



# West Boat Haven Master Plan Feasibility Report - FINAL

February 11, 2026

PND Project No. 254016

PREPARED FOR:



PREPARED BY:



ENGINEERS, INC.

**PND ENGINEERS, INC.**



ENGINEERS, INC.

## **EXECUTIVE SUMMARY**

### **WEST BOAT HAVEN MASTER PLAN - FEASIBILITY REPORT**

The West Boat Haven is an essential waterfront asset that supports recreational boaters, community sailing and education programs, visiting vessels, and a thriving marine trades industry. As part of the Usual and Accustomed (U&A) lands of multiple Tribal nations, the West Boat Haven also supports both treaty and non-treaty fishing operations ranging from independent and family fishers to larger commercial groups. Much of the West Basin was constructed in the mid 1980's, and while it remains functional, many components have reached or exceeded their intended service life. This Feasibility Analysis evaluates whether modernization of the West Basin is justified and achievable based on existing conditions, market demand, stakeholder input, environmental considerations, and conceptual layout development.

Assessment of the current facility shows aging floats and piles, slip geometry that does not fully meet contemporary standards, maneuverability challenges created by the north-south orientation of the slip field, and utilities and access structures in need of modernization. The Market Analysis conducted by BST Associates indicates strong demand for mid-sized slips in the 30 to 50-ft range and significantly lower demand for 20-ft slips than current conditions supply. Commercial marine activity continues to be an important part of the basin's use, and operators benefit from improved side-ties, circulation, and fairway geometry.

Advisory Committee members and the public reinforced many of these themes, emphasizing the need to address wind related maneuverability, rebalance the slip-mix to better match demand, support commercial activity, and improve access for community sailing programs. Concepts that increased the number of 20-ft slips were viewed less favorably, while concepts that improved wind alignment and circulation received stronger support.

Five conceptual alternatives were developed to explore different approaches to slip-mix, layout, maneuverability, and operational performance. Alternatives that retain the existing slip orientation offer familiar geometry and may provide more flexibility during construction phasing. Alternatives that reorient the marina may improve maneuverability and better align with market demand, and refined concepts such as A1 and C1 each address user needs in different ways. All alternatives are technically feasible using commonly constructed marina infrastructure.

No major environmental or permitting constraints have been identified at this planning level that would prevent redevelopment. Overwater shading, in water work timing, sediment disturbance, and boathouse related considerations will require further study during design and permitting.

Modernization appears feasible from an infrastructure, market, operational, and environmental standpoint. The next step the Port may wish to consider is a comprehensive financial feasibility assessment. This work would evaluate long term financial sustainability, funding strategies, rate structures, and capital sequencing to support a final decision on whether and how to proceed with modernization of the West Basin.

## **PREPARED BY**

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February 11, 2026  
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Todd Belsick, PE  
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## 1. INTRODUCTION

The West Boat Haven Master Plan establishes a long-term vision for modernizing one of the Port’s most important community and economic assets. The Port operates the Boat Haven in Port Angeles, which consists of both East and West Basins. This facility plays a central role in supporting the city’s maritime economy and community boating activities, making the timing and strategy for redevelopment especially important. The marina supports recreational boaters, community sailing and education programs, visiting vessels, and a thriving marine trades industry. As part of the Usual and Accustomed (U&A) lands of multiple Tribal nations, the West Boat Haven also supports both treaty and non-treaty fishing operations ranging from independent and family fishers to larger commercial groups.

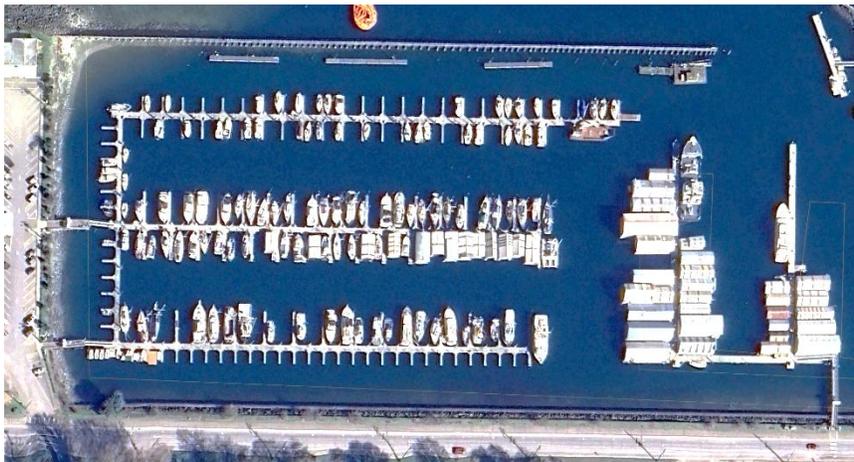


Figure 1. West Boat Haven Satellite Image (Google Earth, 2025)

The West Basin includes nearly 275 slips ranging from 20-ft to 100-ft in length. Several floats were replaced in 2007, while the remaining floats date back to the original construction era and are now due for full replacement. This historical context underscores the need for planning and investment, as much of the West Basin’s core infrastructure is nearing the end of its intended service life and no longer meets modern design or operational standards.

