, Part 1, Section 3)

There are two basic types of enhancement sites: (CBEMP Vol. II, Part 2, Section 8.4.3, p. 8.4-10)

i. Similar in nature to diked restoration sites, except that there is already a breach in the dike permitting estuarine influence, but with circulation impaired, and

ii. Sites where removal of driftwood, old pilings or other debris would enhance vegetative growth and tidal circulation.

Restoration: Replacing or restoring original attributes or amenities such as natural biological productivity and aesthetic or cultural resources which have been diminished or lost by past alterations, activities, or catastrophic events. Active restoration involves the use of specific remedial actions such as removing dikes or fills, installing water treatment facilities, or rebuilding or removing deteriorated urban waterfront areas. Passive restoration is the use of natural processes, sequences, or timing to bring about restoration after the removal or reduction of adverse stresses. (CBEMP Vol.II, Part 1, Section 3)

Restoration Sites: are of two basic types: (CBEMP Vol. II, Part 2, Section 8, p. 8.4-8)

i. Spoil islands that may be scalped down to intertidal level, and

ii. Diked former tidal marsh where there is an opportunity to restore to tidal influence.

Several sites within the South Slough National Estuarine Research Reserve were identified by the CBEMP to have restoration or enhancement qualities and included for as sites ideally suited for mitigation and restoration activities. In this inventory those sites are identified in the maps, however, they are not included in the sites identified within Table 32 since they are already used for mitigation and no longer available to serve as a repository for intertidal and tidal marshland restoration under ORS 196.830).

The CBEMP prioritized mitigation sites, as High, Medium, or Low, based on a list of criteria including (listed in importance) (CBEMP Vol. II, Part 2, Section 8.5.2)

1. biological gain,
2. use conflicts,
3. engineering requirements,
4. similarity, or similar potential, to development sites,
5. potential to replace habitats subject to greatest historical loss, and
6. in South Slough [National Estuarine Reserve]

The PCW updated the list of mitigation sites to account for sites that are no longer in use, have been fully utilized, or no longer have the benefit that they did when the CBEMP was developed. The PCW also proposed new sites and if they should be considered for creation, enhancement, or restoration activities and if the sites are considered high, medium, or low priority (Table 32).

Table 32: Mitigation Sites Detail

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
1	Medium	Remove (Restored, SSNERR managed)	Restoration	Restored: Road/dike removed 2002
2	Medium	Remove (Restored, SSNERR managed)	Restoration	Fredrickson marsh- restored in 1998
3	Medium	Remove (Restored, SSNERR managed)	Restoration	Dalton Creek marsh- dikes removed and marsh restored in 1998
4	Medium	Remove (SSNERR managed)	Restoration	Passively restored long ago, considered least-disturbed site.
5	Medium	Remove (Restored, SSNERR managed)	Restoration	Kunz marsh- dike removed and marsh restored in 1996
6	Medium	Remove (Restored, SSNERR managed)	Enhancement	Extremely low ecological lift. Also, SSNERR-managed land and should not be used for mitigation.
7	Medium	Remove (SSNERR managed)	Enhancement	Low ecological lift; breached since the 1990's (i.e., passively restored). Removing the dike remnant may elicit a reaction from local duck hunters who build temporary blinds on the dike. Also, SSNERR-managed land and should not be used for mitigation.
8	Medium	Remove (SSNERR managed)	Enhancement	Little ecological lift since it's been open to tidal exchange since the 1990's (i.e., passively restored). Also, SSNERR-managed land and should not be used for mitigation.
9	Medium	Remove (SSNERR managed)	Enhancement	Likely low ecological lift. While restoration work is a potential, SSNERR-managed land and should not be used for mitigation.
10	Medium	Remove (SSNERR managed)	Restoration	Breached dike open to tidal exchange. While restoration work is a potential to increase tidal exchange, SSNERR-managed land and should not be used for mitigation.

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
11	Medium	Remove (SSNERR managed)	Enhancement	Little ecological lift since it's been open to tidal exchange since the 1990's (i.e., passively restored). Also, SSNERR-managed land and should not be used for mitigation.
12	Medium	Remove (Restored, SSNERR managed)	Enhancement	Little ecological lift since it's been open to tidal exchange since the 1990's (i.e., passively restored). While restoration work is a potential to increase large woody debris, SSNERR-managed land and should not be used for mitigation.
13	Medium	Remove (SSNERR managed)	Restoration	lift. SSNERR-managed land and should not be used for mitigation.
14	Medium	Remove (Restored, SSNERR managed)	Enhancement	Little ecological lift since it's been open to tidal exchange since the 1990's (i.e., passively restored). While restoration work is a potential to increase large woody debris, SSNERR-managed land and should not be used for mitigation.
15	High	Remove (Restored)	Enhancement	Restored: diked breached 1990's.
16	High	Remove (Restored)	Enhancement	No ecological lift. Considered a least-disturbed site.
17	High	Remove (Restored)	Restoration	Restored: Excavated/salt marsh constructed in 1990's.
18	Medium	Remove (No Value)	Restoration	Tidal influence restored either actively or passively.
19	Medium	Medium	Restoration	Okay, Expensive to remove fill; small area.
20	High	Medium	Restoration	Expensive to remove old dredge fill; might want to lower Priority level to medium
21	Low	Low	Creation	Expensive; probably unrealistic; however, okay as "Low"
22	High	Medium	Restoration	Already fully tidally influenced. Site to Southwest is part of Airport future runway extension.
23	Low	Low	Enhancement	Higher Value than the Hwy 101 bridge channel at Haynes; however, unlikely to receive high mitigation score and likely costly
24	Low	Very Low	Enhancement	Very low additional ecological uplift potential; most dikes breached currently
25	Low	Low	Enhancement	Very low additional ecological uplift potential; perhaps some large woody debris could be added
26	Low	Low or Remove	Enhancement	Limited ecological uplift, recommend remaining "Low" Priority or off list
27	Medium	Low	Enhancement	Dike has breached; little additional uplift to be added; some removal of old berm and installation of channels; Recommend "Low" or remove.
28	Medium	Low	Restoration	Dike has breached; some additional uplift to be obtained; however; should probably be reduced to "Low"
29	Low	Removed (Restored)	Restoration	Restored: 1/2 of site already mitigated; remaining has "Medium: to "High" ecological value; EFU
30	Low	Low	Restoration	Some ecological uplift value with tidegate removal and installation of new culverts
31	-	Medium	Proposed Site	Multiple landowners, needs levee and tide gate removals and likely channel remeanders

