environment

The coastal region embraces two distinct marine environments. One includes the vast offshore waters of the Pacific Ocean, and the other is found in the estuaries of the coastal rivers. Many marine species move between these two ecosystems at different stages in their development.

Estuaries perform a unique and often vital function in the life cycles of a large number of plants and animals. An estuary includes all the area where ocean salt water mingles with fresh water. Here, the tides pump in rich supplies of nutrients and oxygen from the ocean while the fresh water flows removes waste materials. In many places solar radiation penetrates shallow tidal waters to allow abundant vegetation growth. The result is unique feeding and spawning grounds for many forms of marine life that are important links in the food chain. The chain starts with microscopic organisms and follows through snails, worms, shrimp, insects, clams, shore birds and eventually to man himself.The coastal rivers of Oregon include 217 square miles of estuaries which provide a priceless ecological asset. Much of this same area contains important commercial harbors and recreation areas; therefore a carefully considered balance must be reached between natural and man-made use of these unique ecosystems.

An example of efforts actively being taken to accomplish this is the Corps of Engineers' dredging program to keep Oregon's coastal harbors open to commercial and recreational navigation. All proposed dredging activity by the Corps is carefully reviewed by federal and state environmental and fishery agencies, and is open to public scrutiny and comment. Whenever possible, dredging materials are utilized to provide or enhance wildlife on marine life habitat. Special procedures are followed to minimize the impact of dredging on the natural environment. In addition, the Corps is actively involved in research, both locally and nationally.The Corps also administers a permit program which has been effective in helping to protect our coastal and river environments. The authorities for this program come from the River and Harbor Act of 1899, which deals with dredging and construction in navigable waters, and the Clean Water Act of 1977. The Corps' original authority was aimed at navigational interests only; it now extends to environmental considerations. Anyone wishing to build or dredge in navigable waters, or to place dredged or fill material into waters of the United States, must first apply to the Corps for a permit. Each permit application is evaluated in light of the known information, including comments submitted by federal, state and local agencies, and by the public, to determine if the permit would be in the public interest.

recreation

recreation activities

The Oregon coast has long been famous for its rugged beauty. It draws an estimated 28 million visitors annually for pastimes ranging from sightseeing to ocean fishing. The state of Oregon maintains more than 50 parks on the coastline for both day-use and overnight camping. Many of these are at sites of spectacular scenery. A number of the parks are located near or adjacent to Corps jetty projects.

Fishing
Although often hazardous to foot traffic, jetties provide some of the best onshore fishing found on the coast. This includes anadromous fish runs of chinook, coho and sockeye salmon, plus steelhead trout and anchovy. Year-round fish include cod, perch and flounder. Fishing for crabs may be done from boats in many jetty areas. Beaches near jetties allow picnicking, sunbathing and many other outdoor activities.

Project Location	Nearest town	Nearest Overnight Park*	Project Location	Nearest town	Nearest Overnight Park*
Columbia River	Astoria	Fort Stevens State Park	Umpqua River	Reedsport	Umpqua Lighthouse State Park
Nehalem River	Wheeler	Nehalem Bay State Park	Coos Bay	Empire	Sunset Bay State Park
Tillamook Bay	Garibaldi	Barview Jetty Park (County)	Coquille River	Bandon	Bullards Beach State Park
Depoe Bay	Depoe Bay	Beverly Beach State Park	Port Orford	Port Orford	Humbug Mountain State Park
Yaquina Bay	Newport	South Beach State Park	Rogue River	Gold Beach	Humbug Mountain State Park
Siuslaw River	Florence	Honeyman Memorial State Park	Chetco River	Brookings	Harris Beach State Park

*All parks except Barview accept reservations.

the corps

about the corps

The U.S. Army Corps of Engineers is the federal government's largest water resources development and management agency. The variety and challenge of water projects under its civil works program also serve to maintain a broad range of engineering skills critical to the Corps' capabilities and performance during national emergencies.

The Corps' water resource program began in 1824 when the U.S. Congress first appropriated money for improving river navigation. Since then, the Corps has been involved in improving ports and river navigation, reducing flood damage and controlling beach erosion. Along with these missions, the Corps generates hydropower, supplies water to cities and industry, regulates development in navigable waters and wetlands, and operates an extensive recreation program. Today, the Corps manages nearly 2,000 water resource projects nationwide.

Along with developing our nation's water resources, the Corps is equally committed to providing a balanced development with conservation of our natural environment.

Federal rules and regulations concerning public use of this area are set forth in Title 36, Chapter III, of the code of Federal Regulations and are on display in the areas of the project most frequently used by the public. All other federal, state and local laws also apply in Corps areas.

Under the Archeological Resources Protection Act of 1979, it is illegal to excavate or remove artifacts from federal land. Violators are subject to a fine of not more than $100,000, imprisonment of not more than five years, and forfeiture of all equipment (including vehicles) used in connection with a violation.

