

APPENDIX G

COWLITZ PARTNERSHIP SHORELINE MASTER PROGRAM UPDATES

DEMAND FOR WATER ORIENTED USES

1.1 Shoreline Guidelines Requirements

This report has been prepared to meet requirements of:

WAC 173-26-251 Shorelines of statewide significance, Subsection (3)(c)(ii)

Preserve sufficient shore lands and submerged lands to accommodate current and projected demand for economic resources of statewide importance, such as commercial shellfish beds and navigable harbors. Base projections on statewide or regional analyses, requirements for essential public facilities, and comment from related industry associations, affected Indian tribes, and state agencies. [Emphasis added]

173-26-201 Comprehensive process to prepare or amend shoreline master programs. (2)(d)(ii)

Reserve shoreline areas for water-dependent and associated water-related uses. Harbor areas, established pursuant to Article XV of the state Constitution, and other areas that have reasonable commercial navigational accessibility and necessary support facilities such as transportation and utilities should be reserved for water-dependent and water-related uses that are associated with commercial navigation unless the local governments can demonstrate that adequate shoreline is reserved for future water-dependent and water-related uses and unless protection of the existing natural resource values of such areas preclude such uses. Local governments may prepare master program provisions to allow mixed-use developments that include and support water-dependent uses and address specific conditions that affect water-dependent uses.

173-26-211 Environment designation system (3)(b)

Use compatibility. Land use policies and regulations should protect preferred shoreline uses from being impacted by incompatible uses. The intent is to prevent water-oriented uses, especially water-dependent uses, from being restricted on shoreline areas because of impacts to nearby nonwater-oriented uses. To be consistent, master programs, comprehensive plans, and development regulations should prevent new uses that are not compatible with preferred uses from locating where they may restrict preferred uses or development.

173-26-211 Environment designation system (5)(f)

Regional and statewide needs for water-dependent and water-related industrial facilities should be carefully considered in establishing master program environment designations, use provisions, and space allocations for industrial uses and supporting facilities. Lands designated for industrial development should not include shoreline areas with severe environmental limitations, such as critical areas.

1.2 Summary

The demand for water dependent use is affected by a wide variety of economic and social factors. This report is intended to provide the following items:

- A description of factors affecting demand or water-dependent use in Cowlitz County from the perspective of the Lower Columbia River, the Pacific Northwest, and the West Coast.
- A summary assessment of the supply of waterfront land in Cowlitz County and the Lower Columbia River.

In general, the planning horizon for this report is 20 years, although some forecasts and/or estimates of future conditions are within a shorter timeframe.

There are about thirteen miles of land zoned industrial along the Columbia River of which about 5 miles, or near 40 percent which is vacant or redevelopable.

This represents nearly the amount of waterfront which has been developed since the 1950s and is likely to be sufficient for at least 20 years, given past trends.

The future demand for water-dependent uses, particularly port use is dependent on a wide range of factors, including world trade and for grain exports, competition for Upper Midwest grain exports from Gulf Coast ports.

The policy decision of the extent to which this land should be reserved for water-dependent use will be based on a range of issues, including whether the entire Lower Columbia River including major port facilities in Portland, Vancouver, Kelso and Longview have future capacity, whether non-water-dependent use is a reasonable interim use that may allow redevelopment to water-dependent uses in the future and whether it is in the broader state and regional interest to reserve areas for potential port use along the Columbia River Navigation Channel which has recently been deepened by the U.S. Army Corps of Engineers to a 43-foot depth from the mouth of the river to Portland, a distance of 105 miles.

2. DEMAND FOR WATER DEPENDENT USES

2.1 Regional Context

The Lower Columbia River region includes the navigation channel in the Columbia River maintained by the U.S. Army Corps of Engineers at a 43-foot depth from the mouth of the river to Portland, a distance of 105 miles. The channel provides deep-water access to facilities at the Washington ports of Longview, Kalama, Woodland, and Vancouver; and to the Oregon ports of Astoria, St. Helens, and Portland, as well as to a number of private industrial operations including sawmills and log export facilities, pulp and paper manufacturers, and chemical industries.

The Lower Columbia River is one of five major port concentrations on the West Coast of North America, which include:

- **Southern California** ports consist largely of the ports of Los Angeles and Long Beach and are the largest port complexes on the west coast. Freight traffic was 118.5 million tons in 2010 (USACE 2010). These ports serve the largest domestic market on the West Coast. As a result, these ports naturally attract imports for consumption in the local and regional market, as well as large volumes for distribution throughout the eastern two-thirds of North America. In addition to vessel loading and unloading, Southern California hosts large numbers of distribution centers where imports are processed and transloaded for shipment east.
- **Northern California** ports include the Port of Oakland, San Francisco, Stockton, and Sacramento with freight traffic of 66.8 million tons (USACE 2010). These ports serve the regional domestic market and ship agricultural products from the Central Valley and eastern U.S.
- **Columbia River** ports, including Portland, Vancouver, Woodland, Kalama, Longview, and St. Helens, processed freight traffic of 41,457 million tons in 2010 (USACE 2010).
- **Puget Sound** ports, including Seattle, Tacoma, and several smaller ports, processed a total of 40,522 tons of freight traffic in 2010 (USACE 2010).
- **British Columbia** ports include Port Metro Vancouver (PMV) and the Port of Prince Rupert (PPR) which handle international containers, grain, and other agricultural products, forest products, finished autos and auto parts, and other general import/export merchandise.

Different ports have substantially different mixes of products.

The largest component of freight in the Southern California ports is petroleum and related products, which are about 25 percent of freight tonnage, with chemicals, manufactured products, and food about 10 percent each.

The largest component of freight in the Northern California ports is petroleum and related products, which are about 55 percent of freight tonnage, with chemicals and food about 13 percent each, and manufactured products about 6 percent.

The largest export in the Lower Columbia River ports is food products which are about 60 percent of freight tonnage, with grain about 40 percent of the total. Chemicals are about 15 percent of freight tonnage with forest products about 6 percent.

The freight tonnage of the Puget Sound ports consists of about 50 percent food products, with about half of which is grain, about 25 percent chemicals, and about 14 percent manufactured goods.