This Feasibility Analysis report evaluates:

- Existing infrastructure conditions
- Market demand and economic context
- Stakeholder and Advisory Committee input
- Public comments
- Environmental and permitting considerations
- Multiple alternative configurations
- Technical feasibility
- Financial implications

The purpose of this Feasibility Analysis is to determine whether redevelopment of the West Basin is justified and feasible, considering existing conditions, operational challenges, market demand, environmental requirements, stakeholder feedback, and preliminary construction cost estimates.

## 2. EXISTING CONDITIONS

The West Boat Haven has been shaped over decades by incremental construction, user-driven modifications, and maintenance cycles. Much of the facility reflects its original construction, with only limited upgrades completed since that time. While the marina remains functional, many components have exceeded their intended service life and no longer align with modern design or operational needs. Feedback from Port staff and users also highlights several factors that influence day-to-day operations, including aging floats and piles, wind-related maneuverability challenges, outdated utilities, and evolving moorage requirements. These characteristics provide important context for evaluating the existing conditions and identifying opportunities for future modernization.

### 2.1 INFRASTRUCTURE CONDITION

The West Boat Haven was constructed in the mid-1980s, with several floats replaced in 2007. No formal condition assessment was performed as part of this Master Plan effort, nor did PND review any prior assessment reports. For planning purposes, we are assuming that all original (1980s-era) floats and piles have reached the end of their service life and will require full replacement. The floats replaced in 2007 are assumed to be in generally good condition; however, their actual condition will need to be verified under a separate assessment at a later date.

### 2.2 SLIP CONFIGURATION AND MANEUVERABILITY

The West Boat Haven consists of multiple floats arranged in a predominantly north–south orientation, with central fairways running east–west through the basin. Slips vary in size and configuration and accommodate a mix of recreational vessels, commercial and Tribal fishing operations, and other marine trades.

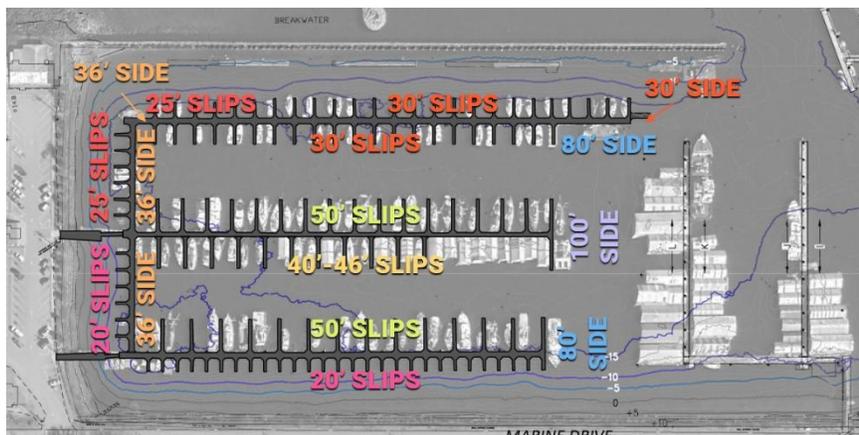


Figure 2. West Boat Haven Existing Layout

Users participating in the stakeholder outreach process noted that the existing north–south slip orientation can create challenging conditions during prevailing westerly winds. These crosswinds may complicate docking and departure for some vessels, particularly during winter storms or for operators of less maneuverable boats.

In reviewing the existing configuration, several layout elements do not align with contemporary industry recommendations for marina design. In certain areas, finger spacing is tighter than current guidelines suggest, and fairway widths are more constrained when accommodating larger or wider vessels. Additionally, water depths in some slip locations may be insufficient for deeper-draft sailboats, which can further limit moorage flexibility.

Slip sizes within the West Basin also vary significantly in utilization, and several size categories no longer align well with current demand. The following table summarizes the existing slip inventory, occupancy levels, and the recommended distribution identified through the market analysis.

		WEST FLOATS												
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot
CURRENT	<b>Count</b>	70	24	81	7	-	23	60	-	-	2	1	7	275
	<i>Occupancy</i>	33%	76%	86%		98%		96%	83%			-	-	
	<i>Recommended</i>	25	41	75	19	17	22	58	-	-	2	1	-	260

As shown, 20-ft slips represent the single largest category in the basin but have an average annual occupancy of only of 33%, indicating a substantial oversupply relative to demand. In contrast, slips between 30 and 50-ft consistently show high utilization, with annual occupancy levels above 85%. Larger slips remain well used and continue to support commercial and visiting recreational vessels.

The recommended slip-mix reduces the number of small slips and increases the number of mid-sized slips to reflect demonstrated demand. This information provides important context for evaluating the concept alternatives in Section 5 and emphasizes the need to rebalance slip sizes as part of future modernization planning.

