

# Market Analysis for the Port of Port Angeles Marine Facilities Master Plan

## FINAL REPORT

PREPARED FOR  
**Port of Port Angeles**

PREPARED BY  
**BST Associates**  
18414 103rd Ave NE  
Suite A  
Bothell, WA 98011  
(425) 486-7722  
[bstassoc@seanet.com](mailto:bstassoc@seanet.com)



January 25, 2006

# Table of Contents

<b>1 EXECUTIVE SUMMARY .....</b>	<b>1</b>
1.1 MARINE CARGOES .....	1
1.1.1 Logs.....	1
1.1.2 Other Opportunities.....	1
1.2 PASSENGER VESSELS .....	3
1.3 SHIP REPAIR AND BOAT BUILDING .....	3
1.3.1 Boat Building .....	3
1.3.2 Topside Repair.....	3
1.3.3 Boat Lifts.....	4
1.4 MARINAS .....	4
1.5 FISHING INDUSTRY SUPPORT ACTIVITIES.....	5
<b>2 MARINE CARGO.....</b>	<b>5</b>
2.1 OVERVIEW .....	5
2.2 FOREST PRODUCTS .....	6
2.2.1 Harvest Volumes in the North Olympic Peninsula .....	7
2.2.2 Flow of Fiber in Clallam County.....	8
2.2.3 Port of Port Angeles Cargo Opportunities.....	9
2.3 OTHER MARINE CARGOES .....	14
2.3.1 Petroleum Products .....	14
2.3.2 Aggregates .....	15
2.3.3 Solid Waste.....	16
2.3.4 Moorage for Idle Vessels .....	17
2.4 BARGE SERVICE.....	17

2.4.1	<i>Evaluation of the Port Angeles Market</i> .....	18
2.4.2	<i>Generic Benefits of Barge Service</i> .....	18
2.4.3	<i>Requirements for Successful Barge Service</i> .....	19
2.4.4	<i>Feasibility of Barge Service in Port Angeles</i> .....	19
<b>3</b>	<b>CRUISE SHIPS/PASSENGER VESSELS</b> .....	<b>20</b>
3.1	CRUISE VESSELS .....	20
3.2	SMALL CRUISE SHIPS .....	21
3.3	OPPORTUNITIES .....	21
<b>4</b>	<b>SHIP &amp; BOAT BUILDING AND REPAIR</b> .....	<b>22</b>
4.1	COMPARISON OF REVENUE TRENDS IN SHIP BUILDING AND BOAT BUILDING .....	22
4.2	TOPSIDE REPAIR .....	22
4.2.1	<i>Topside Repair Market</i> .....	23
4.2.2	<i>Berth Utilization</i> .....	23
4.3	BOAT REPAIR.....	25
4.3.1	<i>300-Ton Lift</i> .....	25
4.3.2	<i>Marine Ways</i> .....	26
4.3.3	<i>70-Ton Lift</i> .....	27
4.4	BOAT BUILDING.....	28
<b>5</b>	<b>MARINAS</b> .....	<b>29</b>
5.1	MARINA DESCRIPTION .....	29
5.2	MARKET ASSESSMENT .....	30
5.2.1	<i>Market Area Served</i> .....	30
5.2.2	<i>Growth in Boat Ownership</i> .....	30
<b>6</b>	<b>FISHING SUPPORT FACILITIES</b> .....	<b>31</b>

6.1 FISHERIES TRENDS .....	31
6.1.1 Whiting ( <i>hake</i> ).....	31
6.1.2 Sardines.....	33
6.2 FISH PROCESSING INDUSTRY IN CLALLAM COUNTY .....	33
6.2.1 Fish Landings.....	33
6.2.2 Fish Processing Industry .....	33

## List of Tables

Table 1 - Quantities Of Disposed Wastes in Clallam County .....	16
Table 2 – Potential Barge Service Market on North Olympic Peninsula .....	18
Table 3 - Small Cruise Vessels in Alaska and Pacific Northwest .....	21
Table 4 – Utilization of the 300-ton lift .....	25
Table 5 –Utilization of the Marine Ways .....	26
Table 6 – Utilization of the Port Angeles 70-ton Travelift.....	28
Table 7 – Whiting Harvest Allocation for 2005 .....	32
Table 8 – Total Commercial Fishery Landings At Northwest Ports (Metric Tons) .....	34

## List of Figures

Figure 1 – Washington State Non-Containerized Marine Cargo Trends (Revenue Tons) Source: Pacific Maritime Association.....	6
Figure 2 – Waterborne Movements of Logs in Port Angeles Harbor Source: US Army Corps of Engineers Waterborne Commerce .....	10
Figure 3 - Port of Port Angeles Log Handling Trends (Bdft).....	11
Figure 4 – North American Wood Chip Export Trends .....	13
Figure 5 – Waterborne Movements of Wood Chips in Port Angeles Harbor Source: US Army Corps of Engineers Waterborne Commerce .....	14
Figure 6 – Waterborne Movements of Petroleum Products in Port Angeles Harbor Source: US	

Army Corps of Engineers Waterborne Commerce ..... 15

Figure 7 – Imports of Cement and Aggregates from Canada into Port Angeles Harbor Source:  
US Maritime Administration ..... 16

Figure 8 – Idle Moorage at Terminal 3 ..... 17

Figure 9 – Alaskan Cruise Market Trends in the Pacific Northwest ..... 20

Figure 10 - Gross Business Incomes of Washington State Boat and Ship Builders..... 22

Figure 11 – Berth Utilization at the North Berth ..... 24

Figure 12 – Number of Days of Overlapping Berth Days ..... 24

Figure 13 – Berth Utilization in 2004 ..... 25

Figure 14 – 300 Ton Lift at Port Angeles ..... 26

Figure 15 – Marine Ways at Port Angeles..... 27

Figure 16 – Monthly Utilization of the Marine Ways ..... 27

Figure 17 – Monthly Utilization of the 70-Ton Travelift ..... 28

Figure 18 – West Coast Hake Landings ..... 32

Figure 19 – West Coast Sardine Landings..... 33

# 1 Executive Summary

The Port of Port Angeles retained BST Associates to prepare an assessment of market opportunities to help guide the Marine Facilities Master Plan. The Port of Port Angeles has a number of options for utilization of its marine terminals. These opportunities are briefly reviewed in this section with a more detailed assessment in subsequent sections of the report.

## 1.1 Marine Cargoes

The opportunities to attract marine cargo to any port are directly related to the size of the local population and economic base within the port's primary market area. In the case of the Port of Port Angeles, the primary market area is the central portion of Clallam County (between Sequim and Forks). Lack of rail service constrains the ability of the Port of Port Angeles to handle gateway cargoes, which originate or terminate in more distant markets (such as containerized cargo or automobiles coming from Asia and bound for the U.S. Midwest). In addition, higher valued cargoes (food and consumer products) typically seek more rapid forms of transportation (truck as opposed to barge service.)

The assessment of cargo opportunities is based on interviews with shippers and carriers as well as review of recent trends and forecasts.

### 1.1.1 Logs

The Port of Port Angeles served primarily as a log export port in the past. However, several factors have interacted to eliminate log exports, including decreased harvests, increased demand in the domestic US markets, and increased competition from overseas, among other factors. As a result, there has been a shift from exports in large vessels to domestic shipments and receipts by barge/raft.

The growth in logs moving by shallow draft vessels in domestic markets is expected to remain at current levels or increase modestly. The expected increases in log traffic due to new mill operations outside of Clallam County, sourcing fiber in Clallam County, sourcing of fiber outside of Clallam County by local producers, increasing harvests, servicing local mills via barge and raft from Canadian sources and restrictions on booms are expected to outweigh loss of outbound cargo precipitated by the opening of a new mill.

While log exports in larger vessels is non-existent at the present time, it could occur in the future, particularly as harvests increase. The Port should consider maintaining limited shoreside facilities to load these vessels, supplemented by off-dock storage/marshalling areas and ex-water loading.

### 1.1.2 Other Opportunities

The Port of Port Angeles also has other cargo opportunities, including general cargo, dry and liquid bulks.

#### 1.1.2.1 General Cargo

General cargo includes commodities handled in a container or in breakbulk form (e.g., hand-stowed or palletized cargoes). Most of the forest products manufactured in Clallam County are trucked from the peninsula. In addition, solid waste will soon be trucked from the peninsula as the landfill reaches capacity. The Port has been at the forefront of the industry in evaluating and promoting short sea shipping, which would link Port Angeles to Puget Sound by barge.

The potential market includes around 24,000 containers of industrial products (primarily finished forest products such as lumber, paper, plywood et al) and approximately 2,800 truckloads of solid waste per year. The potential share of this cargo that is likely to participate in the proposed barge service has not been estimated in this study. The Port of Port Angeles has been pursuing a partnership with Port of Olympia, which is outside the congested area of Central Puget Sound.

The feasibility of the barge depends upon several factors. First, barge operations must be cost-effective (i.e., competitive with trucking) and offer service that meets the needs of potential users (service once per week is the minimum requirement but some shippers need more frequent service). Barge service that accommodates several shippers is required.

Second, barge service needs to take into account changes in logistics patterns. Some large shippers have contracts with warehouse operators that will terminate in the next two years. As this occurs, there may be an opportunity to develop a barge terminus in Puget Sound.

There are also challenges to successfully implementing barge service. Since trucking is biggest competitor for new barge service, the challenge is to forge a partnership with truckers. This may be accomplished by recognizing trucker's problems, such as increasing fuel costs, longer turn around times, and a reduction in drivers' hours. The Port is seeking to create a model that builds a win-win solution for barge operators and truckers. The Port is moving diligently forward with barge service plans with shippers and trucking firms.

#### **1.1.2.2 Dry Bulks**

Other ports in Puget Sound focus on attracting dry bulk cargoes. However, most of this cargo is railed from the Midwest or Mountain Central regions to the ports for export overseas (commodities include corn, soda ash, potash, bentonite clay, and copper concentrates among other cargoes). These cargoes do not represent an opportunity for Port Angeles because of a lack of rail service.

However, gravel imports for local consumption are a stable opportunity for the Port of Port Angeles. Lakeside Gravel, which leases around an acre of terminal space on Terminal 6, brings in approximately 60,000 to 100,000 tons of gravel per year from Canada each year for asphalt production. Lakeside stores the product on Port property for up to four months between barge shipments. Trucks then move the aggregates to the local asphalt plant where it is stored until needed. This activity is likely to continue at current levels in the future.

#### **1.1.2.3 Liquid Bulks**

Private terminals generally accommodate liquid bulk cargoes such as crude oil and petroleum products. In Port Angeles, Tesoro Marine Services provides petroleum products for delivery to deep-draft cargo vessels, tugs and commercial fishing boats. Port Angeles receives between 180,000 and 400,000 tons of petroleum products by water. Port Angeles is ideally positioned for fueling commercial vessels because all vessels entering Puget Sound pass by it and pilots are transferred to vessel at Port Angeles. This activity is likely to continue at current levels.

#### **1.1.2.4 Idle Moorage**

The Port of Port Angeles provides idle moorage for vessels at Terminal 3. There were nearly 50 days of idle moorage in 2002, mainly as a result of several visiting Navy vessels. However, during most recent years, the number of days at idle moorage has ranged from 20 to 35, representing a berth utilization rate of 6% to 10%. There will continue to be sporadic demand for idle moorage.

## 1.2 Passenger Vessels

There are opportunities for Port Angeles to attract passenger vessels.

The Alaska cruise market has grown 9% per year since 1998. It is expected to continue to grow at around 5% or more per year. Seattle and Vancouver BC serve as homeports (vessel home base when it is in the Alaskan market). Port Angeles has an opportunity to serve as a port of call (one of the ports stopped at on the vessel's itinerary) for both large and small cruise vessels serving the Alaskan market. These vessels frequently seek ports-of-call when they re-position into or out of Alaska. Port Angeles has attracted the Zaandam and has another vessel call scheduled in 2006.

Constraints that could limit participating in this market include proximity to Seattle and Vancouver and competition from Victoria BC. It should also be recognized that there could also be a berth conflict between cruise vessels and topside repair operations in the spring and fall.

Additional opportunities will require marketing key cruise industry contacts (via individual companies and industry associations such as Seatrade). Increasing cruise activity at Port Angeles (small and large cruise vessels) is dependent on the success of long-term marketing efforts by a partnership that includes the Chamber of Commerce, the Visitor and Convention Bureau and the Port. Opportunities appear to be more favorable for small vessels than for large vessels.

## 1.3 Ship Repair and Boat Building

Port Angeles has a well established niche in both ship and boat building and repair. Within Washington State, both sectors have grown but boat building is increasing more rapidly due primarily to rapid growth in the mega-yacht business compared with stability in the commercial sector.

### 1.3.1 Boat Building

Westport Shipyards, one of the largest builders of mega-yachts in Washington State, employs 125 people at the waterfront facility and 120 people at the Port Angeles airport. Westport's growth has been very strong in recent years. However, because of this growth, they may need room for expansion in the near future. An additional 25,000 square feet (at the Port Angeles airport) would accommodate stone cutting, upholstery, and allow them to relocate the company's airplane to Port Angeles.