British Columbia ports, which include Port Metro Vancouver (PMV) and the Port of Prince Rupert (PPR), handle international containers, grain and other agricultural products, forest products, finished autos and auto parts, and other general import/export merchandise (WPPA 2009).

U.S. Gulf Coast ports are a significant competitor to Pacific Northwest ports for export of farm products from the Midwest. There are a variety of factors that affect choice of point of export. A major consideration is transportation costs, including competition from the Mississippi River barge transportation. This includes rail, barge, and marine shipping costs and is influenced by a variety of market conditions from year to year. As of 2011 about 50 percent of grain and soybean exports (about 2.5 million bushels) was shipped from Gulf Coast Ports, with about half shipped through the Panama Canal to Asia. Pacific Northwest Ports (Puget Sound and Columbia River ports) shipped about 1.4 million bushels. Widening of the Panama Canal allowing transit of larger ships is expected to lower marine shipping costs from Gulf Coast ports somewhat and may affect the split between competing ports (USB 2011).

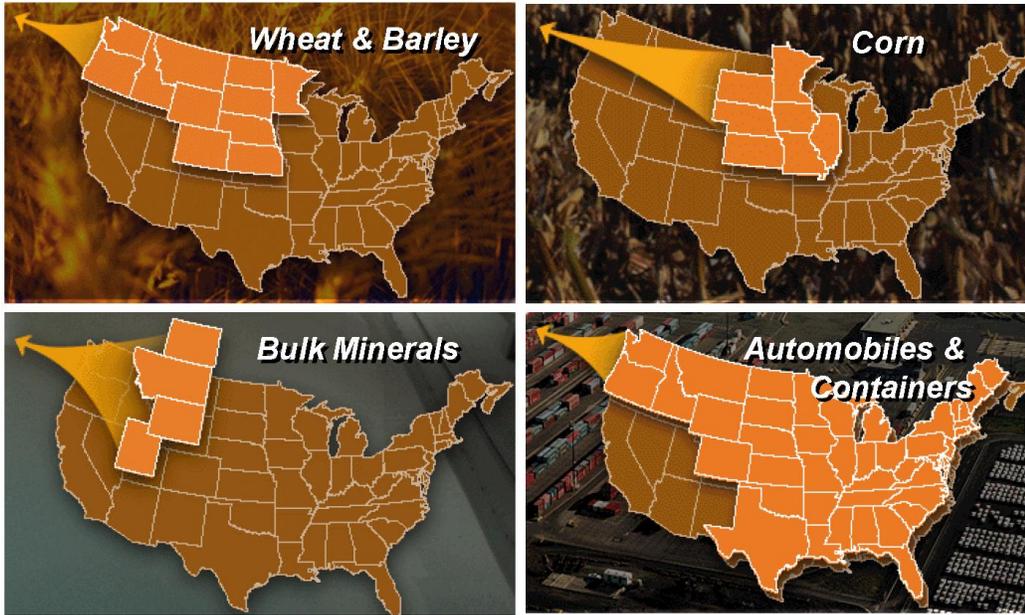
Global Trade

Demand for port facilities is driven by international trade. The world-wide economic recession beginning in 2008 substantially decreased world trade. Long-term projections, however, indicate that total international trade will increase from about 35 percent of world Gross Domestic Product (GDP) in 2008 to about 40 percent of world GDP by 2040. This will increase the volume of waterborne trade. At the same time, world GDP is projected to increase substantially.

Trade with countries located on the Pacific Rim is the most important component of international trade for U.S. West Coast Ports. This component of trade has grown more rapidly than in other regions of the world. Asian Pacific exports and imports each accounted for 45 percent of world exports and imports in 2007 (increased from approximately 41 percent in 1989). Total exports increased from U.S. \$1.2 trillion to U.S. \$6.2 trillion: an annualized average growth rate of 9.5 percent and larger than the world average of 8.9 percent. During the same period, total imports grew at the high rate of 9.4 percent per annum. The largest component of future growth is expected to be the economy of China. Other economies expected to grow rapidly include India, South Korea, Southeast Asia, and to a lesser extent Japan and Taiwan (POP 2010).

2.2 Marine Cargo

Figure 1 below indicates the general areas of the United States from which selected exports are drawn that utilize Lower Columbia River ports.



Source: Port of Portland

2.2.1 Grain and Similar Commodities

Lower Columbia River ports are the leading export gateway for U.S. wheat and barley. Pacific Northwest ports are competitive for trade with Asia largely by virtue of the low-cost rail and barge routings available via the Columbia River and train rail transport for Midwest grains, as an alternative to rail or barge routings through Gulf Coast Ports for destinations in Asia and South America.

Grain exports through Lower Columbia River ports are projected to experience marginal increases in grain (and related) exports at an average annual rate of 0.3 percent to 2030, with total exports of between 13 and 15 million tons in 2030. (WPPA 2009, PNA 2013).

The component of grain which originates in Eastern Washington and Oregon varies between about 2 to 3 million metric tons per year, depending upon harvest. Little change in total volumes is projected in the future. The balance of 9 to 10 million metric tons typically comes from the Midwest (POP 2010). Columbia River ports compete for that market with ports on the Mississippi River and Gulf Coast. In addition, U.S. grain exports compete with grains from Canada and Australia, as well as former importers including India and Pakistan, which are projected to export to the same markets (WPPA 2009).

Projections for food products export vary considerably both for the U.S. as a whole and from various groups of ports. A large number of factors are likely to influence the potential for growth of Lower Columbia River ports and the proportion of U.S. food exports they capture. Major factors include (WPPA 2009):

- Infrastructure, including investment in rail and barge transportation, maintenance and improvement of rail beds, investment in rail cars, and investment in both barges and dam and lock and channel maintenance (USB 2011). Factors such as drought also can influence regional movement of exports as occurred in the Mississippi system in 2012 (AS 2012).