If violators are observed, report the violation immediately to the local authorities or to Corps of Engineers personnel.

safety

safety tips

Beaches and Jetties
- The seaward ends of jetties present danger from large waves, even in calm weather. A single ocean wave can hit with a force of 20 tons. Algae makes many of the rocks slippery.
- Swimming in the surf can be treacherous due to powerful currents and extreme cold. Watch for deep water, sinkholes and outgoing tides.
- Many dangerous cliffs and dropoffs are not fenced, so be especially careful in these areas.
- Don't play on or near beach logs. Waves can move them quickly and unexpectedly.
- The Oregon State Police has cadet policemen patrolling the beaches and state parks during the summer. Their vehicles carry first aid equipment.

Dredges
- Pipeline dredges are held by anchor lines marked by buoys. Avoid both the lines and the dredge itself.
- Hopper dredges constantly maneuver. Do not pass in front or cut in close. Large vessels cannot stop or turn easily.

Boating
- Always consult weather information before departing.
- Become familiar with all aids to navigation.
- Use extreme caution when crossing a bar. Consult tide tables and try to cross on a flood tide or slack period.
- Know proper procedures for navigating in fog.
- Know all the accepted ways of sending a distress signal.

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Portland District
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2005

US Army Corps of Engineers ®
Portland District

Oregon Costal Harbors

harbors

harbors, ports and commerce

The Army Corps of Engineers has been active on the waterways of the Oregon coast since 1866, when Congress initiated a series of River and Harbor Acts which made the Corps responsible for developing and maintaining all officially designated federal waterways, including Oregon's ten major coastal rivers. Early Corps works included fortifications as well as public works. Fort Stevens was constructed just south of the Columbia River in 1963. It was shelled by a Japanese submarine in 1942, making it the only U.S. continental fort to be fired on in the last 160 years. The Corps also constructed several of the early lighthouses on the coast.

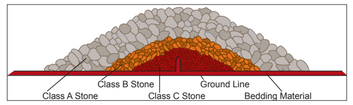
To date, the Corps has constructed 22 jetties on the ten major rivers plus accompanying navigation channels on nine of them. Total length of these jetties is 28 miles. Individual lengths range from the 6.6-mile long Columbia south jetty to the one-fourth-mile long north jetty at Chetco. The jetties contain more than 25 million tons of rock and concrete fill. The current value of these projects is more than $150 million. The Corps has also constructed breakwaters and entrance channels for 12 small boat basins in various coastal harbors, a breakwater at Port Orford, and the harbor entrance and boat basin at Depoe Bay. Since the Corps plays an important role in the development of coastal waterways, it continually participates in environmental planning for the coast region, both through its own studies and in cooperation with local, state, and federal agencies.

jetties

jetties and navigational channels

In the early 1800s, navigation from the ocean into the coastal rivers was extremely dangerous and often impossible. Each river accumulated large quantities of sand and sediment at its mouth, building up a very shallow area called a bar. The main river channel shifted constantly through the bar, making it both hazardous and difficult to find deep enough water for a safe crossing. At the Columbia River mouth alone, hundreds of ships were lost when they ran aground trying to find the elusive main channel. Obviously, this was a serious impediment to the growth of waterborne commerce on the coast.

Typical Jetty Section
The problem was reduced when the U.S. Army Corps of Engineers constructed a series of jetties on all the major coastal rivers. The purpose of a jetty is to concentrate and accelerate water flow at the mouth of a river. This concentrated water flow scours out shallow sand deposits and stabilizes the river channel. When combined with periodic dredging, jetties provide a safe route from ocean to river.

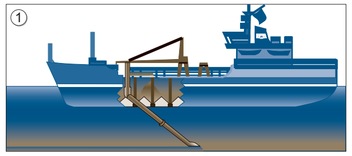


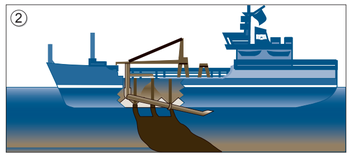
Jetty construction starts with a bed of rocks being placed on the ocean floor. Larger boulders are placed on top of this bed to form the main body of the jetty. Progressively larger boulders are used toward the jetty's seaward end where wave action is most powerful. Here, rocks as heavy as 30 tons are placed to resist the perpetual onslaught of the sea. Prior to the 1950s, jetty rocks were hauled to the placement site by railroad dump cars. Now, they are hauled by truck and placed by a large movable crane.

Dredging
Although jetties stabilize ocean entrances, they do not solve the problem entirely. In order to keep them clear, dredging is necessary. A navigation channel provides a deep water path through the river bar and upstream to port areas. Each year from May through October, the Corps removes ten million cubic yards of sediment from coastal river channels.

Dredging is accomplished primarily with two types of vessels, both of which vacuum sediment off the bottom with a powerful suction device. Hopper dredges fill internal compartments with dredged material and dump it at sea or in deep-water areas. Pipeline dredges transport the dredged material through large pipes to sites on shore where the material is deposited.