Westport is considering developing a new line of 145-foot long boats. There are several advantages to locating this potential new facility in Port Angeles. Port Angeles offers a larger labor pool than Westport. There are likely economies of scale that would accrue by locating the new facility near their existing Port Angeles plant. For example, the engineering department was relocated from Seattle to Port Angeles and would not need to be replicated in the new facility. The new facility could bring an estimated 140 new jobs to town. However, Port Angeles will need to compete for this possible expansion with other communities (Aberdeen/Hoquiam, among others).

### 1.3.2 Topside Repair

Topside repair occurs at Terminal 1, serving mainly the domestic tanker fleet. Berth utilization at Terminal 1 peaked in 2000, when there were 201 vessel days and berth utilization reached 55%. However, from 2001 through 2004, the number of days at berth ranged from 139 to 147 vessels and berth utilization averaged 40%. In 2005, there were 141 vessel days, with a corresponding berth occupancy of 39%. The Port projects similar numbers for 2006.

Berth utilization cannot reach 100% without significant disruption in scheduled operations. Most port planners consider 60% to represent full berth utilization, after which additional berth space is required. The berth utilization at the Port of Port Angeles does not currently meet the requirement for expansion. It is unlikely that Port Angeles will exceed this level of berth utilization in the near future but this issue should be closely monitored.

### **1.3.3 Boat Lifts**

The Port and its tenants provide a diverse array of lifting equipment for recreational and commercial vessels.

#### **1.3.3.1 300-ton Travelift**

The 300-ton Travelift is owned and operated by Platypus Marine (PMI), which has approximately 70 employees at the present time. Port records indicate that the number of lifts increased from 23 one-way lifts in 1999 to 91 through the end of October 2005. PMI would like to increase lift utilization but this may require an adjustment to the tariff rate (especially for smaller vessels). PMI is also considering facility improvements, including improved buildings and a wash down pad. However, the financial implications of these improvements are unclear.

#### **1.3.3.2 Marine Ways**

Arrow Marine operates the marine ways (which is owned by the Port), primarily serving company-owned boats. The marine ways at Port Angeles has a 200-ton capacity with a cradle measuring 105 feet in length and 25 feet in width.

Utilization of the marine ways increased significantly from 2003 to 2004, up from 130 days of use (representing a 36% utilization rate) to 276 days of use (76% utilization rate). However, through August 2005, the utilization rate has dropped from 172 days in 2004 (47% utilization rate) to 110 days in 2005 (30% utilization rate).

#### **1.3.3.3 70-ton Travelift**

The 70-ton lift is owned by the Port and operated by Port Angeles Marine, serving smaller recreational and commercial boats. The 70-ton Travelift has typically been used between 500 and 600 times per year since 2000, which amounts to about 1.3 to 1.7 boats per day on average. Use of the 70-ton lift consistently peaks in April and May as recreational boaters prepare for the summer season. During this time, there are approximately 3 to 4 boats per day being lifted. The lowest level of use occurs in October through March, with less than 1 lift per day on average.

Local boat owners also utilize boat yards located in Port Townsend or other parts of Puget Sound. There is interest by some marine businesses to expand facilities at Port Angeles in order to attract more repair work. This could require facility improvements, including expanding the boat yard, adding a wash down facility, more parking and upland storage areas, among other items. However, the financial impact of these additions is unclear.

## **1.4 Marinas**

The Port of Port Angeles owns and operates two small boat harbors: Port Angeles Boat Haven (520 slips) and John Wayne Marina (300 slips). Most of the tenants come from Clallam County (88% at John Wayne Marina and 80% of the tenants at Port Angeles Boat Haven). Around 10% of the tenants at each marina are from other counties in Washington, and the remainder from out of state.

Both marinas have relatively high seasonal vacancy rates, particularly for the smaller slips. Master plans are underway for each marina to address infrastructure requirements. Moorage rate increases are being implemented to help pay for needed improvements.

## 1.5 Fishing Industry Support Activities

Port Angeles has one major fish processor (High Tides Seafood), which mainly processes salmon, halibut, crab and other locally harvested species. High Tides is considering entry into other species, particularly for hake and sardines.

Hake landings have increased significantly at Washington ports, with volumes up 100% from 16,000 metric tons in 2003 to 32,000 tons in 2004. The whiting allocation for 2005 is approx. 250,000 metric tons. Approximately 97,000 tons are allocated to shoreside plants with nearly 32,000 tons allocated to Washington State, which is comparable to 2004 levels and substantially more than in prior years. In addition to the state shore-based plant allocations, there is an allocation of 34,000 metric tons to the Makah Tribe.

There are reasonable opportunities to capitalize on the harvests of hake (and sardines) at the present time. However, there also remains uncertainty about the health of these stocks, which could affect future harvest levels. Under these considerations, it is important that any financial commitment by the Port be carefully assessed to minimize potential losses.

## 2 Marine Cargo

This section reviews the recent trends and potential opportunities for marine cargoes at the Port of Port Angeles.

### 2.1 Overview

Marine cargo moving via Washington State ports peaked in 1995 due primarily to large grain export crops<sup>1</sup>. However, although volumes in 2004 were greater than the previous six years, they were still less than occurred in 1990. As a result, total marine cargoes moving through Washington State ports declined at -0.6% per year during this time period.

As shown in Figure 1, most of the non-containerized cargo moving through Washington State ports consists of dry bulk cargoes, which includes grain and related products (corn, wheat, soybeans, barley, and animal feeds, among other cargoes) as well as other miscellaneous agricultural and industrial bulk products (soda ash, bentonite clay, gypsum, scrap metal, copper concentrates and fertilizers, among other products). Dry bulk cargoes increased at an average annual rate of 0.1% per year between 1990 and 2004. The dry bulk cargoes are typically low-valued products that require low cost transportation methods to/from ports that service a regional or national market base. Most of these products are transported by rail from producers to the ports for export or move directly from the port to a producer.

General cargo volumes grew at 3.2% per year between 1990 and 2004. The largest growth in this category was in steel and other metal product (aluminum) imports, which move by rail to national producers (such as automobile and appliance manufacturers) or are used in local construction products.

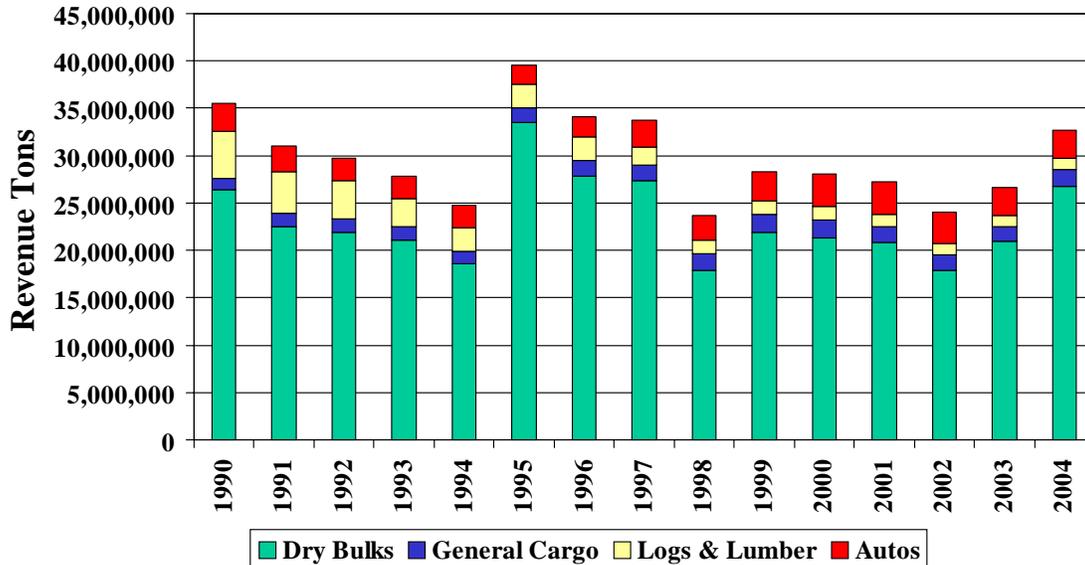
---

<sup>1</sup> Source: Pacific Maritime Association, which coordinates payment of longshoremen by maritime employers. The cargo handled in these transactions includes all cargo handled by the ILWU but does not include cargo handled by non-ILWU terminals (liquid and dry bulk facilities including crude oil, petroleum products, sand and gravel et al).

Imports of fully assembled automobiles occur through the Ports of Tacoma and Vancouver at the present time. Nearly 85% of these imports are moved by rail to inland destinations.

Shipments of logs and lumber have long been a mainstay of the Port of Port Angeles. However, as indicated in Figure 1, exports of these products have declined by nearly 10% per year through Washington State ports.

**Figure 1 – Washington State Non-Containerized Marine Cargo Trends (Revenue Tons)**  
**Source: Pacific Maritime Association**



The opportunity for Port Angeles to attract non-containerized cargoes beyond what is needed to serve local Clallam County markets is constrained by lack of rail service and limited access to agricultural and industrial producers. Several other Washington State public and private terminals provide these attributes (primarily in Vancouver, Longview and Kalama on the Columbia River, Grays Harbor on the Washington Coast and Everett, Seattle, Tacoma and Olympia in Puget Sound). These ports engage in fierce competition for non-containerized cargoes. Relative transportation costs, which are influenced by the size of the local market and the efficiency of transport systems to more distant markets, are a major consideration for shippers and carriers.

The specific opportunities for additional cargo movements via the Port of Port Angeles are covered in the following sections. The focus of the market analysis is on sustainable cargo volumes. In addition, there may be sporadic movements of other commodities.

## 2.2 Forest Products

Clallam County has a dynamic forest products industry that employs approximately 2,000 persons, including tree planting, harvesting, transportation and manufacturing. The firms buying fiber in Clallam County include those that manufacture within the county and those that source locally for production outside of Clallam County.

The following section reviews the trends and estimates projected volumes for forest products moving via Port of Port Angeles facilities.

### ***2.2.1 Harvest Volumes in the North Olympic Peninsula***

The North Olympic Peninsula region is considered a net exporter of wood fiber. Substantially more volume is harvested than is utilized in mills located in the area. However, there has been a dramatic change from export of fiber to domestic shipment and local consumption of fiber resource.

In a recent publication<sup>2</sup>, the Center for International Trade in Forest Products at the University of Washington (Cintrafor) estimated that the timber harvest in the North Olympic Peninsula (NOP, which includes Clallam and Jefferson Counties) averaged 322 million board feet over the period from 2000 through 2004. This estimate was based upon average sales per acre, with an estimated 8,070 acres harvested annually. The majority of the existing harvest per acre was estimated as follows:

- #2 sawmill – no minimum rings per inch, 12 inch minimum scaling diameter and 12 feet minimum length (15 million bdft),
- #3 sawmill – no minimum rings per inch, 6 inch minimum scaling diameter and 12 feet minimum length (15 million bdft),
- #4 sawmill – no minimum rings per inch, 5 inch minimum scaling diameter and 12 feet minimum length (7.5 million bdft),
- Other (3 million bdft).

Cintrafor projects that the harvest could reach 344 million board feet in the period 2015 to 2020, based on the annual harvest increasing to 8,618 acres on average. These projected acreages were adjusted to reflect anticipated harvest limitations occurring as a result of more stringent rules protecting streams. The estimates are considered sustainable volumes.

The Cintrafor report does not differentiate the harvest by county within the North Olympic Region. In order to get an estimate of the harvest in Clallam County, the 2002 harvest report<sup>3</sup> by the Washington State Department of Natural Resources (DNR) was evaluated.

DNR estimates that the 2002 timber harvest was 281 million board feet in the NOP, with 207 million bdft from Clallam County (approximately 74% of the total harvested in the NOP) and 74 million bdft from Jefferson County (approximately 26% of the total harvested in the NOP). Most of the harvest occurred on private lands in Clallam County (88% of total harvest), while state lands accounted for only 9% of the Clallam harvest (19 mil bdft).

Most of the timber harvested in Clallam County was in the following species: Western Hemlock (64%), Douglas-Fir (17%), Other Conifers (10%), Red Alder (5%), Other (4%).

---

<sup>2</sup> Resource Inventory, Market Assessment and Analysis for Forest Products in Clallam and Jefferson Counties, by Dr John Perez-Garcia, Associate Professor at Cintrafor, March 2005

<sup>3</sup> Washington Timber Harvest 2002, by Washington State Department of Natural Resources, March 2004.

## **2.2.2 Flow of Fiber in Clallam County**

The harvest in Clallam County could increase from approximately 238 million bdft annually at the present time to 255 million bf annually by 2015 to 2020, which would represent a 6.8% overall increase in supply<sup>4</sup>.

### **2.2.2.1 Forest Products Industry - Internal**

The forest products manufacturing base in Clallam County consists of several sawmills, a plywood/veneer manufacturer, a paper manufacturer and several firms engaged in production of shake and shingles.

Sawmills require inputs of logs and produce lumber, wood chips and hogged fuel. Allen Logging operates a sawmill near Forks with an 8-hour capacity of 125 mbf. The company sources logs primarily in western Clallam County, trucks the logs to a yard adjacent to the mill, and then trucks some products to the planing mill in Forks. Shipments of lumber move by truck from the mill(s) directly to the end customer and/or to a reload center in Aberdeen for truck and/or rail shipment to the customer. The company also ships hogged fuel. Allen Logging only uses Port facilities to ship wood chips by barge to regional paper mills.