- Rail freight costs reflect a variety of factors, including the weight capacity of rail lines, the availability of cars, and demands for transportation of other commodities, as well as fuel cost. Components of rail costs include the tariff plus fuel surcharge; loading and unloading adjustments; switching fees; and other similar accessorial charges, premiums, or discounts. Railroads prefer consistent volumes because they are better able to allocate resources. The rail system does not have unlimited capacity on the network, which results in competitive pressure to operate over finite capacity. Increasing Asian demand is also creating demand for other commodities such as coal that largely moves by rail. Grain demands are more seasonal and may not receive as favorable rates as more constant customers with coal demands.
- Depth of channels. The navigation channel in the Lower Columbia River recently was deepened to 43 feet. Channel depth determines the amount of grain that can be accommodated on a vessel. Terminals on Puget Sound have the deepest terminal draft in the U.S. Puget Sound elevators load vessels to an average of 2,386 thousand bushels, compared to an average of 2,187 at Columbia River elevators. Channel depth on the Lower Mississippi at New Orleans is dredged to 45 feet and is authorized to 55 feet, although there are no current appropriations to deepen the channel. Texas Gulf ports channels vary between 40 and 55 feet.
- Elevator capacity influences how quickly grain and other products such as corn and soybeans come to market. Additionally, export elevators are a bottleneck during peak export periods. Changes in elevator capacity directly impact the flow of grain and other products to ports.
- Dockage costs vary considerably between ports. [Dockage costs are based on the Gross Registered Metric Ton (GRT) of the vessel at the berth and the number of days docked.] Lower Columbia dockage rates vary from \$2.25 to \$2.80 per GRY. Puget Sound rates vary from \$3.05 to \$3.20. Central Gulf rates vary from \$2.95 to \$3.00. Texas Gulf tariffs vary from \$1.47 to \$180.
- Pilotage fees vary greatly depending upon the type of vessel, distance from the sea, difficulty with maneuverability, etc. The average fee for a Panamax vessel is \$45,000 in the Center Gulf and about \$16,200 in the Lower Columbia.
- Labor costs and the potential for labor stoppages are important short-term factors in determining the choice among alternative ports.
- Panama Canal tolls will have a substantial influence on the cost of moving grain and other products from Gulf ports to Asia. The relative cost of tolls will influence the competitiveness of rail transportation to Pacific Northwest Ports.

All of these factors are likely to interact in complex patterns and may vary over time. There is no clear basis to provide an estimate of the relative share of grain and other food product exports from Mississippi and Gulf ports versus Pacific Northwest ports on the Lower Columbia and Puget Sound.

The major influence local communities on the Lower Columbia can have on these factors include maintenance of the Columbia River Navigation channel, and maintenance and expansion of the capacity of terminals. In the long term, the reservation of sites with access to the Columbia River Navigation Channel has the greatest potential to accommodate long-term demand. Since there is a limited supply of potential port sites, using these sites for non-port use has the potential to limit the long-term potential of the Lower Columbia Ports to increase their share of commodity exports.

2.2.2 Dry Bulk

Dry bulk exports include minerals, ores, and like products. Most of the inorganic chemical volume is made up of exports of soda ash, which is mined in Wyoming and exported via Lower Columbia River ports (mainly Portland). Portland also exports potash mined in Saskatchewan and bentonite clay mined in Wyoming. Copper concentrates from Montana are exported via the Port of Vancouver (WPPA 2009).

Dry bulk traffic in the Pacific Northwest increased from 3.4 million tons in 1998 to 4.7 million tons in 2008. Dry bulks moving through Lower Columbia Washington ports (Vancouver, Longview, and Kalama) increased from 475,000 tons in 1998 to 1.1 million tons in 2008 (WPPA 2009).

Throughout the past 20 years, new dry bulk exports have been initiated through Columbia River ports. Some of the most notable examples include soda ash and potash, which are the key exports via Portland, and copper concentrates via Vancouver, among other cargoes. There are expected to be other dry bulk cargoes (imports as well as exports), that will occur in the future. Port of Portland dry bulk traffic is forecast to increase from approximately 2.8 million tons in 2009 to between 4.6 million tons (low) and 6.7 million tons (high) in 2040, with a most likely level of 6.0 million tons (WPPA 2009).

Opportunities for dry bulks originating in national/international markets are expected to remain favorable. In particular, dry bulk export cargoes are driven by strong growth in Asia (especially China). The lower U.S. dollar exchange rate will likely continue to support dry bulk exports (WPPA 2009).

Dry bulks that originate/terminate in local and regional markets include cement, gypsum, aggregates, steel scrap, petroleum coke, and fertilizers, among other like products. Most dry bulk exports via the Lower Columbia River in Oregon are handled via facilities in the Portland Harbor. The one major exception is gypsum, which is imported through the Port of St. Helens. Dry bulk traffic via the Lower Columbia Oregon ports serving local/regional markets has increased from 1.9 million tons in 1998 to 2.1 million tons in 2008. Regional dry bulks moving through Lower Columbia Washington ports (Vancouver, Longview, and Kalama) increased from 1.0 million tons in 1998 to 1.3 million tons in 2008 (WPPA 2009).

Dry bulk cargoes associated with construction (building materials) are expected to grow at the rate of growth of regional population and housing. Other local/regional commodities are expected to grow slightly slower.

2.2.3 Container Shipping

Container shipping in the U.S. is dominated by the Southern California ports (Los Angeles and Long Beach). These two ports account for more than 37 percent of full international containers shipped into or out of the U.S., and handle twice as many of these containers as all other West Coast ports combined. The size of the local population in Southern California, combined with the transportation connections and logistics industry in that region, means that these ports will continue to exert their market dominance (WPPA 2009).

The share of the West Coast container market between 1982 and 2008 increased from 46 percent to 71 percent for Southern California ports. The share for Puget Sound ports fell from 25 percent to 17 percent; for Northern California ports from 27 percent to 11 percent; and for the Columbia River ports from 2.1 percent to 1.3 percent. Despite the decrease in market shares in the Puget Sound, container traffic increased by an average of 3.4 percent per year between 1990 and 2008 (WPPA 2009).