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
32	-	Medium	Proposed Site	Multiple landowners, needs levee and tide gate removals and likely channel remeanders
33	-	High	Proposed Site	Wetland Reserve Program site [Frederickson site]. TIde gate pulled stream remeandered and planted, date:2001 acres: 14, Note: connectivity would be greatly enhanced by adding downstream parcel and deepening channels
34	-	High	Proposed Site	99% under 4ft elevation, levee and tide gate removal and channel remeander required, essential for removing existing primary Palouse tide gate
35	Medium	Low or Remove	Restoration	Conflict with residential use/infrastructure. Move to low or remove.
36	Low	Remove	Enhancement	and very low additional benefits. Remove from list
37	Low	Low	Restoration	Polygon much larger than potential restorative lands
38	-	Low	Proposed Site	Multiple landowners, needs levee and tide gate removals and likely channel remeanders. Protection of access for homes challenging
39	(x)	High	Restoration	Kentuck Golf Course; relatively low elevation; tidal influence if opened to the bay; use by Coho in Kentuck Creek
40	Low	Low	Restoration	Needs new large culvert or bridge; beaver have created high value in site
41	Medium	Medium	Restoration	Medium Okay; needs some tidal channel construction on site and new culvert under East Bay
42	High	High	Restoration	Expensive to remove island to intertidal marsh where ecological benefits high.
43	Medium	Medium	Restoration	Good site for "Medium" benefit; needs tidegate removal and new bridge or culvert under drive to homeowner
44	Low	Low	Enhancement	Mostly restored through time and dike failures; could install some Large woody debris (LWD); unlikely sufficient ecological uplift for mitigation.
45	-	Medium	Proposed Site	Some passive restoration but levee breaching and some stream remeander would add ""uplift"" with MTR tide gate adaptive management
46	-	Medium	Proposed Site	Some passive restoration but levee breaching and some stream remeander would add ""uplift"" with MTR tide gate adaptive management
47	-	Medium	Proposed Site	Single landowner, levee and tide gate removals and channel remeanders required, working lands model would be best if parcels downstream of Russel Road parcels are not included
48	Low	Low	Restoration	Remove tidegate and put in new culvert.
49	Medium	Medium	Restoration	Needs bridge or culvert under East Bay Drive to restore tidal action.

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
50	High	Low or Remove	Restoration	Dike breeched and largely self-restored but could use improved tidal channels. Reduce Priority level to low or take off list.
51	High	Low	Restoration	Dike has breached but could benefit from improved tidal channels. However, additional ecological uplift low.
52	Low	Low	Restoration	Reasonable ecological uplift, but a bit difficult due to infrastructure. Okay as "Low".
53	Medium	Medium	Restoration	Some of area not intertidal; however, overall good site to remove dike and remeander ditches. Good as "Medium".
54	Medium	Low or Remove	Restoration	Could benefit from installation of tidal channels and removal of dike. However, currently functioning so reduce level to low.
55	(x)	High	Restoration/ Enhancement	Install tidal channels, remove tidegates, and install sufficiently sized culverts under Millicoma Hwy. Potential conflict with grazing uses.
56	(x)	High	Restoration/ Enhancement	Install tidal channels, remove tidegates and remove dike for full tidal influence. Will make excellent Coho/Chinook habitat post restoration.
57	(x)	High	Restoration/ Enhancement	Install tidal channels, remove tidegates and remove dike for full tidal influence. Will make excellent Coho/Chinook habitat post restoration. Potential conflict with grazing uses.
58	(x)	Medium	Restoration/ Enhancement	Install tidal channels, remove tidegates and remove dike for full tidal influence. Will make excellent Coho/Chinook habitat post restoration. Potential conflict with grazing uses.
59	(x)	High	Restoration/ Enhancement	Install tidal channels, remove tidegates and remove dike for full tidal influence. Will make excellent Coho/Chinook habitat post restoration. Potential conflict with grazing uses.
60	-	Low	Proposed Site	Primary tide gate already removed at Daniels Creek mouth, significant wetland maturation already occured, could be enhanced with meandering and planting
61	(x)	Low	Restoration	Would need tidal channels and much larger openings to River/ bay; could be partially restored and retain grazing
62	(x)	Medium	Restoration	Would need tidal channels and much larger openings to River/ bay; could be partially restored to retain grazing
63	(x)	High	Restoration	Would need tidal channels and much larger openings to River/ bay; could be partially restored to retain grazing
64	Low	Medium	Restoration	North end has self-restored; south end remains in need of restoration. Expensive; could be moved to Priority of Medium on south end only.
65	Low	Low	Restoration	Tough site with infrastructure for any substantial restorative actions. Low okay.