Interfor recently purchased the Crown Pacific sawmill in Port Angeles, which has an 8-hour capacity of 225 mbf. Interfor currently receives its logs by truck from the Olympic Region. However, the company is expanding mill capacity and may require approximately 1 million bdft of logs per year to fuel this expansion. These logs may come from the company's holdings in British Columbia and could come by raft/barge through the Port of Port Angeles' facilities. Interfor is anticipating at least 10 barges in 2006. Interfor currently ships some of its residual chips via Port Townsend but is considering shifting these shipments to Port Angeles.

Portac operates a sawmill in Beaver with an 8-hour capacity of 230 mbf and a kiln in Forks. Portac, Inc. employs approximately 115 people and annually produces approximately 130 million board feet of lumber as well as 15,000 BDUs of chips and 20,000 BDUs of sawdust. Portac does not typically use Port facilities directly but it does sell logs and lumber to other firms that do use the Port facilities.

Washington Alder is currently developing the Port Angeles Hardwood mill, which will require 20 to 25 million Bdft of logs per year in initial years and may be expanded if market conditions permit. Washington Alder is currently the second largest log customer of the Port of Port Angeles, with volumes rafted to its other mills in Chehalis and Mount Vernon. As a result, the raft volumes will likely shift away from the Port of PA to the local mill. However, if the mill is expanded, it may receive logs by water from sources in Puget Sound.

K-Ply produces approximately 16 to 20 million bdft of plywood and veneer at its Port Angeles plant. K-Ply also produces approximately 10 loads of wood chips per week, which are shipped via other (non-Port) facilities to regional pulp and paper mills. All outbound products are shipped by truck. K-Ply sources its logs evenly from East Puget Sound and the Olympic Peninsula. Approximately 75% of the inbound logs arrive by water (35% by raft and 65% by barge) and 25% arrive by truck. K-Ply uses its own equipment and facilities to transfer logs from the water into the plant. K-Ply also handles logs for some other customers but is constrained by the size of their yard.

---

<sup>4</sup> Based on 74% of the Cintrafor harvest estimates.

Nippon Paper Industries USA owns and operates a paper mill in Port Angeles. The paper mill produces about 160,000 tons of paper per year. Approximately 90,000 tons moves to the company's Tacoma facility for domestic distribution, which is typically west of the Rocky Mountains. Some paper goes directly to large customers (in Portland and elsewhere) and some goes to the Ports of Seattle and Tacoma for export overseas in containers. Inputs to production include wood chips, fiber and wastepaper (90,000 tons) as well as liquid chemicals and fine clay. All of the inbound and outbound movements currently trucked at the present time. Nippon Paper Industries leases land and warehouse space from the Port but currently does not use the Port's marine terminals.

Merrill & Ring, which owns substantial timberland holdings in the Olympic Peninsula, harvests timber and ships it to customers (mills located throughout Puget Sound and along the west coast as far as California). Between 35% and 50% of the logs are transferred via the Port of Port Angeles. Logs bound for Puget Sound are rafted while logs bound for California are barged. A small barge can hold approximately 1 million board feet of logs (around 200 to 250 loads).

Green Crow currently operates log handling and acquisition facilities in Port Angeles and Everett, and Andover, New Hampshire. Operations include log sorting, handling, merchandizing, marketing, and open market acquisition for Green Crow and its clients. Green Crow recently purchased the former Olympic Wood Products mill in Port Angeles. The mill has been renamed Greencreek Lumber, a wholly owned subsidiary of Green Crow, and will source its wood supply from the Olympic Peninsula and Canada.

Local mills in the North Olympic Peninsula currently consume approximately 130 million bdf (or around 40% of the total harvest). After construction of Port Angeles Hardwood mill, local consumption will rise to approximately 155 million bdf or around 48% of the total harvest.

#### **2.2.2.2 Forest Products Industry - External**

This leaves a substantial volume of timber that is shipped to other areas. According to Cintrafor, more than 90 million bdf of timber is exported to mills located in other Washington counties:

“The majority of this timber flow, about 77,000 mbf went across the Puget Sound to Whatcom, Skagit, Snohomish, King and Pierce county mills”.

Several firms source fiber in Clallam County for use in other areas. Simpson is currently expanding its mill in Shelton from 500 million bdf/year to 600+ million bdf/year. Simpson uses approximately 400 million bdf of logs at its mills annually, of which approximately 100 million bdf is moved by raft. Port Angeles accounts for 25% of their log shipments by water. Simpson is the Port's largest log customer, accounting for approximately 35% of its total volume.

Tubafor, the largest producer of cedar fencing in the world, sources logs in Clallam County for its mills in Lake Quinault and Morton. The logs going to the Morton mill are rafted from Port Angeles to Olympia and then trucked to Morton. Tubafor may expand the operation at Morton if it enters into additional contracts with large retailers. This could lead to increased log movements via the Port of Port Angeles.

In addition, Sierra Pacific is constructing a new mill in Burlington, which is likely to receive some of its fiber from Clallam County.

#### **2.2.3 Port of Port Angeles Cargo Opportunities**

This section evaluates the trends and opportunities for forest product cargoes moving via Port of Port Angeles facilities.

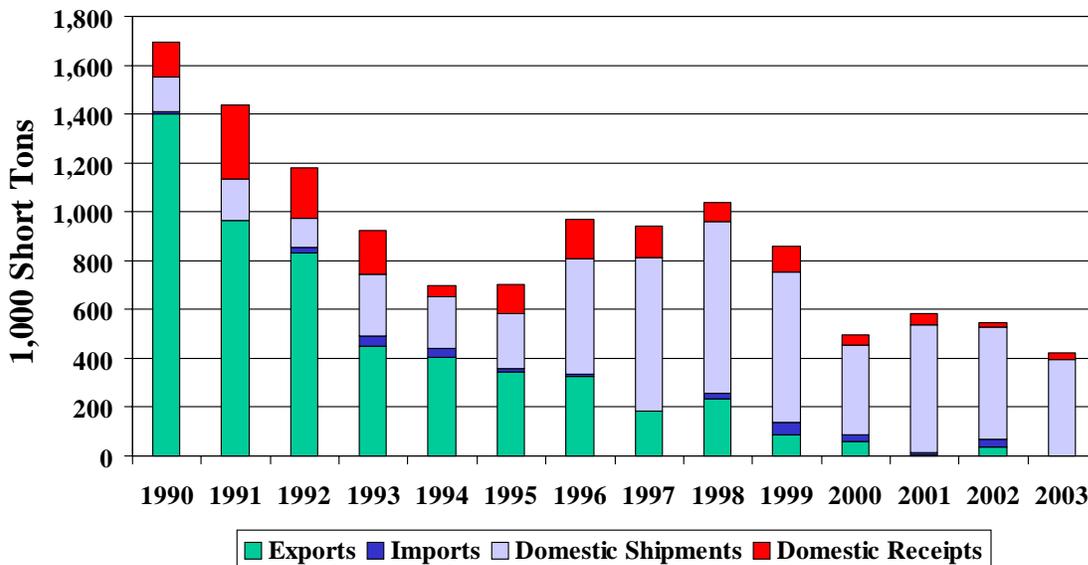
2.2.3.1 Logs

As shown in Figure 2, the log markets have changed dramatically from high levels of exports through the mid-1990s to a focus on domestic shipments in more recent years.

Despite these changing market conditions, logs remain an important mainstay of the Port of Port Angeles. The Port of Port Angeles generally handles the outbound shipment if it is located east of Forks and west of Sequim.

The Port of Port Angeles has handled an average of 63 million bdft of product over the period from 1999 through 2004. The Port handles approximately 30% of the logs harvested in Clallam County.

**Figure 2 – Waterborne Movements of Logs in Port Angeles Harbor**  
**Source: US Army Corps of Engineers Waterborne Commerce<sup>5</sup>**



As shown in Figure 3, the following trends have occurred in the recent past:

- Decks have increased as a percentage of Port log activity and now represent 38% of total in 2004
- Rafts have declined in volume but still represented 47% of Port log activity in 2004
- Round booms have declined and now account for 15% of 2004 Port log volumes.

The Port of PA handled an average of 16,000 loads per year between 1999 and 2004 (using an average of 4,000 bdft per load).

The customers that use log decks at the Port have changed markedly in recent years. Until mid-2002, most of the decking was for Willamette Industries, which served mills on the West Coast by barge. Since 2003, Simpson became the largest user of the Port’s decking operations followed distantly and sporadically by Merrill & Ring as well as other smaller accounts.

<sup>5</sup> Note: 2003 is the most recent data available from this source.

Simpson uses Port Angeles facilities to help balance the resource flow to its mills and will likely increase the volume of logs moving through Port Angeles to feed the mill expansion in Shelton.

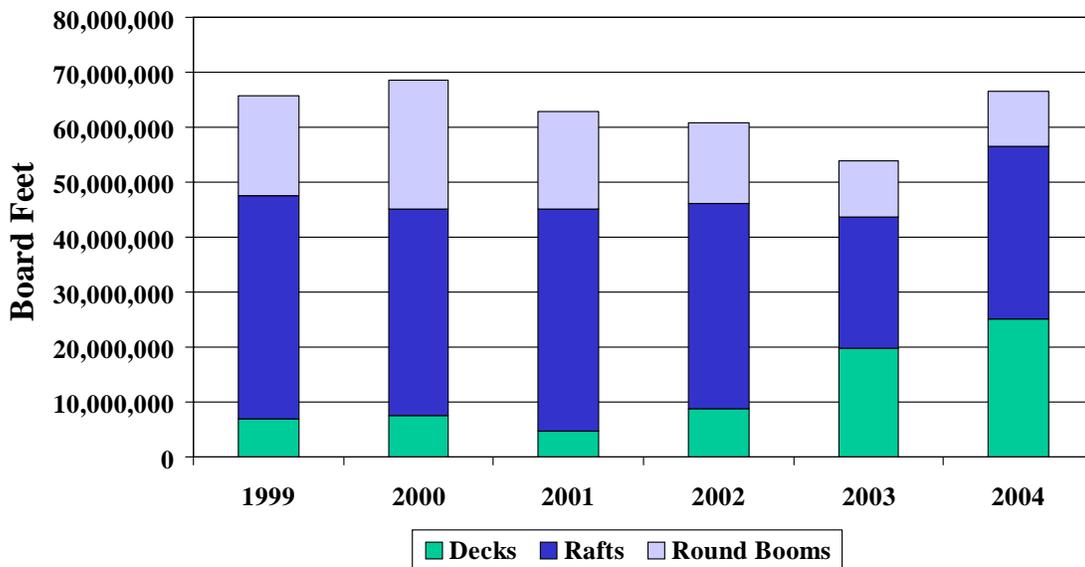
The customers that use Port facilities for rafting have also changed in recent years. Currently, the major customers are Washington Alder and Northwest Hardwood – who jointly account for around 60% of the Port’s activity. The development of the Port Angeles Hardwood mill by Washington Alder will have a planned consumption of logs of 20 to 25 million Bdft. As a result, the raft volumes will likely shift away from the Port of Port Angeles to the local mill.

Round boom volumes via the Port of Port Angeles have declined significantly in recent years. Boise Cascade is the largest customer followed distantly by Simpson Timber at the present time but the number of loads in booms has declined to less than half that were moved in 1999 and 2000.

Log volumes are likely to remain at existing levels or grow slightly in coming years but there is a relatively high degree of uncertainty about future log throughput levels.

The main factor that could negatively impact Port log throughput is diversion from outbound shipments to local mills that would bypass Port operations. The near-term diversion from the Port will occur as logs are sent directly to the Port Angeles Hardwood mill rather than being moved through the Port to outside mill(s), which could decrease Port volumes by 20%. Additional growth in local mills could have a similar negative effect but there are no new mills planned at this time.

**Figure 3 - Port of Port Angeles Log Handling Trends (Bdft)**



The factors that could increase log throughput at the Port include development of additional mills at outside locations that would source through the Port, mills in Clallam County sourcing outside fiber, servicing local mills via barge and raft from Canadian sources and limitations on use of log rafts and booms that would increase the need for upland storage.

As indicated previously, both Simpson and Sierra Pacific are expected to source logs from the NOP. However, specific volumes are unknown. In addition, Port Angeles Hardwood and

Interfor may source additional fiber by water depending upon the relative costs and product availability.

Mills require several log sorts depending on the number of customers and fiber characteristic (grades, lengths and diameters by species). Mills also require surge areas in order to meet the peak requirements of their specific supply chains. As one forest products industry representative put it:

“Reliability is critical in the timber industry. Large mill facilities require a consistent stream of wood but often do not have a lot of land area for storage at the mill site. They meter the wood and use just-in-time delivery to feed the mill. Any hiccup in their delivery schedule can be a major issue<sup>6</sup>.”