The share of Asia-U.S. containers has grown in the East Coast ports as shippers look for other gateways as both a backup to and as an alternative to West Coast gateways. High population growth rates in the southern states have also increased the efficiency of using southern ports as international gateways. A substantial number of large distribution centers have been constructed around southern ports, which has led to increasing volumes of containers. The biggest current impediment to growth in the Asia-East Coast container trade is the Panama Canal, which is reaching capacity in the number of ships that can pass through it daily, and new container ships are too big for the current dimensions of the locks. These impediments will be reduced by plans by the Panama Canal Authority to upgrade the canal by 2014 to 2016 (WPPA 2009).

Lower Columbia River ports do not currently serve as an import center for intermodal containers that originate or terminate in other regions, such as the upper Midwest. Lower Columbia container terminals are limited to the Port

of Portland. The major limiting factor for container traffic on the Lower Columbia River is size of container ships and the inability of the Columbia River channel to accommodate newer ships. The average design draft (for fully loaded conditions) is between 44 and 46 feet. The Columbia River channel has been deepened from 40 feet to 43 feet of draft which does not serve fully loaded larger ships. The current Lower Columbia container market mainly consists of an area including Oregon, southern Idaho, and Southeast Washington. Products in this market area can move either via Columbia River ports or container ports in Puget Sound. The share of this market captured by each depends on factors such as the number of containers moving to and from potential destinations, the relative frequency of service provided by marine carriers, and relative inland transport costs. Lower Columbia River products moved by container include exports of agricultural products (e.g., frozen French fries), forest products, and other commodities. However, import traffic has increased in recent years and is now approximately equal to exports (WPPA 2009).

The Port of Portland estimates its container terminal has a capacity of 700,000. It currently handles between 180,000 and 220,000 TEUs. Forecasts for container port demands range from 379,000 TEUs to 614,000 TEUs in 2040. Based on these forecasts, there is not likely to be a demand for additional container ports on the Lower Columbia River.

2.2.4 Liquid Bulk

Liquid bulk traffic on the Lower Columbia River primarily includes primarily refined petroleum products and chemicals. The Lower Columbia River region has no oil refineries, so all of the gasoline, diesel fuel, jet fuel, heating oil, and other refined petroleum products are shipped into the area. Most of petroleum products used in the region (as well as in most of Oregon) originates at refineries in Puget Sound and California. These products are shipped to the Lower Columbia by pipeline or by ship. The Olympic Pipeline runs from the refineries on Puget Sound to Portland with throughput capacity of approximately 4.6 billion gallons per year. The pipeline carries gasoline, diesel fuel, and jet fuel, and also carries a large share of the refined products shipped to the Portland area (WPPA 2009).

The two main types of liquid chemicals received on the Columbia River are nitrogenous fertilizers and benzene/toluene. Nitrogenous fertilizers declined substantially during the 1990s due to an increase in domestic production of these products near the Tri-Cities. Other liquid chemicals include alcohols, ammonia, and other hydrocarbons, but these are limited in volume (WPPA 2009).

Liquid bulk traffic via Portland Harbor increased from 5.7 million tons in 1998 to 6.4 million tons in 2008. Liquid bulks moving through Lower Columbia Washington ports (Vancouver, Longview, and Kalama) increased from 379,000 tons in 1998 to 917,000 tons in 2008. Liquid bulk forecasts in the year 2040 may range between 6.9 million tons (low) and 8.0 million tons (high), with a most likely level of 7.6 million tons (POP 2010).

2.2.5 Breakbulk and Project Cargoes

Historically, the major commodity groups moved in breakbulk form to and from Pacific Northwest ports have included apples and other fruit, metals, and forest products. Some cargoes that move in breakbulk form can also move in containers (otherwise called “swing” cargoes), and differences in between 2002 and 2007 breakbulk cargo volumes saw sustained growth along both sides of the Columbia River. At Washington ports, breakbulk traffic increased from 1.1 million tons in 2002 to 1.2 million tons in 2007. At Oregon ports, breakbulk traffic increased from approximately 800,000 tons in 2002 to nearly 1.2 million tons in 2007. Forest products continue to be the largest export breakbulk commodity for Columbia River ports, and nearly all of this moves through Washington ports. The volume of export breakbulk forest products moving through Washington Columbia River ports fell by 110,000 tons between 2002 and 2007 (WPPA 2009).

Future breakbulk growth for Columbia River ports are projected to come primarily from imports of metal products. The main drivers of these metal imports are the Steelscape plant in Kalama and Oregon Steel in Portland, as well as steel products bound for inland U.S. points. In addition, Columbia River ports have also attracted components for wind generation systems. These imports are expected to increase as more funding is secured for alternative sources of power in the U.S. Total Washington (Columbia River) breakbulk volume is forecast to grow from 1.2 million metric tons in 2007 to 1.6 million metric tons in 2030 (WPPA 2009).

“Swing cargoes” are commodities that can be shipped either in breakbulk or containers. Although a number of factors influence whether swing cargoes are shipped in breakbulk or containerized form, such as westbound trans-Pacific container rates, frequency of sailings, and the size of overseas orders, price is probably the most significant factor. Shipping lines have added so much container ship capacity to satisfy demand for U.S. imports from Asia that there was substantial excess westbound capacity. This resulted in a decrease in westbound container rates, which attracted breakbulk swing cargoes (WPPA 2009).

2.2.6 Auto Processing

Portland is the primary auto import center in the Pacific Northwest, the fifth largest in the U.S. and second largest on the U.S. west coast (behind Long Beach). Portland is home to several major auto importers, including Honda, Hyundai, and Toyota. Fully assembled autos moving through the Port of Portland increased from approximately 400,000 units in 1998 to a peak of 464,000 units in 2006. Volumes fell slightly in 2007 and 2008 in response to the recession, ending at 408,000 units in 2008. Portland has accounted for 60 to 70 percent of the Pacific Northwest market during the past 10 years, followed by Tacoma with 25 to 30 percent share, and 10 to 15 percent via the Port of Vancouver. The Port of Portland’s share of the PNW auto market is expected to range from 50 (low) to 70 (high) percent, and most likely average 60 percent (WPPA 2009).