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
66	Low	High	Restoration	Has "High" potential for ecological uplift; however likely use conflict with grazing and EFU.
67	Low	High	Restoration	Has "High" potential for ecological uplift; however likely use conflict with grazing and EFU.
68	-	Medium	Proposed Site	Relatively high elevation, Breached dike open to tidal exchange. additional restoration work has potential to increase tidal exchange
69	Low	High	Restoration	Has "High" potential for ecological uplift; however likely use conflict with grazing and EFU.
70	Low	High	Restoration	Has "High" potential for ecological uplift; however likely use conflict with grazing and EFU.
71	Medium	Medium	Restoration	Same as original assessment.
72	Low	High	Restoration	Has "High" potential for ecological uplift; however likely use conflict with grazing and EFU.
73	Medium	Medium	Restoration	Same as original assessment.
74	High	Remove (Restored)	Enhancement	Has largely self-restored; remove from list
75	Medium	Remove (Restored)	Enhancement	Restored, remove from list.
76	High	Remove (Restored)	Restoration	Restored, remove from list.
77	Medium	High	Restoration	High ecological value for restoration.
78	Medium	Medium	Restoration	Same as original assessment.
79	Low	High	Restoration	Has "High" potential for ecological uplift with dike removal and remeandering of ditches; however likely use conflict with grazing and EFU.
80	Medium	High	Restoration	Good potential site for restoration. Could be moved to high priority.
81	Medium	Medium	Restoration	Has partially restored; leave as "Medium"
82	Medium	Medium	Restoration	Okay as medium priority.
83	Low	Low or Remove (Restored)	Restoration	Remain Priority of "Low" or remove is essentially restored by default due to larger culvert and removal of tidegate; culvert remains undersized
84	Low	Low	Restoration	Okay as "Low"
85	-	Medium	Proposed Site	Existing channels are <3'. Restoration would require dike removal, planting and channel remeander in conjunction with other connected parcels
86	-	Medium	Proposed Site	Existing channels are <3' would require dike removal planting and channel remeander in conjunction with other connected parcels
87	-	Low	Proposed Site	Higher than other nearby parcels, would require dike removal planting and channel remeander in conjunction with other connected parcels
88	Medium	Remove	Restoration	Upland berm provides waterfowl habitat; reducing to below tidal low value; remove from Mitigation list

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
89	-	Medium	Proposed Site	Poor connectivity but has potential if Blossom Gulch school is ever removed/restored
90	-	Low	Proposed Site	Very high >14', riparian planting and or terracing may be only options
91	High	Low	Enhancement	Coos County installed new culvert in 2014; remaining benefit from restoration limited; Reduce Priority to low
92	High	Low	Enhancement	Currently functioning; removal of remaining dike low value; reduce to Priority of low
93	Low	High	Restoration	High potential for ecological uplift with dike removal/ install tidal channels. Possible use conflict with EFU. Priority to High.
94	Low	High	Restoration	This site has high potential for ecological uplift with dike removal/install tidal channels. May conflict with residential use. Move priority to High
95	High	Low	Enhancement	Perhaps some large wood debris additions and dike removal. Not high mitigation potential; recommend reduction to "Low"
96	Medium	Medium	Restoration	Same as original assessment.
97	Medium	Medium	Restoration	Same as original assessment.
98	-	Medium	Proposed Site	Breached dike open to tidal exchange. Additional restoration work has potential to increase tidal exchange
99	-	Medium	Proposed Site	Breached dike open to tidal exchange. Addtional restoration work has potential to increase tidal exchange
100	(x)	Medium	Restoration/ Enhancement	Install tidal channels, remove tidegates, and remove dike for full tidal influence. Good Coho/Chinook habitat post restoration.
101	High	Remove (Restored)	Restoration	Restored. Remove.
102	Medium	Medium	Enhancement	Super small site; highway inflow issues; these sites are tough for the cost/unit of acre; perhaps "Medium" okay
103	(x)	High	Restoration/ Enhancement	Install tidal channels, remove tidegates, and remove dike for full tidal influence. Good Coho/Chinook habitat post restoration.
104	Low	Medium	Restoration	Has partially self-restored and ODOT has plans to restore full function in 2018.
105	(x)	Remove (Restored; SSNERR Managed)	Enhancement	Has self-restored to a high degree. Also, sites are already being managed for conservation purposes by South Slough; DSL ownership creates conflict of interest so preferred not to use for mitigation.
106	High	Remove (SSNERR managed)	Restoration	While site needs restoration work, it should be categorized as mitigation sites since it is already being managed for conservation purposes by South Slough; DSL ownership creates conflict of interest so preferred not to use for mitigation.
107	Low	Medium or High	Restoration	High potential for ecological uplift with dike/tidegate removal. Possible use conflict with EFU. Priority to Medium or High.

ID	ORIGINAL PRIORITY	PROPOSED PRIORITY	ACTION TYPE	COMMENT
108	Medium	Medium	Restoration	High expense and low restorative value since channels in wetland are fine. Culvert under Hwy 42 undersized; Medium priority.
109	Medium	Medium	Restoration	Same as original assessment.
110	Low	Low	Enhancement	Low ecological lift; partially self-restored. Low priority OK.
111	Medium	Medium	Restoration	Same as original assessment.
112	Medium	Medium	Restoration	Same as original assessment.
113	-	Medium	Proposed Site	Tide gates look to be failing with significant wetland maturation already occurring, could be enhanced with meandering and planting
114	(x)	High	Restoration	Currently has failing tidegate; most of acreage below elevation 8.0ft; "High" Ecological Potential; currently EFU

MAP 6.3: TIDAL WETLAND LANDWARD MIGRATION ZONE PRIORITIZATION

As shown in Map 5.8 the Coos Estuary can expect increased inundation as sea-levels rise. The resulting sea level rise will lead to landward migration of tidal wetlands. The Midcoast Watersheds Council modeled the impacts of sea level rise (SLR) and mapped landward migration zones (LMZ) for 23 estuaries in Oregon including the Coos Estuary.

Map 6.3 details Landward Migration Zone Prioritization areas based on elevation and projected sea level rise of 4.7 feet by the year 2100 according to the West Coast Sea Level Rise Study (NRC 2012). The 4.7-foot scenario is the upper end of the projected SLR for the year 2100. This amount of sea level rise could occur earlier or later than that date. The 4.7-foot SLR scenario for was chosen for two reasons:[35]

1. Across many estuaries, this was the earliest scenario that showed a very distinct change in distribution of tidal wetlands compared to the current time; and
2. It represents a fairly long-range planning horizon, allowing adequate time for coastal groups to develop strategic plans and consider the range of potential approaches to conserving and restoring tidal wetland resources.