Rafted and boomed volumes will likely decline, which will increase the need for storage on land. The Port Angeles area represents a very large portion of DNR log booming resources<sup>7</sup>, accounting for booming (10% of state), booming and storage (4% of state), storage (45% of state). With all uses included, Port Angeles represents 37% of state’s booming and storage capacity. However, DNR is projecting that log booming and storage leases will decline due to lack of interest by lessees. In contrast, lessees report that new DNR leases have more extensive liability clauses for potential (existing and prior) environmental losses and that lease rates are increasing. As a result, lessees are less likely to utilize DNR leases and this will increase demand for upland log storage in PA.

The net result is an expectation that log volumes via the Port upland facilities will likely remain at existing levels or slightly higher in the foreseeable future. There is a greater likelihood that most log traffic will occur in barges/rafts rather than in larger vessels (log exports), as has been the case in recent years. However, some log exports may occur in the future and the Port should retain facilities capable of accommodating log exports.

#### **2.2.3.2 Chips**

Wood chips, which are produced as a residual product at sawmills or from chipping of pulpwood, may be exported or sent to domestic mills.

As shown in Figure 4, a substantial volume of woodchips was exported from Port Angeles until 2002 when exports ceased. As shown, wood chip exports have declined from all North American origins due to competition from Australia, New Zealand, Chilean and other sources.

Wood chips are also shipped from Clallam County mills via the Port of Port Angeles to regional pulp mills. Allen Logging produces wood chips at its Hoh River mill and delivers the wood chips to Port Angeles, where chips are loaded onto barges for delivery to area mills. These wood chips are currently stored on Terminal 5 on a one acre adjacent to Green Crow’s operation.

As shown in Figure 5, wood chip exports ceased in 2002. Domestic shipments of wood chips have been erratic in the recent past.

The market for wood chips is relatively weak at the present time and is likely to remain at existing levels for the foreseeable future due to changes in the domestic pulp and paper industry. Georgia Pacific closed a mill in Bellingham and Weyerhaeuser recently closed a mill in Cosmopolis. In addition, remaining domestic mills are increasing their utilization of recycled

---

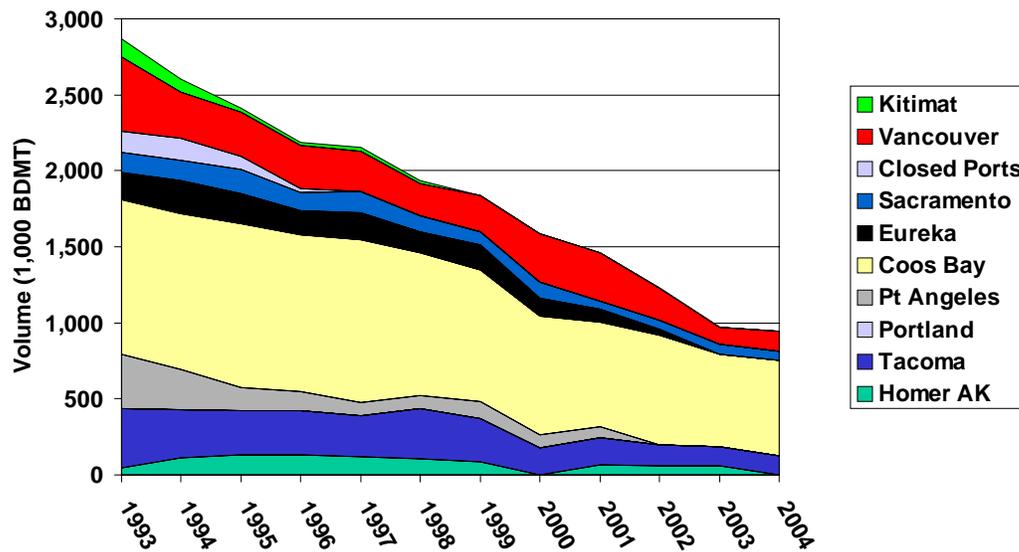
<sup>6</sup> Interview with a representative from Rayonier Inc

<sup>7</sup> Log Booming and Storage Report, Prepared by DNR January 2005

wastepaper in order to meet mandated recycling content levels. The demand for wood chips by pulp and paper mills will likely decrease in the foreseeable future.

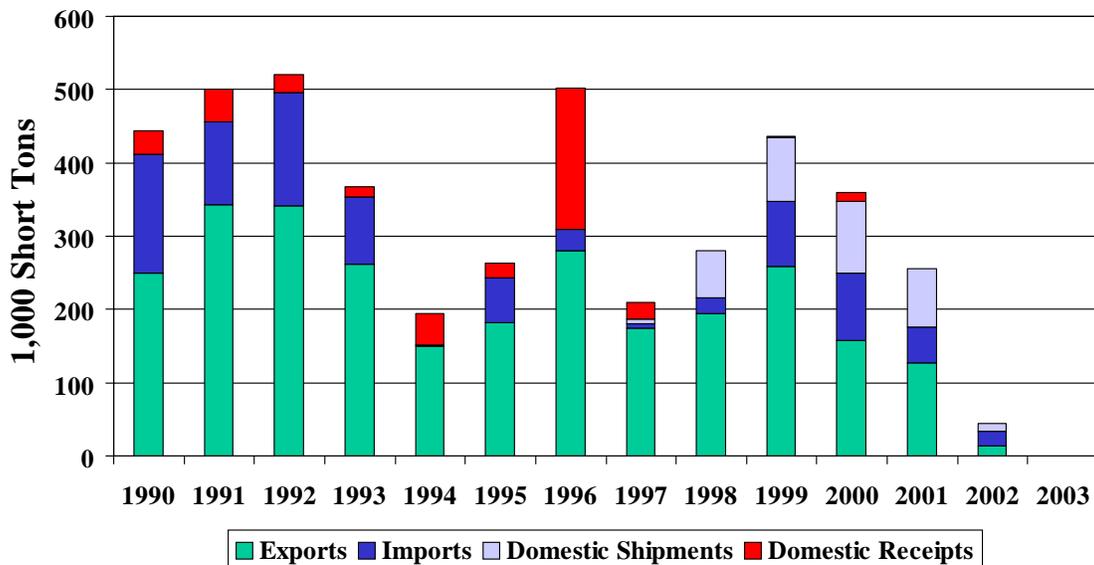
As the demand decreases for wood chips, prices will likely decline. Mills will need to evaluate the options for disposal of wood chips and hog fuel. One potential option is the development of biomass-to-energy projects, which would provide power as well as environmental benefits in terms of improved air quality. This type of facility is currently being explored for waste from shake and shingle mills. If biomass-based energy facilities are developed, it could lead to a reduction of wood chip shipments.

**Figure 4 – North American Wood Chip Export Trends**



The future volume of wood chips moving via the Port of Port Angeles is uncertain. It could decrease if the demand by pulp/paper mills continues to decline or if some of this fiber is used in energy facilities. It could increase as a result of diversions from other routes/modes. For example, Interfor Pacific currently ships wood chips via Port Townsend but is considering shifting these outbound shipments through Port Angeles.

**Figure 5 – Waterborne Movements of Wood Chips in Port Angeles Harbor**  
**Source: US Army Corps of Engineers Waterborne Commerce**



### 2.2.3.3 Other Forest Products

As discussed above, virtually all finished forest products are transported off the Northern Olympic Peninsula by truck. Some move directly to customers while others are move to reload facilities for transfer to trucks or railcars, which are then transported to the end consumer. There is interest in a barge service by some shippers. The concept of a barge system serving Port Angeles is discussed below.

## 2.3 Other Marine Cargoes

This section reviews other marine cargoes that currently use port facilities in Port Angeles as well as future potential marine cargo opportunities such as provision of barge service.

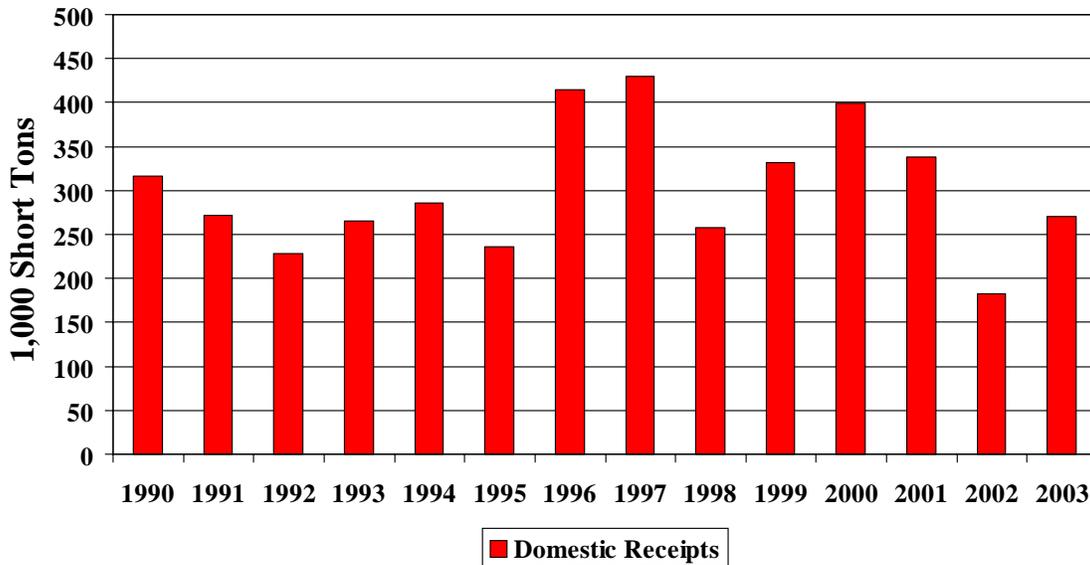
### 2.3.1 Petroleum Products

#### 2.3.1.1 Commercial Marine Products

Tesoro Marine Services purchased the U.S. West Coast marine fuels operations of BP Marine in 2001. One of the facilities included in the purchase was the Port Angeles terminal, from which Tesoro provides petroleum products (MDO and MGO) for delivery to deep-draft cargo vessels at anchor via barge. Tesoro also delivers high-sulfur No. 2 diesel fuel to tugs and commercial fishing boats at the wharf. Tesoro produces these products at its refinery located in Anacortes and delivers them to Port Angeles by barge.

According to statistics from the US Army Corps of Engineers, Port Angeles receives between 180,000 and 400,000 tons of petroleum products by water. Port Angeles is ideally positioned for fueling commercial vessels because all vessels entering Puget Sound pass by it and pilots are transferred to vessel at Port Angeles. This activity is likely to continue at current levels.

**Figure 6 – Waterborne Movements of Petroleum Products in Port Angeles Harbor**  
**Source: US Army Corps of Engineers Waterborne Commerce**



**2.3.1.2 Retail Markets**

Petroleum products serving retail markets (gasoline and heating oil etc) are trucked to Port Angeles. Pettit Oil, a petroleum product distributor has facilities located on Port property. Pettit Oil provides lubricants and specialty products to marina customers, topside repair firms and boat building companies.

**2.3.2 Aggregates**

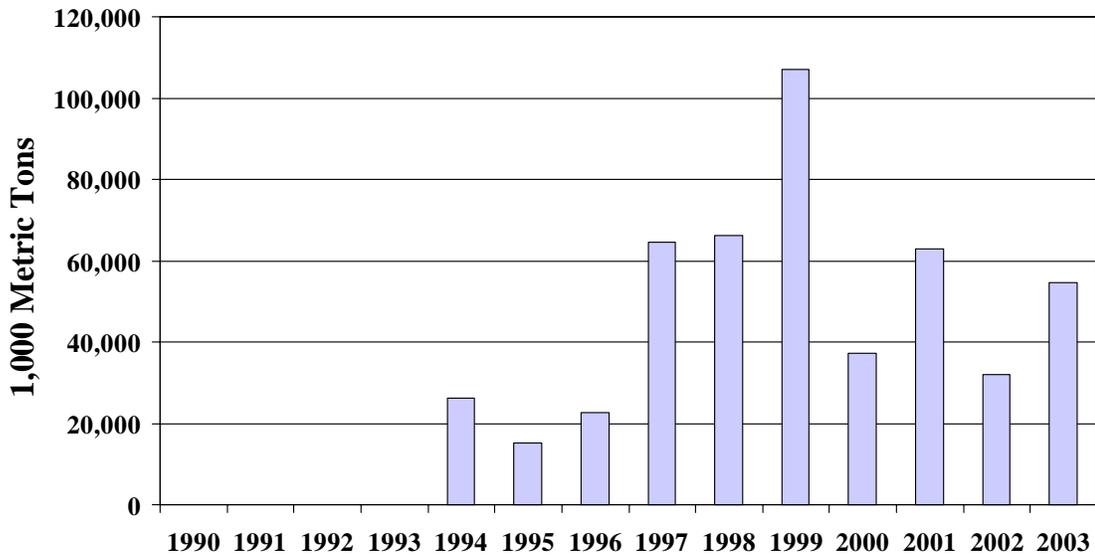
Imports of aggregates and cement from Canada into the Seattle Customs District have grown at 3% and 29% respectively per year since 1990 (See Figure 7). Canadian products have high quality, meeting the standards required by public agencies such as the Washington State Department of Transportation. In addition, moving large lots by water minimizes transportation costs compared with truck hauls.

Port Angeles currently receives aggregates by barge from Canada. Lakeside Gravel, which leases around an acre of terminal space on Terminal 6, brings in approximately 60,000 to 100,000 tons of gravel per year from Canada each year for asphalt production.