Forecasts of auto imports will depend on the success of U.S. manufacturers in maintaining market share. Additional entries into the import market are expected in the future. A state-owned Chinese company named Dongfeng has entered into a joint venture with Honda and is now exporting cars to Europe and America. DaimlerChrysler recently cut a deal with the Chinese automaker Chery, and together the companies aim to explore the U.S. market. In addition, automobile production in India is expected to rise to 1.6 million cars in 2009 and reach 4 million cars by 2017. India could also export cars to the U.S. market. IHS Global Insight is projecting rapid growth in fully assembled auto imports, with growth averaging 3 to 4 percent per year (WPPA 2009).

2.2.7 Passenger Vessels

The passenger vessel market is divided between very large vessels and a variety of markets served by smaller vessels.

The large cruise ship market is differentiated between homeports and ports of call. A homeport refers to a vessel’s home base when it is in a particular market area. Homeports are chosen for their ability to smoothly transfer passengers that fly-in or drive-in with the cruise ship. This generally requires a large local market with strong airport/highway capacity. For example, Vancouver B.C. and Seattle are the homeports for vessels in the Alaskan cruise market. A port of call is one of the ports that will be visited during a cruise itinerary or when the vessel is re-positioning from one market to another. Cruise vessels ports of call for the Alaska market include Juneau, Ketchikan, Sitka, and other ports of call. Astoria Oregon is a port of call for “repositioning cruises” in the spring and fall when ships are repositioned from the Mexico to the Alaskan market and back (Cruisemates 2013). The Port of Astoria has 22 such stops scheduled in 2013. (POA 2013) It is possible that such stops could be accommodated by the Port of Longview; however, Astoria at River Mile 13 has a travel time advantage over Longview at River Mile 66.

It is unlikely that the Lower Columbia Region would be able to compete with other large seaports for large cruise ships as either a homeport or a port of call for other than repositioning cruises because of the lack of an established market.

There is also a fleet of smaller cruise ships that serve local markets. American Cruise Lines Company operates paddlewheel vessels the Queen of the West, the Safari Legacy, the Sea Bird, and the Sea Lion which are homeported in Portland and operate on the Columbia, Snake, and Willamette Rivers. Charter, excursion, and dinner boats are an additional sector of the passenger vessel market. These boats offer public and private sightseeing tours and host weddings, corporate events, and community activities. There also are a number of smaller specialty boats, including sailboat cruises.

Such services are currently provided out of ports in Cowlitz County, for example the Queen of the West stops at the Port of Kalama (Reeder 2013) but are not likely to achieve the level of departures from Portland in terms of attracting potential passengers.

If passenger service were to be established in the area, these services would likely use existing marinas rather than develop new facilities.

2.3 Ship and Boat Building and Repair

The Lower Columbia River became a major shipbuilding area during World War II when Kaiser Industries operated yards in Portland and Vancouver that produced 455 Liberty Ships (Abbott 1983). Shipyards in Portland and Vancouver produce a variety of specialty vessels, with the largest producers Vigor (and subsidiary Cascade General) specializing in fishing vessels, tugs, barges, ferries, and national security vessels. Overhauling and modernizing vessels are also a large portion of the industry (CPRO 201). Christensen Shipyards in Vancouver is a major builder of composite fiberglass ocean going motor yachts, ranging from 100 feet to 165 feet in length. Christensen has completed approximately 25 of these mega-yachts. A variety of other smaller yards provide largely repair services or construction of barges (CC 2012).

Foss Maritime operates a shipyard in Rainier, Oregon, that builds a variety of specialty vessels, including tugs for its own fleet (Foss 2013). Northstar Yachts builds large motor yachts in Kalama (Northstar 2012).

Ship building in the U.S. is largely a niche market for specialty vessels since construction of large vessels takes place in a variety of second world countries such as South Korea, China, and Japan. The U.S. also has a substantial oversupply of ship building capacity in existing yards and has been largely dependent on U.S. Navy contracts for the bulk of its support. Prospects for growth in ship building in the U.S. are generally considered very limited, except for specialty niche markets (AS 2012). There is a variety of waterfront locations along the Columbia River that are likely suitable for ship building and repair; however, the oversupply of existing facilities makes near future growth in the sector unlikely.

2.4 Moorage

2.4.1 Commercial Moorage

Commercial moorage in the Lower Columbia is dominated by moorage for the commercial fishing industry. The majority of fishing vessels are home ported near the mouth of the river near Astoria, Oregon, or Ilwaco, Washington.

There is very little moorage devoted to fishing vessels in Cowlitz County. The lack of related facilities for servicing and repair will likely limit moorage to fishing vessels owned by residents of the Lower Columbia who moor in the area for convenience. Those vessels moored in the area are largely accommodated by existing

marinas. The overall demand for fishing vessel moorage is expected to decrease due to reductions in the allocation of fish to the commercial fishery and buy-back programs for existing permits. (WDFW 2013)

2.4.2 Recreational Moorage

Recreational moorage demand in most markets has typically been characterized as a situation where demand exceeds supply. The relative demand for in-water storage of vessels, however, can be seen as a function of supply, convenience, and cost of other alternatives, including self-launching of small boats and dry storage alternatives (McManus 1997). The options for larger boats, however, are more limited since many large boats are impractical for self-launching or dry storage. Moorage space in all counties tends to lag behind the growth of vessel registrations indicating that recreational use of boats is not tied to the supply of moorage and owners generally find alternatives such as launching for day-use an acceptable alternative.

In the long term, the demand for marina space is likely to be related both to the total number of boats owned in the area, as well as the cost of in-water moorage as it compares to self-launching and dry storage. The Port of Kalama and other marinas have waiting lists for moorage. (Reeder 2013) It is likely that the most consistent demand in the future will be moorage for larger boats that have fewer alternatives and whose owners are likely to be more able to afford moorage, even if rates increase.

The supply, convenience, and cost of public boat launches also affects the extent to which alternatives to moorage are available to smaller boats that are trailered and launched into the water, as well as by hand launched small boats such as kayaks.

Recreation moorage supply in Cowlitz County has not been surveyed. The largest marina facility at Kalama, with 222 slips, is operated by the Port of Kalama. The Longview Yacht Club maintains xx slips.