The analysis and data do not take into account rates of sediment accretion.

The study-analyzed data on five factors that influence the importance of conserving or restoring land within LMZs. The prioritization rankings are considered useful for those making land use decisions within the estuary. The prioritization factors are:

- Area of the LMZ at the 4.7-foot SLR scenario
- Area of higher LMZs at the 8.2-foot and 11.5-foot SLR scenarios

Table 33: Landward Migration Zone Prioritization for 4.7-foot SLR Scenario, by Jurisdiction

	COOS COUNTY		COOS BAY UGB		NORTH BEND UGB		STUDY AREA	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Low	228	0%	241	5%	107	0%	576	1%
Medium-Low	541	1%	47	1%	201	0%	789	1%
Medium	1,115	2%	128	3%	23	0%	1,266	2%
Medium-High	373	1%	4	0%	0	0%	377	1%
High	937	2%	39	1%	106	6%	1,082	2%
Total	3,194	7%	459	9%	437	0%	4,090	7%

Source: Data from Midcoast Watersheds Council; analysis by the Community Service Center.

[35] Midcoast Watersheds Council. Modeling sea level rise impacts to Oregon's tidal wetlands: Maps and prioritization tools to help plan for habitation conservation into the future. 2017.

- Land management (public vs private)
- Generalized Land use zoning
- Development status (number of structures)

See project report for detailed methods: http://www.midcoastwatersheds.org/landward-migration-zones/

The CSC calculated LMZ prioritization in acres by jurisdiction within the study area (Table 33).

Data used for map and analysis:

- LMZ Prioritization at 4.7-foot SLR scenario (Midcoast Watersheds Council)

Study Area

Within the Study Area there are 1,082 acres of high priority LMZs, which is 2% of land within the study area.

County

Within Coos County there are 937 acres of high priority LMZs, which is 2% of Coos County land within the study area.

Coos Bay

Within Coos Bay there are 39 acres of high priority LMZs, which is 1% of Coos Bay land within the study area.

North Bend

Within North Bend there are 106 acres of high priority LMZs, which is 6% of North Bend land within the study area.

MAP 6.4 AND MAP 6.5: ECONOMIC AREAS

Maps 6.4 and 6.5 display select economic special districts and economically important areas within the study area. The special district maps for this study are more general than the ORS definition.

Data Used for Maps:

- Urban Renewal Districts (Business Oregon, Port of Coos Bay, Coos Bay, North Bend)
- Enterprise Zones (Oregon Spatial Data Library Data Library)
- Foreign Trade Zone No. 132 (Port of Coos Bay, georeferenced by CSC)
- Opportunity Zones (Business Oregon, georeferenced by CSC)
- Terminals and Docks (Port of Coos Bay, georeferenced by CSC)

MAP 6.4 URBAN RENEWAL DISTRICTS

These funds are generated through "tax increment financing" or TIF funds from property taxes gained in an area which is usually an Urban Renewal District. These funds can act as a subsidy to promote economic development or improve utilities within an Urban Renewal District. These public funds are generated through property taxes within a district in which the funds are reallocated for improvement projects, thus increasing property tax values. TIF funds are usually used in "blighted" areas to help improve facades or property and spur new developments. These funds are managed by a city or county depending on the charter that was created when the URA was put in place. In Coos Bay the city has an urban renewal agency/board that is made up of the city council and city manager/staff who takes inquiries regarding the use of the URA funds for projects. A lot of time these funds are used in conjunction with a development agreement the City has for a project and an appropriate "ask" can be solicited of the urban renewal agency. Funds can be used to help connect/create infrastructure, incentivize development through "rebates or refunds", pay for right of ways, etc. essentially anything that might be needed and it is all up to a negotiation process with an Urban Renewal Agency.

URL - North Bay Urban Renewal: http://www.portofcoosbay.com/ccura/

http://coosbay.org/departments/urban-renewal

URL - North Bend Urban Renewal: http://www.northbendoregon.us/urbanrenewal

MAP 6.5 ECONOMIC ZONES

Enterprise Zones

The Bay Area Enterprise Zone exempts businesses from local property taxes on new investments for a specified amount of time. This zone allows for property tax abatements for approved traded sector projects as well as hotels/resorts. Enterprise Zone programs consist of a standard three-year abatement, in which all approved projects are eligible. Projects can apply for an additional fourth-year and fifth-year abatement; however, zone sponsors must agree to the extended timeline and the private business is required to pay 150% above the County average wage for the extent of the four or five-year abatement.

The Bay Area Enterprise Zone also offers an extended "long-term rural" enterprise zone, which offers a seven-year or 15-year abatement for major projects. The following criteria must be met for a project to qualify and be approved for a long-term Enterprise Zone:

1. A total facility investment cost greater than 1% of a county's total real market value by the end of the year when operations begin.
2. Within 3 or 5 years of commencing operations, the business must hire a number of new, full-time employees to work at the facility, at least 10, 35, or 50, depending on the county, to be maintained during the tax abatement period.
3. By the fifth year after the year when new facility operations commenced, average annual compensation (including benefits) for all workers at the facility must be at least 130% (if in a qualified rural county) or 150% of the county average annual wage, based on the latest, final figure, at which point for every subsequent calendar year over the rest of the exemption period:
    a. Average compensation needs to be at least that high relative to the county wage when first met.
    b. The average wages (taxable income) received by those workers also must equal or exceed the latest year's figure for the county average wage.

Projects seeking a long-term abatement program must also get approval by the Bay Area Enterprise Zone sponsors, which consist of the following public taxing districts: City of Coos Bay, City of North Bend, Coos County and the Oregon International Port of Coos Bay.