Lakeside stores the product on Port property for up to four months between barge shipments. Trucks then move the aggregates to the local asphalt plant where it is stored until needed. One barge carries approximately 9,000 tons of gravel. Lakeside has an interest in bringing larger barges and expanding their storage yard to 5 to 10 acres.

Barge shipments of cement to Port Angeles do not currently occur. Future potential operations are impeded by the small market for cement products in Clallam County and lack of existing facilities.

**Figure 7 – Imports of Aggregates from Canada into Port Angeles Harbor**  
**Source: US Maritime Administration**



**2.3.3 Solid Waste**

There is continued discussion about the potential movement of solid waste from Clallam County by barge. However, at the present time, the outcome of these discussions is uncertain.

**Table 1 - Quantities Of Disposed Wastes in Clallam County**

Type of Waste Generator	Annual Amounts	
	Tons per Year	Percent
Residential (homes and apartments)	15,190	29.9%
Residential Self-Haul	7,425	14.6%
Residential Subtotal	22,610	44.4%
Commercial and Institutional	14,480	28.5%
Non-Residential Self-Haul	2,490	4.9%
Commercial Subtotal	16,970	33.4%
Construction and Demolition	5,090	10.0%
Daishowa	3,460	6.8%
Other Industrial	1,010	2.0%
Industrial Subtotal	9,560	18.8%
Tribes	1,740	3.4%
Total	50,870	100.0%

Source: Clallam County Solid Waste Composition Study, by Green Solutions, Jun 2003

The Clallam County Regional landfill located at the Port Angeles Airport is scheduled for closure in 2006. As a result, there has been speculation about the possibility of moving some or

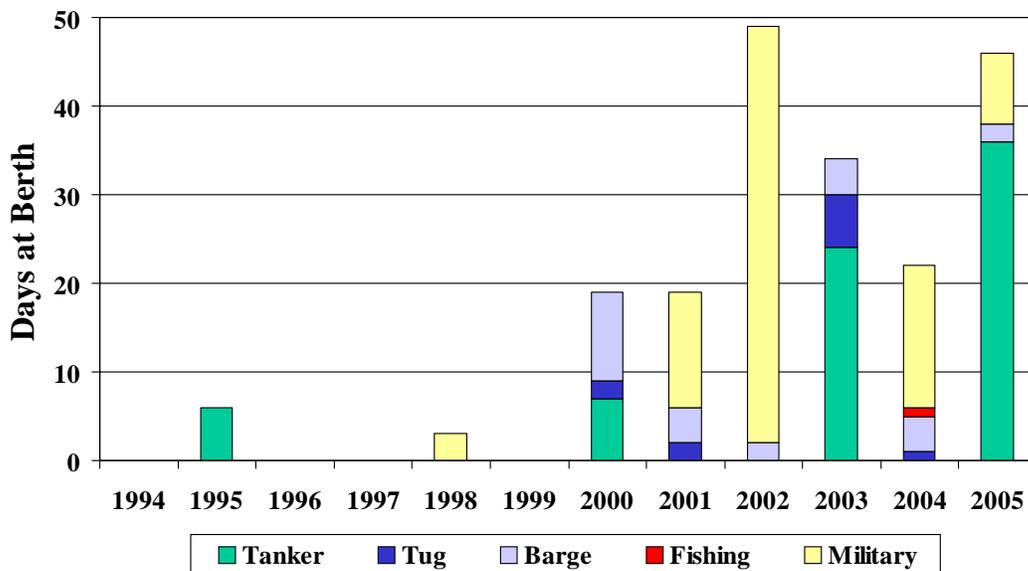
all of this product by barge to Puget Sound and thence to regional landfills in Eastern Washington or Oregon.

Clallam County currently disposes of nearly 51,000 tons of garbage per year from residential, commercial and industrial interests. The Port has estimated that the barge service could accommodate 2,800 loads per year.

**2.3.4 Moorage for Idle Vessels**

The Port of Port Angeles provides idle moorage for vessels at Terminal 3. As shown in Figure 8, there were nearly 50 days of idle moorage in 2002 and 46 days in 2005, mainly as a result of several visiting Navy vessels. However, during most recent years, the number of days at idle moorage has ranged from 20 to 35, representing a berth utilization rate of 6% to 10%.

**Figure 8 – Idle Moorage at Terminal 3**



**2.4 Barge Service**

Port Angeles appears to be a good candidate for barge service, since other transportation options are limited (i.e., there is no rail service, one highway connection and limits due to the Hood Canal Bridge). The Port and interested stakeholders have been studying barge operations for the past 12 years. The Port conducted two feasibility studies on this subject:

In 1992, BST Associates prepared a Barge Feasibility Study for the Ports of Port Angeles and Tacoma. This study concluded that, although there was interest in improved barge service by shippers, the service was neither economically nor financially feasible because barge service could not provide a lower costs than truck service.

Because market conditions had changed, the Port of Port Angeles retained BST Associates to re-evaluate barge service in 1998. This study concluded that the required rate to cover all tug and barge costs was not competitive with trucking rates under any of the scenarios. However, if only barge costs were covered, barge service was competitive with truck service.

### 2.4.1 Evaluation of the Port Angeles Market

The size of the market has been projected at approximately 28,000 containers per year, including round trip movement of industrial products and solid waste but does not include retail products consumed in Port Angeles (Table 2). The potential share of this cargo that is likely to participate in the proposed barge service has not been estimated in this study.

**Table 2 – Potential Barge Service Market on North Olympic Peninsula**

Shipper	Cargo	Destination	Type	Units	Tons
Green Crow	Wood cants	Seattle/Tacoma	Container	208	6,000
Merrill & Ring	Logs	Seattle/Tacoma	Container	104	2,600
Nippon	Paper Rolls	Tacoma for warehouse/rail	Truck	3,300	99,000
Nippon	Paper Rolls	Portland for export	Container	2,200	66,000
Nippon	Solid Waste	Tacoma rail	Container	167	5,000
Nippon	Recycled Materials	Tacoma backhaul	Truck	2,495	75,000
Interfor	Lumber		Truck	NA	
Portac	Lumber		Truck	NA	
Kply	Plywood	Seattle/Tacoma	Truck/IM	780	23,400
Kply	Logs		Truck	500	15,000
Port Angeles Hardwood	Lumber		Truck	1,456	43,560
High Tide Seafood	Seafood Products		Truck	112	3,360
City of Port Angeles	Municipal Solid Waste		Truck	2,800	84,000
				14,122	422,920

Source: Port of Port Angeles with industry input, 2005

### 2.4.2 Generic Benefits of Barge Service

The Maritime Administration and other agencies are promoting consideration of short sea shipping (or barge service) as a means to:

- Improved freight mobility (increased freight capacity) - At a basic level, incorporating Short Sea Shipping into the surface transportation system may add capacity to certain cargo routes because it increases modal alternatives. Short Sea Shipping operations may also help increase capacity in other ways.
- Improved freight mobility (less congestion) - By taking trucks off the road, Short Sea Shipping may help alleviate congestion along key corridors.
- Improved air quality - Barging services may be more fuel efficient than trucking, and one barge may be able to carry as much freight as 58 trucks. Removing these trucks from the road and using a more fuel-efficient option may reduce emissions and improve air quality.
- Reduced need to build roadways and rail lines - By reducing the pressure on existing transportation infrastructure, Short Sea Shipping can reduce the need to build new infrastructure. Large infrastructure projects, such as new roadways and rail lines, are expensive, time consuming, and in some cases may be constrained due to low population density and/or high land costs.

### **2.4.3 Requirements for Successful Barge Service**

Barge service has typically been successful for low-value products that are not time sensitive, including bulk commodities, such as grain, coal, and lumber. Newer barge services are targeting the higher-value time-sensitive containerized freight that normally moves by truck. This may require introduction of new types of service, including introduction of higher-speed self-propelled vessels; which allow trucks to roll on and roll off, instead of the traditional methods in which cargo is lifted on and off by large cranes. The key to success of the barge system is providing an economical way to move freight with the desired.

### **2.4.4 Feasibility of Barge Service in Port Angeles**

Based upon comments by existing stakeholders, barge service from Port Angeles would need to have the following characteristics:

- Cost - Barging will need to be competitive with trucking. Current charges are approximately \$450 to \$600 per container one-way plus some back-haul charges (approximately \$200), resulting in a per container round trip fee of \$650 to \$800. Unknown factors that could increase truck costs could enhance the viability of barge service (i.e., increased fuel costs, increased congestion, tariffs placed on roads/highways, and changes in drivers hours, among other factors).
- Frequency and reliability - Dependable service once per week is the minimum requirement. Some stakeholders require service to occur three times per week. As the level of frequency increases, the need for additional cargo to fill the barge also increases.
- Multi-client service – Barge service that accommodates several shippers is required. Although there may be large shippers that could serve as the primary users of the service, in order to accommodate sufficient cargo, the barge service will need to draw from numerous users. Barge service will need to have a consistent critical mass that allows it to achieve rates that are comparable or better than trucking.
- Changes in logistics patterns – some large shippers have contracts with warehouse operators that will terminate in the next two years. As this occurs, there may be an opportunity to develop a barge friendly terminus on the eastside of Puget Sound.
- Facilities – Stakeholders identified Terminal 3 as a potential site for the barge facility if there was enough upland area to accommodate cargo. In addition, connecting with a site is Eastern Puget Sound that is outside the congested areas appears to be preferable. Olympia has been mentioned as a potential site.

The Port of Port Angeles is one of the leaders in promoting barge service in Port Angeles. The Port recognizes that trucking represents single biggest competitor for new barge service and that the challenge is to forge a partnership with truckers to create a model that builds a win-win solution for barge and truckers. Virtually every to and from Port Angeles begins and ends with a truck move. The Port is moving diligently forward with barge service plans with shippers and trucking firms.

### 3 Cruise Ships/Passenger Vessels

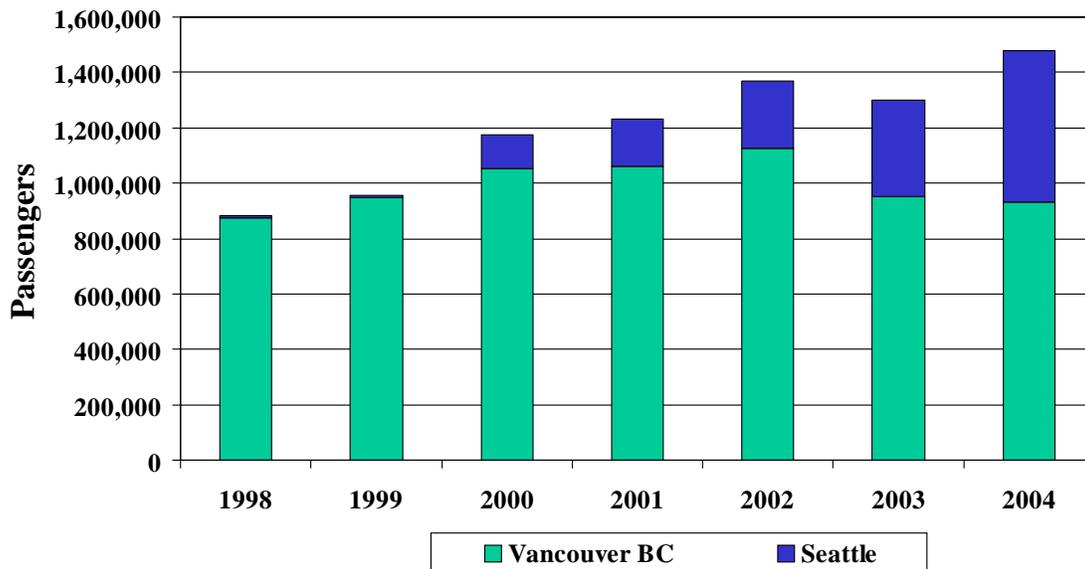
The opportunities for cruise vessels and passenger ships are explored in this section.

The 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 calls at Port Angeles would be considered ports of call, as are the ports of Juneau, Ketchikan, Sitka, Grays Harbor, and other ports of call.

#### 3.1 Cruise Vessels

As shown in Figure 9, the number of cruise passengers in the Alaska market has grown at 9.0% per year. The number of cruise ship calls has increased at 6.2% per year between 1998 and 2004. Vessel dimensions are getting larger. Cruise ships hold 1,500 to 2,000 passengers or more. Most industry forecasters expect the number of passengers to continue to grow at 5% or more per year during the next 10 years.

**Figure 9 – Alaskan Cruise Market Trends in the Pacific Northwest**



There are potential opportunities for cruise vessel calls at Port Angeles when the vessel is entering or leaving the Alaska cruise market or if there are berth conflicts in Seattle and/or Vancouver B.C.

Cruise line itinerary directors are on the lookout for new ports to offer to their passengers, and coastal ports such as Grays Harbor and Astoria have been successful in attracting calls. A port call typically lasts for eight hours. During this time, passengers have between three and seven hours to participate in local activities. At the same time, the ship will often take on fresh water and dispose of trash.