2.4.3 Boat Dry Storage

Dry boat storage-marinas typically store boats on racks, often with roof coverage. Generally boats are lifted by a wheeled vehicle or a crane and track system that moves a boat from storage to the water. Stacked storage typically is utilized by smaller boats, but is not practical for larger boats or boats with large masts. Very large boats may not fit into the facilities offered by dry boat storage-marinas. Typically, dry storage costs are considerably less than wet moorage but much greater than the costs of storing a boat at home and trailering to a boat launch. The development cost of (CDBW 2002)

There are several dry storage facilities in Portland, including the Sundance Marina. There are a number of dry storage facilities in the Puget Sound region where higher wet moorage rates may encourage use, including Edmonds at the Port of Everett's Port Gardner Wharf, on Lake Union in Seattle, on the Thea Foss Waterway in Tacoma, and at the Twin Bridges Marina near Anacortes. Such facilities generally accommodate boats of up to 30 feet in length.

Cowlitz County has no current dry storage facilities associated with a marina, but are stored in mini storage facilities throughout the area.

Many sites with limited shoreline frontage and limited water depth are available along the Columbia River and other rivers that could accommodate this use. Generally, environmental impact and permitting time and cost for dry moorage can be expected to be lower than wet moorage.

2.5 Boat Ramps

The demand for boat ramp capacity is problematic because reliable usage data is not generally available. Use of most boat ramps charged on an honor system basis and reliable records are not available. However,

generalizations can be made about the overall need for space based upon general growth of the affected fleet. Operators report boat ramps are used at or beyond capacity during selected peak days (i.e., nice weekend days in the summer or during fishing seasons).

Key factors that affect boat ramp demand include capacity and waiting times, as well as geographic distribution. In general, the key factors in demand for boat launch capacity are distance from residences and waiting time on the approximately 100 days of a year that account for 50 percent of demand. Other important factors include the availability of ramps in relation to water bodies that are desirable destinations for particular uses such as fishing. These factors are also balanced by the cost of building and maintaining boat launches which is reflected in launch fees and the effects of both monetary cost and the cost of waiting and congestion on individual choices of how frequently to use boats and whether to shift usage to non-peak periods. Other non-monetary costs of launches include environmental impacts. Boaters surveyed generally indicate that the existing supply of boat launches is inadequate to meet their goals, but are often unwilling to pay higher fees if such fees would result in a greater supply (Bell 1995).

Whether and when additional boat launches are provided in the county is likely to be largely a service decision by governmental entities, park departments, and the port districts based on providing a public service or augmenting the area as a water-based tourism destination.

2.6 Water-Related and Mixed Uses

The use of the terminology “mixed-use” differs substantially between the Shoreline Management Act (SMA) application and the general real estate market. The SMA usage refers to a mix of water-dependent and non-water-dependent uses. The real estate market usage refers to the mix of commercial, office, and residential uses.

The typical real estate market characterization of mixed-use development in the Puget Sound area is some combination of residential over retail or office over retail in multi-storied buildings (vertical mixed-use). This type of mixed-use development has become common throughout much of the metropolitan region. There are some combinations that occur in single storied multi-use buildings called ‘flex-tech’ buildings. These buildings can contain horizontal mixes of uses including office, retail, restaurant, commercial, small assembly/service/storage, and showrooms. These ‘flex-tech’ types of buildings/uses tend to occur in business and office parks in suburban areas.

The growth in commercial space in the form of mixed-use is a response to the growth in employment in the finance, insurance, real estate, business, professional, and medical-dental industries and the administrative offices of firms who are engaged in more industrial activities. One of the key determinants of where this type of vertical mixed-use locates is land values. Higher land values will support the vertical mixed-use type of development. Typically, waterfront areas have higher land values.

Generally, the mixed-use building developments have three components: office space with some retail or service to supplement office businesses; parking (surface, structured, or underground); and whatever landscaping and amenities are typical for the market area or required by local regulations. This type of development can be accommodated into waterfront locations where communities value access to and views of the water or waterfront. In order to comply with the Shoreline Management Act and Shoreline Guidelines, public access and water-related uses can be included with little adverse effect on the economic viability of the development. There is potential for complementary use of project elements, such as parking, to serve water-related uses and public access in evenings and on weekends when office demand is reduced and most visitors are oriented to recreational use or amenities (ECS 2008).

There currently are not existing mixed use waterfront developments in cities in Cowlitz County.. In order to be viable, features such as public open space that provides water-enjoyment uses, as well as some uses that attract persons such as restaurants with water views, would likely be required. The balance of the area likely would

include hotels, offices, and other uses that relate to the amenities of the water. The Port of Kalama designates in their Comprehensive Plan a potential restaurant, hotel and conference center as well as an interpretive center in their central waterfront area

3. EXISTING FACILITIES

About nine linear miles of the Columbia River in Cowlitz County is currently zoned for industrial use and developed to the extent of clearing. About four linear miles in the Longview area includes land owned by the Port of Longview, Weyerhaeuser, and Millennium Terminals and is about half undeveloped or subject to redevelopment, such as the Millennium Terminals site of a former aluminum smelter. About four linear miles in the Kalama area is owned by the Port of Kalama, and several private parties with about a quarter of the frontage available for development or redevelopment. In the easterly portion of the county, two parcels owned by the Port of Woodland and one private parcel total about a mile of river frontage. These parcels are cleared and graded but do not host industrial development.