URL: https://ccdbusiness.org/economic-development/

Foreign-Trade Zones

Foreign-Trade Zones (FTZ) are designated areas within the geographic boundary of the United States that have been approved by the U.S. Customs and Border Protection (CBP) as being outside U.S. territory for purposes of duty collection – FTZ sites and facilities remain within the jurisdiction of local, state and federal governments or agencies. FTZs can include labor-intensive manufacturing centers that involve the import of raw materials or components and subsequently the export/entry of finished merchandise or products. Customs duty is determined when the merchandise leaves the zone. Foreign Trade Zones are essentially business islands within the United States. An FTZ is a designated area where merchandise, both domestic and foreign, receives the same treatment it would if it were outside the commerce of the United States.

Importers, distributors, manufacturers, and other entities can utilize an FTZ to defer, eliminate, or reduce duties on imported goods. The three FTZ sites are listed below:[36]

#1 – 284 acres on the eastern shore of the central section of the North Spit Peninsula, Coos County, Oregon; accessed by TransPacific Parkway. This property is owned and operated by the Port and the Bureau of Land Management and is known as the North Bay Marine Industrial Park. Intended use is marine and heavy industrial development.

#2 – 520-acre parcel located on the northeast section of the North Spit Peninsula; also accessed by TransPacific Parkway. This property is owned by Roseburg Forest Products Co. and Weyerhaeuser. Existing buildings on the Roseburg property could be utilized for general-purpose warehousing. A portion of this site has railroad service.

#3 – 531 acres in five parcels located at four marine terminals and at Southwest Oregon Regional Airport.

Parcel 1 - Ocean Terminals in the City of North Bend, at Channel Mile 11.0, with rail and highway access.

Parcel 2 - Export Services in the City of North Bend, at Channel Mile 11.5, with rail and highway access.

Parcel 3 - Central Dock in the City of Coos Bay, at Channel Mile 13.3, with rail and highway access.

Parcel 4 - Coos Bay Docks near the City of Coos Bay, at Channel Mile 15.1, with rail and highway access.

Parcel 5 - Southwest Oregon Regional Airport; regular passenger and cargo flights, with adjacent business park.

URL: https://www.naftz.org/

Opportunity Zones

Opportunity Zones are a newly created federal tax abatement geared towards capital gains and reinvesting those in underserved population areas. These zones will be served by Opportunity Funds which can invest into a business or property within the Opportunity Zone. A maintained investment into an opportunity zone via an opportunity fund allows for a reduced tax on capital gains. A five-year investment allows for a 10% reduction, a seven-year investment allows for a 15% reduction and a 10 year investment allows for a 100% abatement of capital gains taxes. Coos County received two Low Income Community (LIC) Census Tract designations; LIC Tract 5.04 (Empire South to Tarheel Reservoir) and LIC Tract 3 (Southeast section of North Bend along Highway 101 bounded by Broadway and

Virginia Avenue), picture below, green highlighted areas.

Note: At time of document publication these areas were just approved by Oregon and sent to the Department of Treasury for final federal approval.

URL: http://www.oregon4biz.com/Opportunity-Zones/

New Market Tax Credits

The New Market Tax Credit (NMTC) Program attracts private capital into low-income communities by permitting individual and corporate investors to receive a tax credit against their federal income tax in exchange for making equity investments in specialized financial intermediaries called Community Development Entities (CDEs). The credit totals 39 percent of the original investment amount and is claimed over a period of seven years.

URL: https://www.cdfifund.gov/programs-training/Programs/new-markets-tax-credit/Pages/default.aspx

Terminals and Docks

The Port of Coos Bay includes a United States Army Corps of Engineers (USACE) designed and maintained navigation channel that provides access to six marine terminals and seven deep-draft berths as well as a variety of barge facilities (Table 34).

[36] Midcoast Watersheds Council. Modeling sea level rise impacts to Oregon's tidal wetlands: Maps and prioritization tools to help plan for habitation conservation inTerminals & Docks. (2018). Retrieved from http://www.portofcoosbay.com/terminals-docks/. Accessed May 3, 2018.

Table 34: Detail of Terminals and Docks

ID	NAME	LOCATION	USE	NOTES/BERTHS
1	Cape Arago Dock/ Sause Bros.	Channel Mile 5.4	utility/work dock	1 - 505 feet/154 meters Private terminal
2	North Bay Marine Industrial Park	Adjacent to deep-draft navigation channel / TransPacific Parkway, North Spit	developable industrial and marine/industrial sites	Within Site 1 of Foreign-Trade Zone No. 132 Potential dock space
3	D.B. Western Inc.	Channel Mile 5.6/ TransPacific Parkway, North Spit	utility/work dock; vessel repair and construction	Within Site 1 of Foreign-Trade Zone No. 132 1 - dolphins 200 feet/ 61 meters; wharf 140 feet/ 42.6 meters
4	Southport Lumber Company/Southport Forest Products Sawmill & Barge Facility	Channel Mile 6.3 / TransPacific Parkway, North Spit	deadload barge slip. Capacity: 11,000 pounds per sq ft/37,535 kgs per sq meter	Within Site 1 of Foreign-Trade Zone No. 132 1 - 420 feet/128 meters x 120 feet/36.6 meters
5	Roseburg Forest Products Chip Terminal	Channel Mile 7.9/Jordan Cove Rd., North Spit	outbound woodchips	Within Site 2 of Foreign-Trade Zone No. 132 1 - dolphins 1,000 feet/305 meters; wharf 260 feet/79.2 meters
6	Ocean Terminals Dock	Channel Mile 11.0 / Foot of California Street, North Bend Use: inbound and outbound logs;	inbound and outbound logs;	Site 3/Parcel 1 of Foreign-Trade Zone No. 132 1 - 900 feet /274.3 meters; wharf 502.5 feet/153.162 meters
7	K2 Terminal	Channel Mile 11.5	Outbound bulk break logs	1' to 1000'/304.8 Meters Private Terminal
8	Tyree Oil, Inc.	Channel Mile 12.4 / U.S. 101 at Newmark Ave., North Bend	receipt of petroleum products; lighter barge moorage	1 - dolphins 300 feet/91.4 meters; wharf 200 feet/61 meters
9	Oregon Chip Terminal	Channel Mile 12.5 / U.S. 101 at Tower Street, North Bend	outbound woodchips	1 - dolphins 1,000 feet/305 meters Private Terminal
10	Bayshore Dock/ Sause Bros.	Channel Mile 12.7 / 2580	utility/work dock	1 - 700 feet/213.4 meters with dolphins Private Terminal
11	Citrus Dock	Channel Mile 12.9 /2100 Bayshore Dr. (U.S. 101), Coos Bay	utility/work dock	1 - dolphins 200 feet/61 meters; wharf 140 feet/42.7 meters Port of Coos Bay Utility/Work Dock
12	Dolphin Terminal	Channel Mile 13.1 / 1610 Bayshore Drive (U.S. 101), Coos Bay	outbound logs (in- water loading)	1 - dolphins 750 feet/228.6 meters; dock 60 feet/18.3 meters; floating pier 140 feet/42.7 meters Port of Coos Bay Utility/Work Dock
13	USCG Cutter Orcas	Channel Mile 13.2	Homeport for the USCG Cutter Orcas	Wooden Pier: 12 ft (3.66 m) x 160 ft (48.77m) Floating Dock: 130 ft (39.62 m) Facility: 3 wooden pile dolphins, gravel parking lot with concrete pad &storage trailer
14	U.S. Army Corps of Engineers Port of Coos Bay Moorage	Channel Mile 13.2 / 1460 N. Bayshore Drive (U.S. 101), Coos Bay	utility/work dock; government vessel moorage	1 - 350 feet/106.7 meters with dolphins; fixed dock 125 feet/38 meters, floating dock 100 feet/30.5 meters