A hopper dredge acts as a huge vacuum cleaner sucking material off the harbor bottom. (1) The suction comes from large dredge pumps which then route the material through pipes into the hoppers. Here, the solid material sinks to the bottom of the hoppers while the excess water runs off and is piped back to sea. The hoppers are sealed off from the rest of the ship so they can be opened from the bottom to deposit the material in pre-selected deep-water areas. (2)





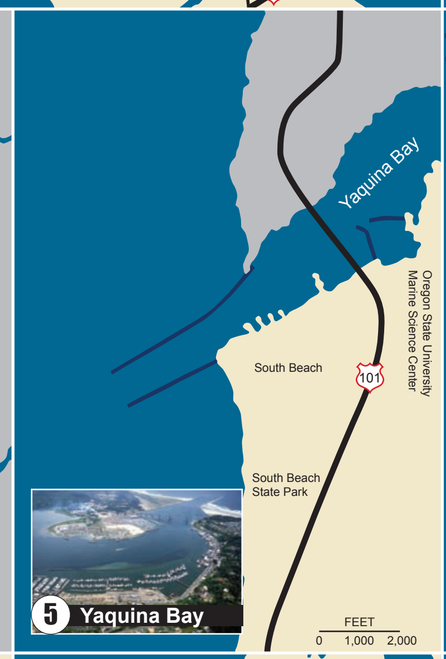
Oregon Coastal Harbors

1 Columbia River

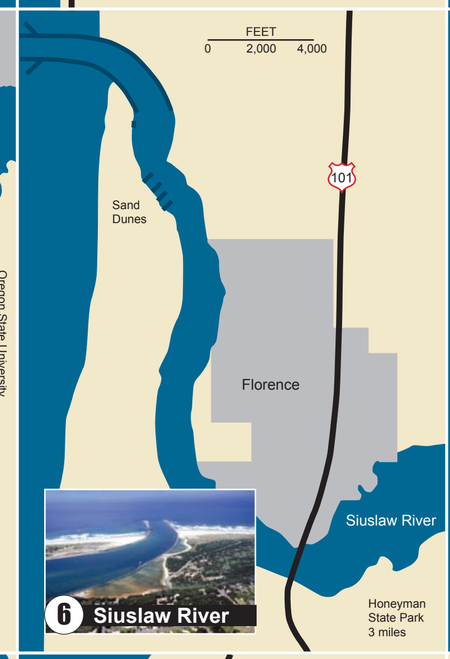
2 Nehalem Bay

3 Tillamook Bay

4 Depoe Bay

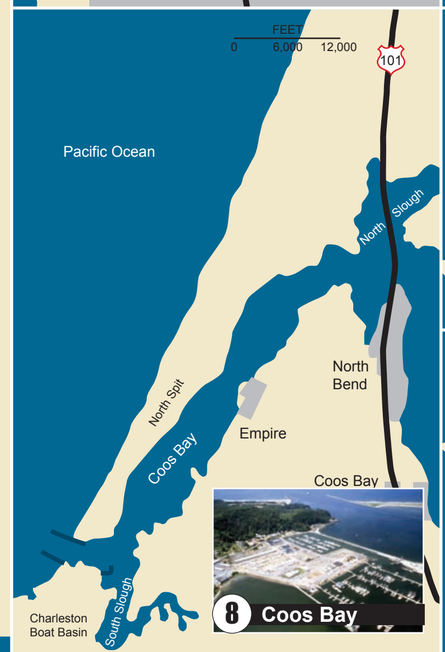


5 Yaquina Bay

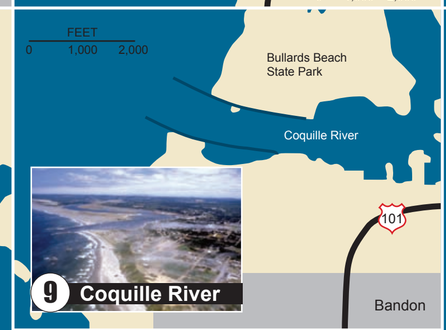


6 Siuslaw River

7 Umpqua River



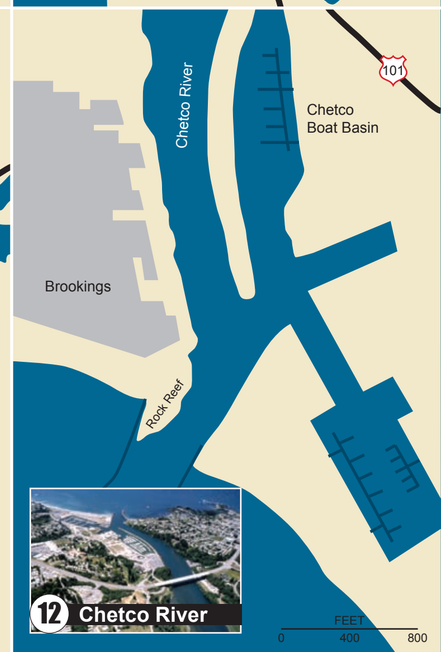
8 Coos Bay



9 Coquille River

10 Port Orford

11 Rogue River



12 Chetco River