3.1 Grain and Farm Products

The following table summarizes existing grain and soybean export elevators on the Lower Columbia River as of 2010 (PoP 2010):

Location/Name	Capacity (tons)	Capacity (bushels)	Site Area acres	Year Built
Portland, Terminal 5 Columbia Grain	109,000 metric	4,000,000	40	1975
Portland, O" Dock Elevator CLD Pacific Grain		1,800,000		1962
Portland, Irving Street Elevator CLD Pacific Grain		1,400,000		1957
Vancouver, Terminal 2 United Grain Corporation		5,000,000		1934
Kalama, TEMCO		6,400,000		1962
Kalama, Kalama Export Company		3,500,000		1983
Longview, Berth 9 EGT	8,000,000		100	2011

Facilities in Cowlitz County comprise about more than half of the Lower Columbia River elevator capacity and include the following facilities:

- TEMCO, a joint venture between CHS and Cargill operates the Port of Kalama Elevator, which was built in 1962. The elevator has one berth with a length of 840 feet. The water depth at the terminal ranges from 40 to 45 feet. The facility has storage capacity for 6,400,000 bushels. It is served by two belts and is rated at 850 tons/hour.
- **Kalama – Kalama Export Company.** ConAgra’s subsidiary Peavey Company built the grain elevator at the Port of Kalama in 1983 on land purchased from the Port. In 1998 it was renamed the Kalama Export Company and is currently owned Gaviion Grain and ADM. The facility includes one berth with a length of 1,088 feet (with dolphins) and water depth of 40 to 67 feet. The terminal is located on approximately 100 acres and has storage capacity for 3,500,000 bushels of product. There is one belt with four spouts and a rated capacity of 3,000 tons per hour. According to Burlington Northern Santa Fe (BNSF), the facility has rail track capacity for approximately 400 cars (four unit trains).
- **Longview Berth 9 ETG.** In 2009, Bunge North America, the North American operating arm of Bunge Limited, created a joint venture with Itochu (the second largest marketer of grain and food products in Japan) and STX Pan Ocean (one of the leading shipping companies of agricultural products in the world) named EGT Development, LLC. The terminal is capable of handling grain, oilseeds, and protein meals. It features a rail loop track unloading system capable of holding four 110-car unit trains at any given time, an efficient shuttle train unloading system, as well as the capability to unload barges from the Columbia

River. The facility is able to handle more than eight million metric tons annually. The terminal encompasses approximately 100 acres.

There are no specific plans or projections for additional grain elevators on the Lower Columbia River although upgrades and modernization of existing terminals can be expected..

3.2 Dry Bulk

The following table summarizes dry bulk facilities on the Lower Columbia River (PoP 2010):

Location/Name	Capacity (tons)	Site Area acres	Main Commodity
Portland, Terminal 5 Portland Bulk Terminals,	600,000 metric	120	potash
Vancouver, Terminal 2 Berth 7 Kinder Morgan		34	copper concentrates, bentonite clay, and other
Kalama Central Port, Emerald Kalama Chemical			Toluene
Port of Longview, Berth 2, Kinder Morgan		100	agri-products, chemicals, and minerals
Port of Longview, Berth 5, West Coast Products			petroleum calcined coke
Weyerhaeuser, Salt Dock		15	salt

Facilities in Cowlitz County comprise about half of the Lower Columbia River dry bulk capacity and include the following facilities:

- **Emerald Kalama Chemical** (formerly BF Goodrich) is an organic chemical manufacturing plant that uses toluene to produce food preservatives, flavors and fragrances, plasticizers, and pharmaceuticals. The 35-acre site has a 680-foot-long dock with water depth of 40 feet.
- **Port of Longview Berth 2** is a bulk handling terminal, operated by Kinder Morgan Terminals. It is used to import and export dry bulk products, such as agri-products, chemicals, and minerals. The dock is 850 feet long with a depth of 40 feet. The terminal offers a dry bulk loader, covered conveyor system, and hot water and air cleaning system. Covered storage is available at Transit Shed 2 and has a 10,000-metric-ton storage capacity.
- **Port of Longview Berth 5** is a bulk handling terminal used for export of Calcined petroleum coke, which arrives by train from BP West Coast Products oil terminal in Cherry Point, Washington (north of Bellingham). The dock is 720 feet long with a depth of 40 feet. The terminal utilizes an electric hydraulic rotating ship loader and electric belt conveyor, which allows direct transfer from rail to ship or transfer into storage and then to ship. The covered storage tanks provide a 40,000–metric-ton capacity.

3.3 Breakbulk

The following table summarizes breakbulk facilities on the Lower Columbia River (PoP 2010):

Location/Name	No. Berths	Site Area acres	Linear Feet	Main Commodity
Portland, Terminal 2	4	49	2,000	steel
Portland, Terminal 6, part, Oregon Steel Mills	4	25	1,500	steel
Schnitzer Steel, Willamette River			2,600	scrap metal

Location/Name	No. Berths	Site Area acres	Linear Feet	Main Commodity
Port of Vancouver Terminal 2 Berths 1, 2, and 4	3	40	1,700	variety
Port of Vancouver Terminal 3 Berths 8 and 9	2	74	1,250	pulp, lumber, steel
Port of Kalama North Port Marine Terminal	1	200	600	steel
Port of Longview, Berth 1	1		800	variety
Port of Longview, Berths 6 and 7	1	35	1,500	Steel, forest products, variety
Port of Longview, Berth 8	1	5	617	Steel, forest products, variety
Weyerhaeuser, Paper Dock	1	15	2,300	paper
Weyerhaeuser, Log Dock	1	40	2,300	logs, lumber

Facilities in Cowlitz County comprise about half of the Lower Columbia River dry bulk capacity and include the following facilities:

- **Port of Kalama's North Port Marine Terminal** serves the adjacent Steelscape mill and handles steel coils and other steel products associated with the mill. The 200 acre North Port and 75-acre Steelscape site has one berth with a length of 600 feet (900 feet with a water depth of 40 feet).
- **Port of Longview Berth 1** is used to handle general cargo. The dock is 800 feet long and has a water depth of 40 feet. Adjacent Transit Sheds 1 and 2 provide 55,000 square feet of storage. (POL 2011a)
- **Port of Longview Berths 6 and 7**, together, share a length of the 1,500-foot terminal with a water depth of 40 feet. Cargo handling equipment includes a container crane, bulk loader, clam shell buckets, and portable hopper conveyor system. Covered storage for general cargo is available at Transit Shed 6, with 100,800 square feet of storage, and Warehouses 8, 9, 10, 11, which provide 319,000 square feet of storage.
- **Port of Longview Berth 8** handles breakbulk cargo (steel, over-dimensional, heavy-lift, forest products, and general cargo). The berth is 617 feet long with a water depth of 40 feet and a 5-acre staging area.
- **Weyerhaeuser Paper Dock** includes a series of docks with about 2,000 feet of water frontage with an adjacent paved area extending about 400 feet from the water with two transit sheds. This facility is currently used primarily for shipping bulk paper.
- **Weyerhaeuser Log Dock** has about 1,200 feet of water frontage that is adjacent to a log and lumber storage area of about 40 acres.