ID	NAME	LOCATION	USE	NOTES/BERTHS
15	Pierce Terminal	Channel Mile 14.8 / 1 Mullen Street, Coos Bay	mineral processing	1 - 600 feet/183 meters Private Terminal
16	Georgia-Pacific	Channel Mile 14.9 / 1170Newport Ave., Coos Bay	outbound woodchips	1- (see Coos Bay Docks data)
17	Coos Bay Docks	Channel Mile 15.1 / 1190 Newport Ave., Coos Bay	breakbulk general cargo, primarily forest products	Site 3/Parcel 4 of Foreign-Trade Zone No. 132. 2 - 1,326 feet/404.2 meters (including chip terminal berth)
19	Knutson Log Yard Moorage	1.9 miles south of main channel in Isthmus Slough/1 Isthmus St., Coos Bay	inbound logs (landside unloading)	1 - dolphins 500 feet/152.4 meters

More information on terminals and docks can be found International Port of Coos Bay's website: http://www.portofcoosbay.com/terminals-docks/

APPENDIX A:
METHODS

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APPENDIX A: METHODS

This appendix describes the methods, definitions, and assumptions used in conducting the land inventory of the study area. Specifically, this analysis:

- Classifies all land and estuary waters into generalized zoning and management unit categories;
- Identifies, at the tax parcel level, areas of improved and unimproved status;
- Identifies the economic and environmental properties and acreage of land within the study area at the tax parcel and/or management unit levels;
- Displays the results in a series of tables and maps.

METHODOLOGY

Estuarine land use inventories are not state mandated, as such there is no prescribed methodology for conducting a land use inventory of this nature. However, using Statewide Planning Goals 5, 7, and 16 as general guidelines, the CSC conducted this land inventory using the following methods:

- Step 1: Identify the study area boundary for the land inventory using the current CBEMP boundary and XXL Tsunami Inundation Zone boundary as the delineators.
- Step 2: Identify the tax parcels that fall within the study area boundary and the percentage of each tax parcel that is within the study area boundary.
- Step 3: To maintain the integrity of each tax parcel that is split by the study area boundary, the CSC verified and removed tax parcels that fell within the following thresholds:
  - Tax parcels that fall outside of the boundary with less than or equal to 3% inside the boundary;
  - Tax parcels that are greater than or equal to 200 acres and are outside of the boundary with less than or equal to 10% inside the boundary;
  - Tax parcels that are less than or equal to 5 acres and are outside of the boundary with less than or equal to 10% inside the boundary;
  - Tax parcels that are less than or equal to .01 acres and are within the boundary with greater than 99% inside the boundary.
- Step 4: Using the land base created in Step 3, the CSC overlaid the generalized zoning to identify the acreage of each zoning designation at the tax parcel level within the study area.
- Step 5: Identify the acreage of the economic and environmental conditions present at the tax parcel level within the study area boundary.
  - Economic conditions
    - Improvement Status
    - Improvement Value Ratio
    - Public Ownership
  - Environmental conditions
    - Environmental Constraints
    - Physical Constraints and Hazards
    - Estuary Features
- Step 6: The CSC also calculated the management units within the entire CBEMP, which includes both land and estuary waters. To understand how certain environmental and physical features are distributed throughout the CBEMP management area, the CSC calculated acreages based on the management units. The features analyzed at both the tax parcel and management unit levels are:
  - Oyster Plats and Beds
  - Aquatic CMECS
  - Biotic CMECS
  - Geoform CMECS
  - Substrate CMECS

GLOSSARY AND PARAMETERS

In conducting the Land Inventory Atlas, the CSC identified policy, economic, and physical features of lands within the study area. The features included in this atlas are the result of resources within Statewide Planning Goals 16 and 17 and consultation with the Partnership for Coastal Watersheds (PCW). The atlas identifies zoning and land use characteristics, economic features, and physical features.

Zoning and Management Units

Zoning for Coos County and the cities of Coos Bay and North Bend are reclassified into general zoning classifications. Coos County zones are reclassified into seven (7) zoning designations to remain compatible with Coos Bay and North Bend zoning. Management units are considered in a separate analysis. The reclassified zones are the following:

- **Agriculture and Forestry.** County zones designated as EFU or F.
- **Airport Overlay.** County zones designated as AO.