Port Angeles has had some previous success in attracting large cruise vessels. Holland America’s Zandam berthed at Terminal 1 in 2004. Passengers spent about six hours visiting downtown Port Angeles and took chartered buses to Hurricane Ridge and Lake Crescent in Olympic National Park. When the passengers walked off the ship, they were greeted by representatives of the Port Angeles Downtown Association, Port Angeles Chamber of Commerce, Port of Port Angeles, North Olympic Peninsula Visitors and Convention Bureau and the city's Waterfront Ambassadors.

Additional cruise vessel calls are likely to occur in Port Angeles but may be limited due to Port Angeles’s proximity to Seattle and Vancouver BC as well as to Victoria, which has become a major port of call in the Alaska cruise market.

### 3.2 Small Cruise Ships

There is also a fleet of smaller cruise ships that serves the Alaska and Pacific Northwest market. As shown in Table 3, there are a number of small passenger vessels that provide cruise opportunities within the Pacific Northwest. Some focus on cruises to Alaska and could present an opportunity when repositioning in and out of the market.

**Table 3 - Small Cruise Vessels in Alaska and Pacific Northwest**

Company	Boat	Passengers	Length
American Safari Cruises	Safari Quest	22	120
American Safari Cruises	Safari Spirit	12	105
American Safari Cruises	Safari Escape	12	112
Alaska West Steamboat Company	Empress of the North	235	360
Alaska West Steamboat Company	Queen of the West	161	230
Clipper Cruise Line	Clipper Adventure	122	330
Clipper Cruise Line	Clipper Odyssey	128	340
Clipper Cruise Line	Yorktown Clipper	138	257
Cruise West	Spirit of Oceanus	114	295
Cruise West	Spirit of Endeavor	102	217
Cruise West	Spirit of '98	96	192
Cruise West	Spirit of Columbia	78	143
Cruise West	Pacific Explorer	100	185
Cruise West	Spirit of Alaska	78	143
Cruise West	Spirit of Discovery	84	166
Cruise West	Sheltered Seas	70	90
Discovery Voyages	Discovery	12	65
Glacier Bay Cruise Line	MV Executive Explorer	104	49
Glacier Bay Cruise Line	MV Wilderness Discoverer	87	169
Glacier Bay Cruise Line	MV Wilderness Adventurer	69	157
Glacier Bay Cruise Line	MV Wilderness Explorer	31	112
Lindblad Expeditions	Sea Bird	70	152
Lindblad Expeditions	Sea Lion	70	152

Source: cruise line websites

As an example, American West Steamboat Company operates two modern paddlewheel vessels, the *Empress of the North* and the *Queen of the West*. Both vessels are homeported in Portland. *Empress of the North* spends the summer plying Alaskan waters, before returning to Portland for the winter. *Queen of the West* spends the entire year operating on the Columbia, Snake and Willamette Rivers, and is joined on this route by the *Empress of the North* during the winter. American West may be considering calls at Port Angeles when it repositions.

### 3.3 Opportunities

The Port of Port Angeles is responsible for providing adequate infrastructure for the cruise vessels, which includes a dock in good physical condition, a gangway for moving passengers on and off the ship, and a clean, safe walkway from the gangway to shore and convenient ground

access for four buses. It should be noted that there could be berth conflicts between cruise vessel calls and topside repair activities, which is discussed further in the next section.

Additional opportunities will require marketing key cruise industry contacts (via individual companies and industry associations such as Seatrade). Increasing cruise activity at Port Angeles (small and large cruise vessels) is dependent on the success of long-term marketing efforts by a partnership that includes the Chamber of Commerce, the Visitor and Convention Bureau and the Port. Opportunities appear to be more favorable for small vessels than for large vessels.

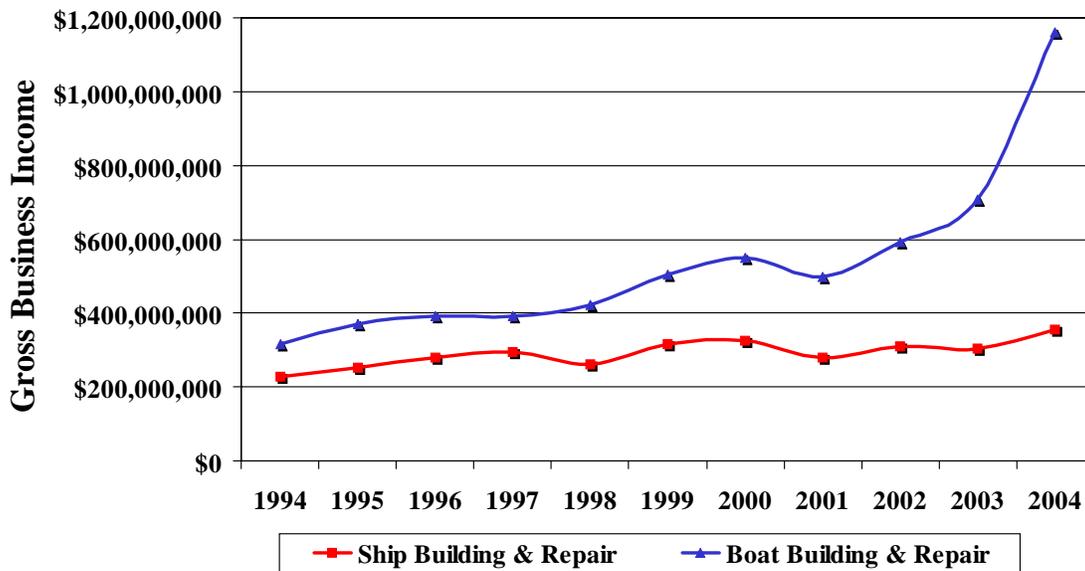
## 4 Ship & Boat Building and Repair

The tenants of the Port of Port Angeles provide repair for large and small commercial vessels, mega-yacht construction and boat repair. These markets are evaluated in this section.

### 4.1 Comparison of Revenue Trends in Ship Building and Boat Building

Within Washington State, the gross business income of boat builders/repairers has skyrocketed from \$316 million in 1994 to nearly \$1.2 billion in 2004, or at an average annual rate of nearly 13.9% (11.1% per year after adjusting for inflation). The gross income of firms engaged in ship repair/building increased from \$226 million to \$354 million during the same period or at 4.6% per year (1.8% after adjusting for inflation).

Figure 10 - Gross Business Incomes of Washington State Boat and Ship Builders



### 4.2 Topside Repair

Port Angeles provides an excellent location for topside service, since it has a protected port with deep water, and all vessels passing through into Puget Sound must pass by it.

There are three firms currently providing topside repairs in Port Angeles:

- Washington Marine Repair, a sister company of Cascade General in Portland, provides topside repair for Alaskan tankers (which represent approximately 95% of its customers). Other customers have included the U.S. Coast Guard, NOAA, tugs and barges, and the Navy (in Seattle).
- Lincoln Industrial provides topside repair, as well as other services including trailer and truss manufacturing.
- Straits Marine performs topside repair work on Alaska tankers, barges, USCG cutters, and other miscellaneous ships and boats either at the Terminal or at anchor.

#### ***4.2.1 Topside Repair Market***

Tanker repair accounts for nearly all of the topside repair activity at Port Angeles. The market for topside repair of domestic tankers is expected to range between 100 and 150 days per year. Domestic tanker operators have constructed new vessels to satisfy regulatory requirements. As a result, there are fewer topside repair contracts for the tanker fleet serving Alaska than previously existed. There will continue to be topside repair and inspections in Port Angeles but the level is expected to be less than occurred in prior years.

However, the competition for topside repair of other vessels is fierce. Topside repair can occur at several locations (i.e., at a terminal dock, at one of the numerous repair facilities located along the west coast or while the vessel is in transit). There are approximately 80 commercial vessel repair yards located along the West Coast that can accommodate vessels 400 feet or longer.

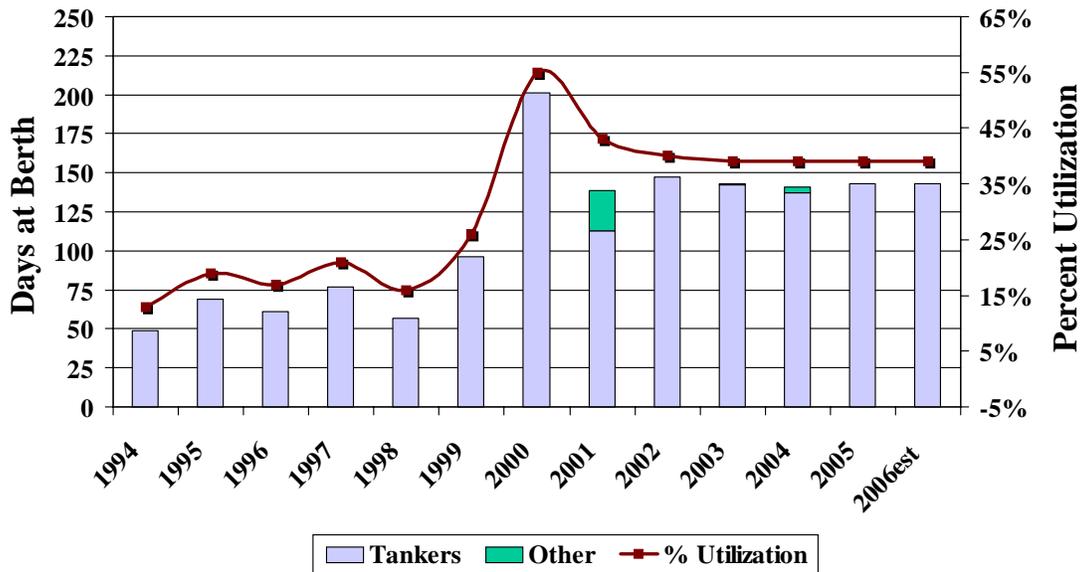
The opportunities for domestic cargo vessels, foreign cargo vessels and tankers, Navy vessels and government vessels are considered to be limited to emergency repairs, which only occur sporadically.

#### ***4.2.2 Berth Utilization***

Berth utilization at Terminal 1 (North Berth) peaked in 2000 with 201 vessel days. Utilization in 2005 reached 55% (See Figure 11). However, from 2001 through 2005, the number of days at berth ranged from 137 to 147 vessels and berth utilization averaged approximately 40%. In 2005, there were 141 vessel days with corresponding berth occupancy of 39%. The Port projects similar numbers for 2006.

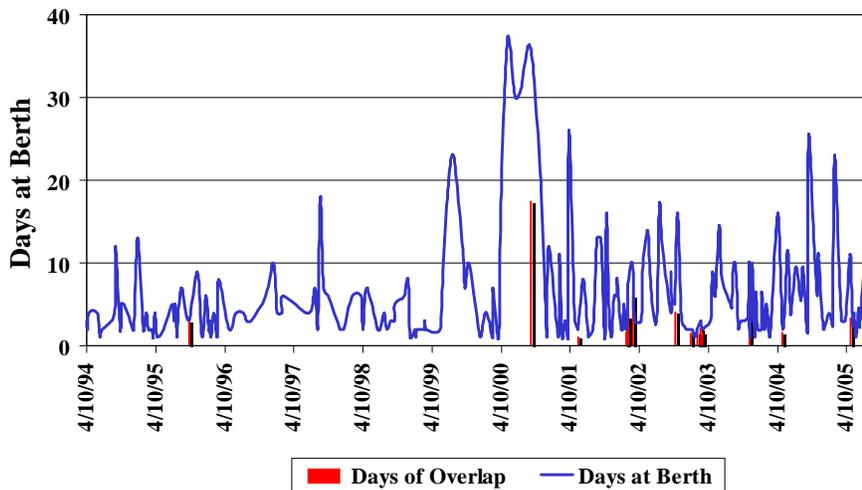
Berth utilization cannot reach 100% without significant disruption in scheduled operations. Most port planners consider 60% to represent full berth utilization, after which additional berth space is required. The berth utilization at the Port of Port Angeles does not currently meet the requirement for expansion and it is unlikely to grow substantially from current usage patterns because of upgrades to the domestic tanker fleet (which require fewer repair days in Port Angeles) and difficulty attracting other types of vessels due to competition from other facilities.

Figure 11 – Berth Utilization at the North Berth



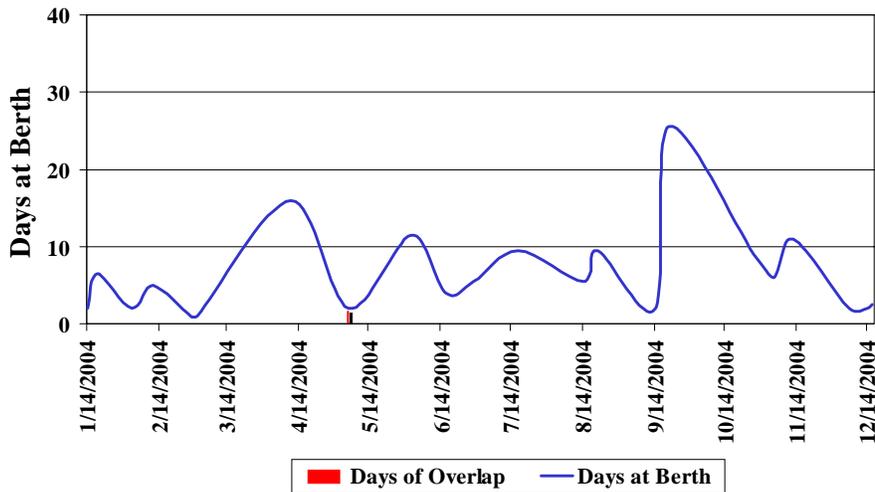
There are a limited number of times that a berth conflict (or overlap) has occurred during the past 11 years. As shown in Figure 12, berth conflicts reached 18 days in 2000 and have occurred sporadically between 2001 and 2005. Double occupancy has occurred less than 5% of the time during the past 11 years.