4. VACANT OR REDEVELOPABLE AREAS

There are a number of large property holdings in the area along the Columbia River with potential access to the Columbia River Navigation Channel that are likely to be available for water-dependent industrial use in the future. There are about five linear miles of industrial zoned land along the Columbia River which is vacant or redevelopable. Some, such as the Millennium site have active pending development applications. Others such as the Wasser-Winters site may have depth and environmental constraints which limit development potential to barge operations.

Overall, about 35 percent of the industrial zoned land with the potential for water –dependent use is vacant or designated by owners for development or redevelopment.

That is substantially more land than has been developed in the past 20 years. The future demand for water-dependent uses, particularly port use is dependent on a wide range of factors, including world trade and competition for Upper Midwest grain exports from Gulf Coast ports.

Port of Longview Point Barlow Site

The Port of Longview purchased the undeveloped, 275-acre, Barlow Point site in October 2010. The site has about 7,300 feet of river frontage. The property is located within the City of Longview and is zoned Heavy Industrial, with a Comprehensive Plan designation primarily of Heavy Industrial and a smaller area as Mixed Use Residential/Commercial. The site has convenient road and rail access being located only 5.4 miles west of I-5 and 2 miles west of the main line railroad. Long-term uses have yet to be determined, however it is anticipated that the long-term development will include a marine facility, as well as other industrial activities as allowed in a Heavy Industrial designation. (POL 2011b)



Point Barlow Site, Port of Longview



Millennium Bulk Terminals

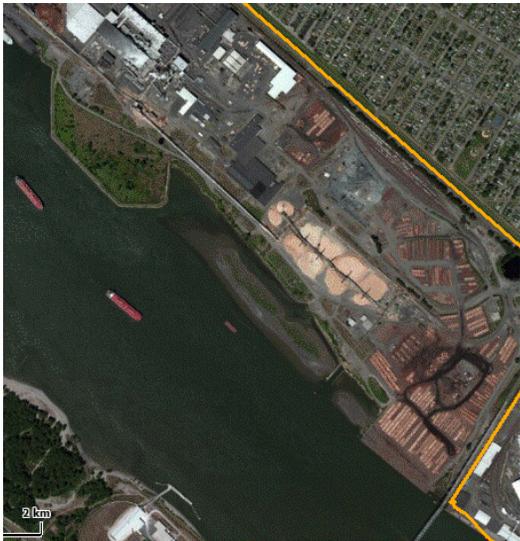
Millennium Bulk Terminals Longview owns a site just east and upriver of the Port of Longview Point Barrow site. The 416 acre parcel with about 6,000 feet of river frontage includes two former aluminum producing plants, a carbon plant and carbon transfer area, amongst other industrial uses. Millennium proposes to upgrade the existing import/export bulk facility and construct a coal export terminal, which will encompass more than 100 acres of the site. If approved the facility would be expected to begin operations in 2015 and full site capacity of 44 million metric tons of coal would be in place by 2018.



Millennium Terminals

Weyerhaeuser Site

Weyerhaeuser has a former deep vessel terminal site west of the existing log dock and an area of leased aquatic lands that were a dredge spoils site with about 3,000 linear feet of water frontage. Existing facilities limit the upland area, except at the dredge spoils site to a few hundred feet . This area has the potential for redevelopment for a variety of terminal uses. The site is zoned Heavy Industrial. Vessel moorage likely would require dredging or construction of pile supported facilities at a distance from the shore. The Washington Department of Fish and Wildlife has identified an accretion area west of the existing log dock as potentially productive habitat which may limit potential or require designs that bridge the nearshore.



Weyerhaeuser

Port of Longview Berth 4

The Port of Longview Berth 4 has an idle grain elevator slated for redevelopment with about 990 linear feet of river frontage. The existing grain elevator site is about 3.5 acres. The port has developed an Omni Terminal concept that has the ability to efficiently handle multiple cargo types. Redevelopment is awaiting a tenant (POL 2011)



Port of Longview Berth 4



Wasser Winters Site

The local firm of Wasser-Winters owns a site about 500 acres in size in the City of Kelso between the Columbia River and the BNSF Railway just east and upstream of the mouth of the Cowlitz River. The site is zoned Heavy Industrial, however about a third to a half of the site is wetlands and likely undevelopable. The channel between the site and Cottonwood Island is shallow in places. About 4,500 linear feet along the river is not encumbered by wetlands. It is likely deep enough for recreational boating and barge traffic but would require dredging to accommodate larger vessels. The Washington Department of Fish and Wildlife has identified the channel as a likely smelt spawning area. Smelt are listed as threatened under the Endangered Species Act.



Wasser Winters Site



Port of Kalama North

The North Port area consists of approximately 200 acres at the northern edge of the existing port properties, and includes a marine terminal as well as the Steelscape finishing plant. The terminal currently handles steel coils and other steel products associated with the mill. The Port has completed engineering and is in the permitting process to add another berth to the marine terminal. (PoK 2010) About 35 acres is available for development (Wilson 2013)



Port of Kalama North Terminal



Port of Woodland Martins Bar Site

The Port of Woodland owns 200 acres of industrial property located on the Columbia River about four miles west of the Lewis River. (POW 2013) The site has about 3,000 linear feet of river frontage. It has been cleared and graded but has no current tenants.



Port of Woodland Martins Bar Site



Columbia River Carbonates, Martins Bar Site

Columbia River Carbonates proposes a limestone import site on a site south of the Port of Woodland site on the Columbia River.



Port of Woodland Austin Point Site

The Port of Woodland Austin Point is a 200 acre site with about 3,000 feet of river frontage immediately west of the mouth of the Lewis River directly across from St. Helens, Oregon (POW 2013). The site has an interim occupant, a heavy equipment training program.



Port of Woodland Austin Point Site

Austin Point, the southernmost parcel, has deep draft feasibility.

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