Table A1: Generalized Zoning Designations

CSC DESIGNATIONS	COUNTY ZONES	COOS BAY ZONES	NORTH BEND ZONES
Agriculture and Forestry	EFU, F		
Employment	C, IND	C, I	M-H, C-G, C-L, M-L, A-Z
Mixed Commercial-Residential	CD, RD	MX	
Recreational	REC, Q-REC, BDR	UP, TL, W, W-H	
Residential	RR, UR	LDR, MDR	R-M, R-T, R-5, R-6,R-7, R-10
South Slough	SS, MES		
Airport	AO		

Source: Information retrieved from Coos County, Coos Bay, and North Bend Zoning Codes, categorized by the Community Service Center.

- **Employment.** County zones designated as C or IND. Coos Bay zones designated as C or I. North Bend zones designated as M-H, C-G, C-L, M-L, or A-Z.
- **Mixed Commercial-Residential.** County zones designated as CD or RD. Coos Bay zones designated as MX.
- **Recreational.** County zones designated as Rec, Q-Rec, or BDR (Bandon Dunes Resort). City of Coos Bay zones designated as UP, TL, W, or W-H.
- **Residential.** County zones designated as RR or UR. Coos Bay zones designated as LDR or MDR. North Bend zones designated as R-M, R-T, R-6, R-5, R-7, or R-10.
- **South Slough.** County zones designated as SS or MES.
- **Management Units.** Management Units were divided into "Terrestrial" and "Aquatic" units as designated in the Coos County Comprehensive Plan. Those Management Units that fell within the Coos Bay or North Bend Urban Growth Boundaries were included as part of that city's zoning.
  - **Terrestrial.** Classified as Conservation, Natural, and Development.
    - **Conservation.** Conservation Shoreland
    - **Natural.** Natural Shoreland, Non-Water Dependent Shoreland, Rural Shoreland
    - **Development.** Development Shoreland, Urban Development Area, Urban Development Shoreland, Urban Water-Dependent, Water-Dependent Development
  - **Aquatic.** Classified as Conservation, Natural, and Development.
    - **Conservation.** Conservation Aquatic
    - **Natural.** Natural Aquatic
    - **Development.** Development Aquatic

Economic Features

Economic features within the study area are determined in this atlas using Statewide Planning Goals 16 and 17 and PCW input as guidelines. Improvement status, Improvement Value Ratios, ownership, special use districts, and employment features are all calculated at the tax parcel level for lands within the study area. The economic features of the atlas are included below:

- **Improvement Status.** The improvement status of land within the study area is determined at the tax parcel level using DLCD Workbook and Statewide Planning Goal 16 guidelines. Lands are classified as either "Improved" or "Unimproved" based on the following parameters:
  - **Unimproved.** Those lands with a PCLS designation of "vacant" and an RMV (Real Market Value) below the $10,000 threshold are classified as "Unimproved" lands which may be underutilized and open to future development.
  - **Improved.** Those lands with a PCLS designation of "improved" and an RMV above $10,000 are considered "Improved" and may be consistent with present and future zoning designations.
- **Improvement Value Ratio.** The ratio of the Real Market Land Value to Real Market Improvement Value. Values are between 0-1, with higher values indicating a higher improvement status.
- **Public Ownership.** Land that falls under public ownership and jurisdiction. For this atlas, tax assessor data was used to determine ownership using both the PCLSD and Ownership fields. Categories include:
  - Federal
  - Tribal
  - State
  - County
  - Cities of Coos Bay and North Bend

  - Special Districts
    - Water Board, Sanitary District, Fire District, School District, University of Oregon
  - South Slough NERR
  - Port of Coos Bay
- **Special Districts.** Special district boundaries within the study area are included in the atlas to show where potential future areas of growth may be accommodated given current conditions. Categories included in the atlas are:
  - Active and Inactive Diking districts
  - Fire districts
  - School districts
  - Water boards
- **Employment Features.** Data on employment within the study area is provided by the Quarterly Census of Employment and Wages. The CSC produced a heat map of broad categories of employment to comply with restrictions on how employment data can be reported. The broad categories include:
  - Commercial and Services: NAICS Codes 42, 44, 45, 51, 52, 53, 54, 55, 56, 61, 62, 71, 72
  - Manufacturing: NAICS Codes 31, 32, 33
  - Public Administration: NAICS Code 92
  - All Other: NAICS Codes 11, 21, 22, 23, 48, 49, 81

Physical Features

Physical features of the estuary and lands within the study area are included in this atlas to create an inventory of current conditions. These features are determined using Statewide Planning Goals 5, 7, and 16. Those physical features identified and analyzed for the land inventory are as follows:

- **Species of Concern.** This data accounts for both vegetative and wildlife species. Snowy Plover and Eelgrass are both used in this analysis to show areas within the study area they are found.
- **Oyster Beds and Clam Beds.** This data shows areas of the estuary that include oyster and clams beds for harvesting.
- **Floodplain Areas.** This data shows the FEMA Flood Insurance Rates Map (FIRM) designations for the .1% (100-year) and .02% (500-year) flood events.
- **Landslide Susceptibility.** This elevation data is converted into slopes, and a multi-pronged analysis process uses these slopes, geology, and mapped existing landslides to create this 10-meter raster. There are 4 classes of landslide susceptibility: Low, Moderate, High, and Very High.
- **Slope.** This data is generated using the SSNERR DEM to create slope classifications of 0% (no slope), >10% slope, 10 - 24% and =<25%.
- **Wetlands.** National and Local Wetland Inventory data from Coos County.
- **Sea Level Rise.** This data uses models to develop risk scenarios of future sea level rise. Data used in this analysis shows the areas modeled to be affected by the 75 cm by 2070 scenario.
- **Tsunami Inundation.** This data shows the tsunami inundation area for "T-Shirt Sizes" S, M, L, XL, and XXL using DOGAMI evacuation modeling.
- **Estuary Features.** This data includes information recreational boat access, parks and campgrounds, and levees.
- **Coastal and Marine Ecological Classification Standard (CMECS) Habitat Types.** CMECS data from DLCD shows habitat types within the Aquatic, Biotic, Geological, and Substrate types that is classified into a national standard of consistent descriptions for estuary and coastal features.
- **Dredge Disposal.** This data includes area of active, inactive, and potential dredge disposal.
- **Mitigation Sites.** This data provides information on wetland mitigation sites including potential new sites, and sites to be removed for having no value, or for having already reached their restoration potential. Sites that are managed the SSNERR are also shown.
- **Landward Migration Zone Prioritization.** This data shows the areas of tidal wetlands that may be impacted by sea level rise and areas of for conservation and restoration prioritization.
- **Economic Areas:** including Urban Renewal Districts and Enterprise Zones, Foreign Trade Zones, Opportunity Zones for Coos County, Coos Bay, and North Bend