Figure 12 – Number of Days of Overlapping Berth Days



The periods of greatest intensity of use appear to occur in the spring and Fall as shown in Figure 13. This is the same time period that vessels are re-positioning in (Spring) and out (Fall) of the Alaskan cruise market. Additional cruise vessel calls could interfere with topside repair activities.

Figure 13 – Berth Utilization in 2004



### 4.3 Boat Repair

Boat repair in Port Angeles includes both large and small boats. There are several facilities for lifting boats into the boat yard at Port Angeles, including a 300-ton Travelift, a 70-ton Travelift and a marine ways. These facilities are described in the following sections.

#### 4.3.1 300-Ton Lift

Platypus Marine, Inc. (PMI) provides subcontracting services for new construction of boats as well as for refits/repairs. PMI operates from a four-acre facility in Port Angeles that includes approximately 70,000 sq ft of covered space. At the present time, PMI has approximately 70 employees. PMI owns and operates the 300-ton travel lift at Port Angeles (See Figure 14).

Port of PA records show the revenues paid by Platypus for use of the haulout pier. Dividing the revenue per year by \$175 (the charge for each use, in or out), the facility has increased utilization from 23 one-way lifts in 1999 to 91 through the end of October 2005.

Table 4 – Utilization of the 300-ton lift

Year	Revenue	Lifts (one-way)
1999	\$4,025	23
2000	\$7,325	42
2001	\$7,700	44
2002	\$5,075	29
2003	\$10,325	59
2004	\$14,000	80
2005 thru end Oct	\$15,905	91

Source: BST Associates using data from Port of Port Angeles

According to Port records, the average boat using the 300-ton lift was 88 feet in length and stayed 37 days in the yard based on 2005 statistics. Most of the vessels are pleasure boats (approximately 80%) with the remainder mainly fishing boats and other commercial boats (including the Puget Sound Pilot’s boat). Around half of the owners are from Washington State,

one-third from other west coast states (California, Oregon and Alaska), and the rest (around 18%) are from other states or outside the US<sup>8</sup>.

PMI would like to increase lift utilization but this may require an adjustment to the tariff rate (especially for smaller vessels). PMI is also considering improvement(s) to the two “rub buildings” with a concrete slab or asphalt paving, lighting, heat, and the appropriate containment system. PMI believes that the installation of a wash down pad at the Port would help with their work activities. However, any improvements to the washdown facilities must comply with new more stringent regulations by the Washington State Department of Ecology on stormwater and wastewater discharge permits.

**Figure 14 – 300 Ton Lift at Port Angeles**



#### 4.3.2 Marine Ways

The marine ways at Port Angeles has a 200-ton capacity with a cradle measuring 105 feet in length and 25 feet in width. See Figure 15. Arrow Marine Services operates the marine ways, primarily serving company owned boats as well as its customers.

Utilization of the marine ways increased significantly from 2003 to 2004, up from 130 days of use (representing a 36% utilization rate) to 276 days of use (76% utilization rate). However, through August 2005, the utilization rate has dropped from 172 days in 2004 (47% utilization rate) to 110 days in 2005 (30% utilization rate).

**Table 5 –Utilization of the Marine Ways**

Year	Customer Days	Tenant days	Total days used of Marine Ways	% Utilization
2003	87	43	130	36%
2004	63	213	276	76%
Through August				
2004	59	113	172	47%
2005	15	138	110	30%

Source: Port of Port Angeles

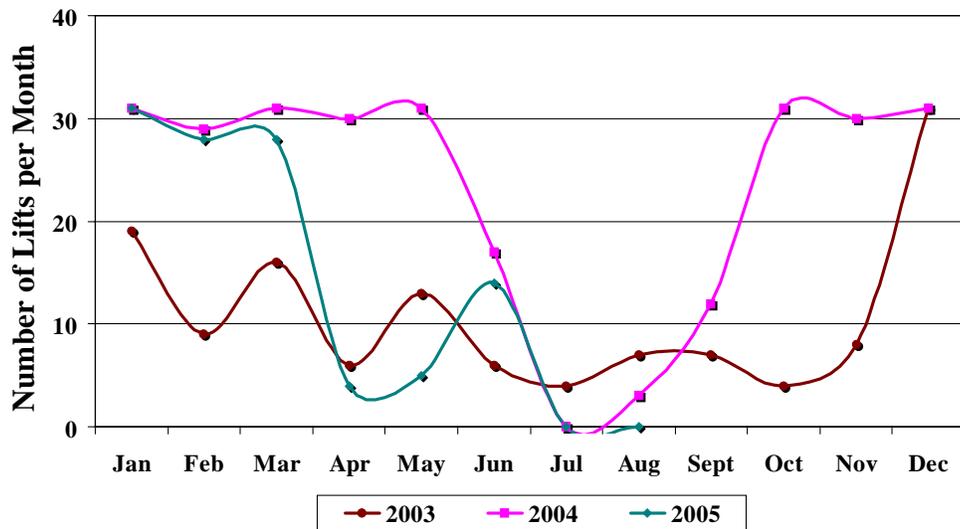
<sup>8</sup> Based upon 2005 records from the Port of Port Angeles and the US Coast Guard database.

**Figure 15 – Marine Ways at Port Angeles**



On a monthly basis, the marine ways are primarily utilized between October and March. During this time period, the ways are used to capacity. In 2003 and 2005, utilization was lighter between March and October.

**Figure 16 – Monthly Utilization of the Marine Ways**



**4.3.3 70-Ton Lift**

The Port owns the 70-ton travel lift dock and equipment, which is operated by Port Angeles Marine. The travel lift is about the right size for the boat yard because larger boats can use the 300-ton Travelift or the Marine Ways.

The 70-ton Travelift has typically been used between 500 and 600 times per year since 2000. It appears that there will be about the same number of lifts in 2005 as in 2004. This amounts to about 1.3 to 1.7 boats per day on average.

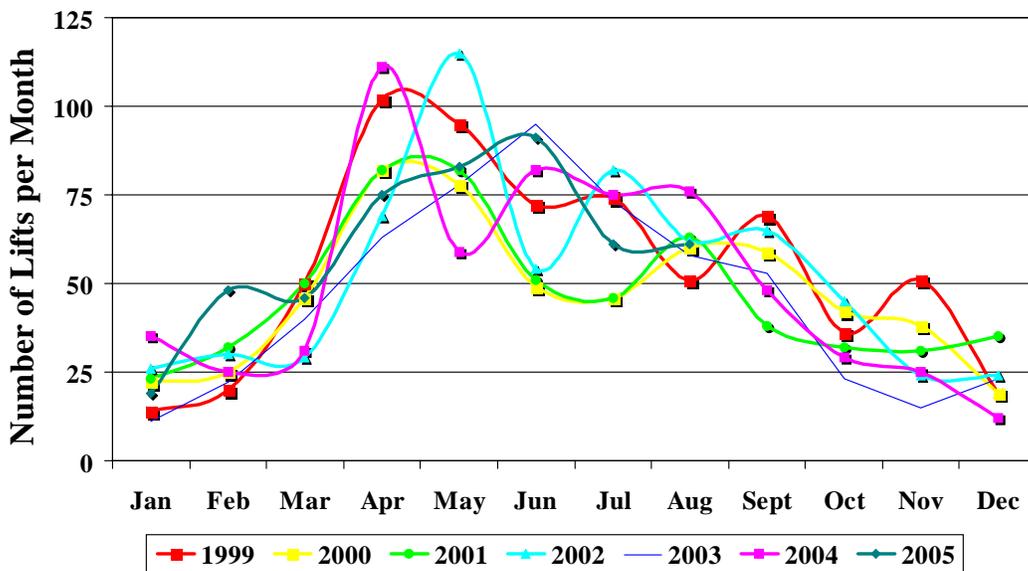
**Table 6 – Utilization of the Port Angeles 70-ton Travelift**

Year	Boats into the yard	Boats into the water	Total Travel Lift Ops
2000	283	282	554
2001	262	231	493
2002	294	256	550
2003	403	266	554
2004	310	298	608
Through August			
2004	248	246	494
2005	250	234	484

Source: Port of Port Angeles

Use of the 70-ton lift consistently peaks in April and May as recreational boaters prepare for the summer season. During this time, there are approximately 3 to 4 boats per day being lifted. The lowest level of use occurs in October through March, with less than 1 lift per day on average.

**Figure 17 – Monthly Utilization of the 70-Ton Travelift**



Local boat owners also utilize boat yards located in Port Townsend or other parts of Puget Sound. There is interest by some marine businesses to expand facilities at Port Angeles in order to attract more repair work. This could require facility improvements, including expanding the boat yard, adding a wash down facility, more parking and upland storage areas, among other items.

#### 4.4 Boat Building

Washington State has a number of boatyards that manufacture high-end recreational vessels, or luxury yachts, including Westport Shipyards, Delta Marine Industries, Christensen Yachts, Nordic Tug, Nordic Yachts, and several others.

Since the market for the luxury yachts is worldwide, the majority of these vessels leave Washington for hailing ports elsewhere in the world.

Westport Shipyards built 163 vessels that have US owners (e.g., 56 fishing boats, 56 passenger boats, 45 recreational boats, and 4 unclassified or unknown). Very few of Westport's vessels have Washington-based owners. Of the 163 vessels, 20 of the fishing boats, 10 of the passenger vessels, and 5 of the recreational vessels have Washington owners.

Westport was originally a builder of fishing boats in the 35-foot to 55-foot range. The earliest big boat built by the firm that is still on the Coast Guard registry was a 78-footer constructed in 1981. According to the company website, they have now constructed more than 50 luxury yachts. Of these, only five vessels longer than 75 feet have owners in Washington.

Westport utilizes a 100,000 square foot plant on 3.3 acres, and employs 125 people at the waterfront facility, and 120 people at the Port Angeles airport. In addition, Westport builds the interiors for all of its yachts at the Port Angeles Airport and also builds two 164-foot long luxury yachts per year at its Port Angeles waterfront facility.

Westport's growth has been very strong in recent years. However, because of this growth, they need room for expansion. An additional 25,000 square feet would accommodate stone cutting, upholstery, and allow them to relocate the company's airplane to Port Angeles. In addition, there is not enough available space to accommodate their employees.

Westport is considering developing a new line of 145-foot long boats. There are several advantages to locating this potential new facility in Port Angeles. Port Angeles offers a larger labor pool than Westport. There are likely economies of scale that would accrue by locating the new facility near their existing Port Angeles plant. For example, the engineering department was relocated from Seattle to Port Angeles and would not need to be replicated in the new facility. If developed, a new Westport facility would bring an estimated 120 new jobs to town.

## **5 Marinas**

The Port of Port Angeles owns and operates two small boat harbors: the Port Angeles Boat Haven in downtown Port Angeles and the John Wayne Marina in Sequim, approximately 20 miles to the east. Both marinas offer moorage to both commercial and recreational boats, and each location has its own advantages.

### **5.1 Marina Description**

Port Angeles Boat Haven has moorage space for more than 520 boats, including 75 boathouses. A number of marine service and repair operations are located at or near the Boat Haven. Services that are available include boat repair and retrofit services, haul out services, charter services, bait shops, and more. Because of these services, the Boat Haven tends to attract a larger share of the commercial fleet than does John Wayne Marina.

John Wayne Marina is one of the newest marinas in Washington, and was constructed in 1985 on 22 acres of land donated by the John Wayne family. The marina is located a few miles from downtown Sequim, on Discovery Bay. The marina offers permanent and guest moorage; launch ramps, fuel facilities, and some marine services. In addition, both the boating and non-boating public can use the facility's restaurant, banquet facilities, public beach access and picnic areas.

## 5.2 Market Assessment

The Port recently completed market analyses for both boat harbors that compared the current slip layout to the existing and projected demand for moorage. For the Boat Haven the issue of slip distribution has more urgency because the facility is substantially older than the John Wayne Marina, and the slips are nearing the end of their useful life.

### 5.2.1 Market Area Served

The primary market for both marinas is Clallam County, which accounts for 88% of the tenants at John Wayne Marina and 80% of the tenants at Port Angeles Boat Haven. Residents of Sequim comprise 75% of the tenants at John Wayne Marina and 10% of the tenants at Port Angeles Boat Haven, while residents of Port Angeles comprise 11.6% of John Wayne Marina tenants and 65.3% of the tenants at the Port Angeles Boat Haven. Approximately 10% of the tenants at each marina are from other counties in Washington, and the remainder from out of state.

The market concentration at both marinas is very tight geographically relative to other marinas, particularly those located in Skagit and Kitsap County. There is a limited appeal for boaters from other parts of Washington State and out-of-state boaters in these marina locations. This characteristic tends to limit the expansion potential of both marinas.