DATA SOURCES

The inventory is based on analysis of a range of data sets provided by each jurisdiction, public institutions, and other data sources. The CSC used the input given from PCW members to be sure the most accurate, current, and reliable data sets were used in the analysis.

In completing the land inventory, the CSC research team used data from a variety of sources, including: Coos County, Coos Bay, North Bend, DLCD, DOGAMI, ESRI, Oregon Spatial Data Library Library, Oregon State University, and NOAA. The CSC did not generate any new data and based all analysis for the land inventory on existing data. Tables A.2 and A.3 below summarize the data sets used by CSC in the inventory:

Table A.2: Planning Data Sets

Data Set	Jurisdiction	Data Source	File Name	Description
Tax lot data	County, Coos Bay, North Bend	Coos County	December_2016_Parcels	Tax lots referenced with descriptive attributes. Polygon File
Current Zoning Data	County	Coos County	Coos_County_zoning_1_27_17	County Zoning. Polygon File.
	Coos Bay	Coos Bay	COOS_BAY_LAND_USE_2017 COOS_BAY_LAND_USE_OVERLAYS_2017	Coos Bay Zoning. Polygon File.
	North Bend	North Bend	Zoning_Districts_1-2017	North Bend Zoning. Polygon File.
Roads	County, Coos Bay, North Bend	Coos County, ESRI	Hwynet_2015	Clipped to major state highways within the study area. Polyline File.
	Coos Bay	Coos Bay	COOS_BAY_STREETS_CLASS	Local, collector, and arterial streets within the city limits. Polyline File.
	North Bend	North Bend	Exist_PAVED-17DSL	Paved Roads within the city limits. Polyline File.
DEM/Hillshade	County, Coos Bay, North Bend	Oregon Spatial	OR_Hillshade_10M.gdb	Hillshade File.
Enterprise Zones	Coos Bay, North Bend	Business Oregon		
Fire Districts	County, Coos Bay, North Bend	Oregon Spatial		
Urban Renewal Districts	Coos Bay, North Bend	Business Oregon		

Table A.3: Environmental Data Sets

Data Set	Jurisdiction	Data Source	File Name	Description
Landslide Susceptibility	County, Coos Bay, North Bend	DOGAMI	Oregon_LS_susceptibility	Scaled from low to high for the County. Polygon File.
Tsunami Inundation	County	DOGAMI	DOGAMI_ Tsunamievacuationzones_2013,S B379 Tsunami Line	S, M, L, XXL Inundation zones. Polygon file.
Floodplain areas	Coos Bay	DOGAMI, DLCD	Oregon_flood_zones WRB_ floodplains_100yr_500yr	FIRM 100 and 500 year floodplains. Polygon File.
Sea level rise	North Bend	OSU, NOAA	NHDPlusV21_PN_17_NHD PlusCatchment_02	Received from Laura Brophy (OSU). Shows a 75 cm sea level rise by 2070. Polygon File.
Local wetlands inventory data	County, Coos Bay, North Bend	County, Coos Bay, North Bend	Wetland_OR	State wetlands inventory dataset. Polygon File
CMECS	Coos Bay	South Slough	Cmecs_coosbay_export_20161018 sg_class2_f	Includes Endangered Species polygon files and other areas of natural concern.
Boat Ramps and Recreation Sites	North Bend	South Slough	Boat paddle launches	Point File of water access points Polygon file of state and local parks
State Parks	County, Coos Bay, North Bend	Oregon Spatial	LO_Parks	2014 State Park inventory clipped to Coos County.
Levee Protected Lands and Levee Inventory	Coos Bay, North Bend	Oregon Spatial	EstuarineLeveeProtectedLandsOCMP2011 LeveeInventory.shp	Polygon File of levee protected lands. Polyline file of levee inventory.
Habitat	County, Coos Bay, North Bend	US Fish and Wildlife, EPA	Sg_class2_f WSPlover_CritHab_USFWS_2005	Existing Eel Grass locations and Snowy Plover nesting sites.
Tide gates	County, Coos Bay, North Bend	South Slough	Tidesgates.shp	Polyline file of tidesgate locations.
Oyster Leases	County, Coos Bay, North Bend	South Slough	Oyster_Beds.shp SouthSloughOysterPlats.shp	Polygon file of oyster bed locations.

STAKEHOLDERS

Coos County

Coos County will use this information to help guide a possible future revision of the Coos Bay Estuary Management Plan.

City of Coos Bay

The City of Coos Bay will use this information for a revision of their own outdated estuary management plan, thereby reestablishing jurisdictional coordination between the city and the county.

City of North Bend

The City of North Bend will use this information to reestablish jurisdictional coordination between the city and the county.

Oregon Department of Land Conservation and Development

As Oregon's coastal management agency, DLCD has prioritized the modernization of local estuary management plans while maintaining compliance with the Oregon Statewide Planning Goals.

APPENDIX B:
MAPS

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APPENDIX B: MAPS

The following pages contain maps referenced throughout this document.

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Appendix A includes the uses and activities for each management unit type found in the Coos County Development Code.

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