### 5.2.2 Growth in Boat Ownership

Boat ownership for registered boats in Clallam County grew at 0.4% per year between 1990 and 2002. Growth was faster than this average for boats greater than 30 feet in length, and the increase in the growth rate was directly correlated to the boat length, except for boats longer than 60 feet.

Focusing on registered boats, growth was above average for boats greater than 30 feet in length and accelerated more rapidly as boat length increased, except for boats greater than 60 feet in length:

- Boats under 16 feet in length declined in numbers at -0.1% per year between 1990 and 2002,
- Boats from 16 to 20 feet in length grew at 0.4% per year during the time period.
- Boats from 21 to 30 feet in length grew at 0.5% per year during the time period.
- Boats from 31 to 40 feet in length grew at 4.6% per year during the time period.
- Boats from 41 to 50 feet in length grew at 6.8% per year during the time period.
- Boats from 51 to 60 feet in length grew at 5.9% per year during the time period but little growth occurred during the past six years. This trend indicates the lack of facilities for vessels in this size range.
- Boats greater than 60 feet in length reached a peak of 4 in 1996 and have since declined to 2 boats. This trend indicates the lack of facilities for vessels in this size range.

Sluggish growth in vessels under 30-feet and more rapid growth in vessels over 30-feet has implications for both the Boat Haven and John Wayne Marinas. It indicates that there are likely too many small slips and not enough in the longer slip lengths. In addition, boat buyers are generally selecting boats that are larger in all dimensions - longer, higher and wider. Facilities that were designed for a certain average vessel size 20 or 30 years ago may have a capacity of

fewer boats now, because of the increase in vessel length. Furthermore, as the average vessel has become longer, the average beam for a given length of vessel has also increased over time. Master plans for both marinas lay out the required infrastructure improvements.

## 6 Fishing Support Facilities

Fisheries support facilities are currently an important part of the Port Angeles economy. This section reviews trends and evaluates potential opportunities.

### 6.1 Fisheries Trends

This section reviews the trends of fish landings, with a particular emphasis on whiting (hake) and sardines.

#### 6.1.1 Whiting (*hake*)

Pacific whiting (or hake) is the largest fishery off the West Coast of the U.S. and British Columbia. It is marketed in two primary ways: surimi (used to make imitation crab and other products) and hake fillets.

According to the National Marine Fisheries Service (NMFS):

The whiting fishery developed in the 1960s with the arrival of distant water fleets from the former Soviet Union and eastern European nations. In the 1980s the fishery in the U.S. exclusive economic zone (i.e., 200 miles seaward of state waters) evolved into a joint venture operation between foreign at-sea processing vessels and U.S. catcher vessels.

By the 1990s, the fishery had developed into a domestic fishery with three distinct sectors:

1. Catcher-Processors that harvest and process at-sea;
2. Motherships that take deliveries from catcher vessels and process at-sea; and
3. Shoreside processors that take deliveries from catcher vessels.

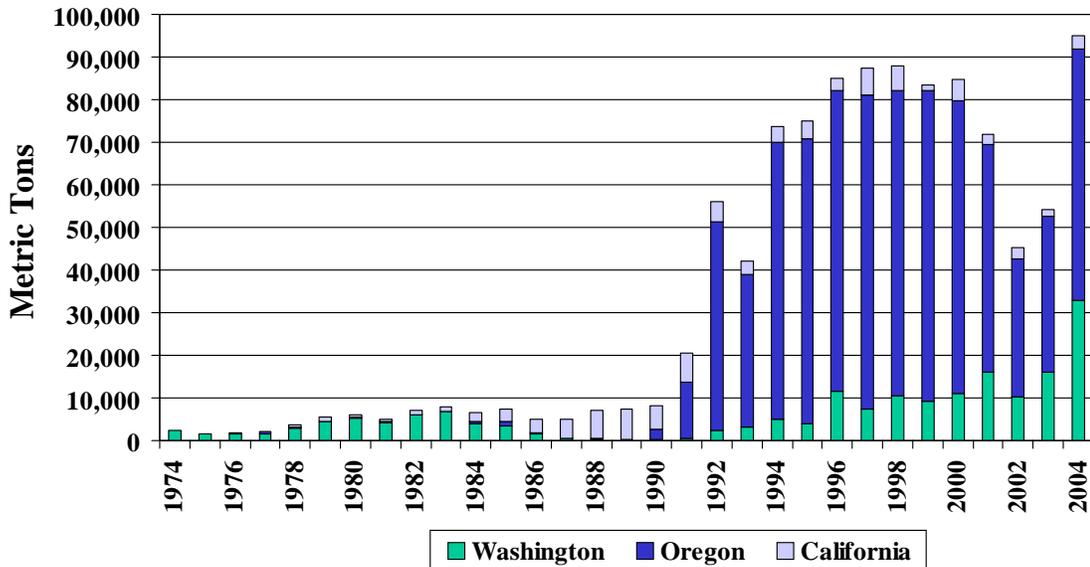
U.S. coastal treaty Tribes in Washington State comprise a fourth sector of the Pacific whiting fishery. Per an agreement with the U.S. government, coastal treaty Tribes receive a specific annual allocation of whiting. Their allocation is based on the level of allowable of harvest, which varies year-to-year. For example, in 2005 the U.S. total allowable catch is 269,069 metric tons; of this amount the Makah Tribe was allocated 35,000 metric tons. The Quileute Tribe is also eligible for an allocation, but has not been active in the fishery in recent years.

One of the major sources of uncertainty with respect to establishing harvest levels relates to stock abundance, which is controlled by the level of recruitment of young fish into the fishery and ocean conditions. Data assessments in 2001 and 2002 indicated a relatively low abundance. However, abundance appears to have increased in both 2003 and 2004. As a result, higher harvest goals were established.

The other concern about harvest levels relates to bycatch or the incidental harvest of other species, particularly those that are threatened or endangered. In addition, concerns have been expressed about the health of the seal and Orca populations as a result of groundfish harvests. These issues could impact future harvests levels.

Despite these concerns, the fishery appears relatively healthy at the present time. As shown in Figure 18, the landings for the three coastal states increased to between 85,000 and about 90,000 metric tons in the period from 1996 to 2000 then declined significantly reaching a nadir in 2003. However, landings exceeded 95,000 tons in 2004. Landings increased most significantly at Washington ports, with volumes up 100% from 16,000 metric tons in 2003 to 32,000 tons in 2004.

**Figure 18 – West Coast Hake Landings**



The whiting allocation for 2005 is approximately 250,000 metric tons. Approximately 97,000 tons are allocated to shoreside plants with nearly 32,000 tons allocated to Washington State, which is comparable to 2004 levels and substantially more than in prior years. In addition to the state shore-based plant allocations, there is an allocation of 34,000 metric tons to the Makah Tribe.

**Table 7 – Whiting Harvest Allocation for 2005**

Category	Whiting Catch (mt)	% Total
<b>Non-Tribal</b>		
Shore Based		
California	3,826	1.5%
Oregon	61,318	24.6%
Washington	31,927	12.8%
Total	97,071	38.9%
Mothership	39,999	16.0%
Catcher/Processor	78,147	31.3%
Total	215,217	86.2%
<b>Tribal (Makah)</b>	34,357	13.8%
<b>Total</b>	249,574	100.0%

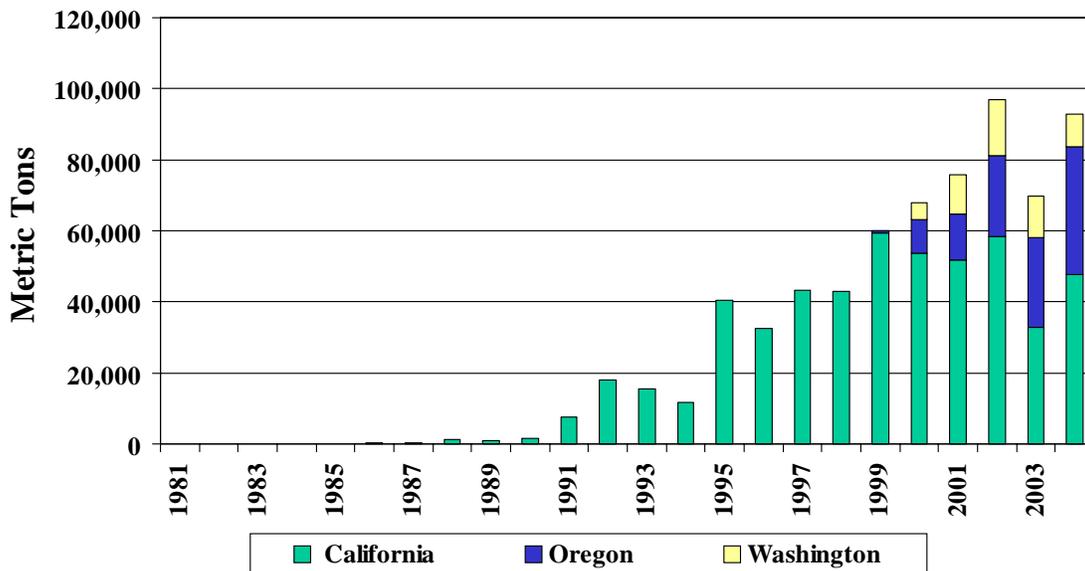
Source: NMFS

### 6.1.2 Sardines

The sardine fishery has also increased dramatically along the West Coast during the past 10 years. As shown in Figure 19, landings in the tri-state area nearly reached 100,000 metric tons in 2002 then fell to 70,000 tons in 2003 and increased to 93,000 tons in 2004.

Washington State landings were non-existent (or at very low levels) prior to 1999 but reached a peak of nearly 16,000 metric tons in 2002. In 2004, Washington State landings were approximately 9,000 metric tons.

**Figure 19 – West Coast Sardine Landings**



## 6.2 Fish Processing Industry in Clallam County

### 6.2.1 Fish Landings

Fishery landings (for all species) in the Pacific Northwest increased from 85,000 to 90,000 tons in the period 1999 to 2001 to more than 150,000 tons in 2004 (see table 7). Most of the landings occur in Astoria and Westport followed by Ilwaco and Bellingham.

Landings at Port Angeles ranged from a low of 600 to a high of 1,500 metric tons between 1999 and 2004, and consisted primarily of salmon, halibut and crab among other species.

### 6.2.2 Fish Processing Industry

There are 2 main firms located in Clallam County that process fish and seafood (High Tides Seafood in Port Angeles and Olympic Fish Company in Neah Bay). These firms jointly employ approximately 70 persons.

High Tides Seafood, which uses Terminal 4 at the Port, handles fish from offshore fishing boats along the Washington coast but also from the Columbia River and Puget Sound. However most products are trucked from the point of purchase (e.g., Neah Bay, La Push and elsewhere). About 75% to 80% of their product is from Neah Bay or La Push, and two-thirds is from tribal fishermen.

High Tides processes four to five million pounds of product per year at the present time, including salmon, halibut, crab and other species.

High Tides leases space in three or four buildings from the Port for their operations and have one 40' x 60' holding freezer for up to 300,000 pounds of product. The current operation is stable and they have no critical new support needs.

A new opportunity is being considered that would entail processing whitefish and sardines. The new plant would process approximately 1½ to 2 million pounds (680 to 900 metric tons) of product per year of whitefish products, fish food, and bone meal. The plant would pump fish via pipeline directly from the fishing boats to the processing plant, which would have storage for up to 750,000 pounds of product.

**Table 8 – Total Commercial Fishery Landings At Northwest Ports (Metric Tons)**

<b>Port</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Astoria, OR	53,615	59,013	46,675	48,490	51,755	61,598
Westport, WA	11,612	17,010	-	28,350	34,337	42,094
Ilwaco-Chinook, WA	4,763	8,981	16,375	19,142	19,595	14,016
Bellingham, WA	9,616	8,165	9,117	10,705	10,841	10,660
Shelton, WA	-	-	-	2,858	5,942	4,899
Seattle, WA	1,225	1,724	-	3,175	3,221	3,493
Blaine, WA	2,948	3,039	4,037	2,858	2,948	3,221
Bay Center-South Bend, WA	-	-	-	3,221	3,992	3,175
Anacortes-La Conner, WA	1,588	-	4,355	3,856	2,722	2,449
Neah Bay, WA	-	-	-	-	3,221	2,177
Tacoma, WA	-	-	-	1,406	1,452	1,542
Port Angeles, WA	-	-	1,497	3,039	590	998
La Push, WA	-	-	-	-	590	953
Everett, WA	-	-	-	-	-	862
Olympia, WA	-	-	-	953	816	862
Port Townsend, WA	-	-	-	-	726	816
<b>Total</b>	<b>85,367</b>	<b>97,932</b>	<b>82,056</b>	<b>128,050</b>	<b>142,747</b>	<b>153,815</b>
Port Angeles % of Total	NM	NM	1.8%	2.4%	0.4%	0.6%

Source: NMFS

The demand for this product appears reasonable, since it requires a very small percentage of the resource base. However, the uncertainty regarding the resource base should be noted. It is important that any financial commitment by the Port be carefully assessed to minimize potential losses.