## 2.3 BOATHOUSES

Boathouses represent a notable component of activity within the West Basin. However, the number of boathouses in the Boat Haven has continued to decline from 75 in 2000 to 41 in 2025. Feedback from Port staff and marina users indicated that many of the existing boathouses are aging and may have flotation or structural concerns. These observations were provided through stakeholder outreach; no formal condition assessment of the boathouses was completed as part of this planning effort.



Figure 3. Boat Houses at the West Boat Haven. Port Angeles, WA.

Because boathouses occupy space along the main floats, they also reduce the Port’s ability to accommodate side-tie moorage, which continues to be an area of interest among recreational and commercial users. Overall, while boathouses remain in demand, their condition and operational limitations are an important factor in evaluating future configuration options for the West Basin.

## 2.4 UTILITIES AND ACCESS

Feedback from Port staff and marina users indicates that the existing electrical systems are aging and may not provide the reliability or amperage required for many modern vessels. Similar comments were received regarding the condition of the potable water distribution system and the need for improved lighting throughout the facility. No formal utility condition assessment was completed as part of this planning effort, and the actual condition of these systems would need to be verified in a future phase.

The primary gangway does not meet current ADA accessibility standards for extreme tides, as its slope varies significantly with tidal fluctuations. Providing safe, consistent access—particularly for users with mobility limitations—is a core requirement of modern marina facilities and will need to be addressed as part of any future redevelopment.

### 3. MARKET ANALYSIS

BST Associates conducted a comprehensive Market Analysis for the West Boat Haven and prepared a standalone presentation report summarizing their findings. This Market Analysis, included as an appendix to this document, provides a detailed snapshot of current marina users, evolving demand, and the economic factors influencing future moorage needs. The marina serves a diverse mix of local recreational boaters, commercial vessel operators, transient vessels, and youth sailing programs. Understanding how these groups use the facility is central to determining how the marina should evolve.



#### 3.1 USER CHARACTERISTICS AND SLIP DEMAND

The marina is a predominantly local facility: approximately 76% of moorage customers are Clallam County residents; including the Makah, Lower Elwha, and Jamestown S’Klallam fleets. This strong local connection reinforces the importance of providing a slip-mix aligned with community needs.

The analysis demonstrates a clear pattern in slip demand.

- 30–50 ft slips are the most consistently filled, with long waitlists, particularly in the 36 ft range.
- 20 ft slips are significantly underutilized, with occupancy around one-third, indicating an oversupply relative to demand.
- Larger slips (50 ft and above) also remain well utilized, particularly during winter when vessels from the outer coast relocate to Port Angeles Harbor.

These findings highlight the need to rebalance slip sizes, reducing the number of small slips and expanding the supply of mid-sized moorage.

#### 3.2 COMMERCIAL MARKET ACTIVITY

Commercial marine trades form an important component of the West Boat Haven’s identity. Boatbuilding, repair, fishing, charter operations, and related support businesses rely on dependable moorage and adequate maneuvering room. Many of these operations increasingly depend on year-round availability, as well as improved utilities and access.

Boatbuilders and repair yards have reported increased lift activity, growing demand for haul-out services, and more work from both regional and out-of-area vessels. Commercial and Tribal operators benefit from side-ties, clear circulation routes, and fairways that accommodate larger workboats. The existing layout does not consistently provide these operational conditions. Redevelopment would improve the marina’s ability to support commercial users’ operational needs.

#### 3.3 ECONOMIC ANALYSIS

The economic analysis indicates that the existing West Basin supports approximately 63 direct full-time equivalent jobs and \$7.5 million per year in economic activity. Redevelopment, particularly under the concept alternatives described in Section 5 (including options such as A1 and C1), would increase

utilization and improve support for commercial users, raising the marina’s annual economic impact from \$7.5 million to an estimated \$8.3 to \$8.5 million with 66 jobs.

Much of this increase comes from allocating moorage more efficiently, supporting larger vessels, and accommodating commercial activity that is currently limited by infrastructure constraints.

The Jobs created at the West Basin have average wage of approximately \$62,000 per FTE (full time equivalent) per year at the West Basin, which is 11% higher than the county average (\$55,900 as per Washington State Employment Security Department).

### **3.4 MARKET OUTLOOK AND REDEVELOPMENT IMPLICATIONS**

The Market Analysis indicates that recreational boaters in Clallam County are already well-served by existing facilities at the Boat Haven and John Wayne Marina. The growth rate in boat ownership has been slower than the county’s population growth over the past two decades, and future boat ownership is expected to remain near current levels. Port Angeles is also expected to attract only a limited number of recreational vessels from outside the area. These factors suggest that recreational demand will remain relatively stable moving forward.

For commercial uses, the Market Analysis identifies opportunities to retain and grow activity within the Boat Haven. Vessel repair operations are experiencing increased demand, and the need for moorage to support these services is also growing. Other commercial uses are expected to remain stable or increase slightly, reflecting broader maritime activity in Port Angeles.

Together, these trends support a slip-mix with fewer small slips, more mid-sized slips, expanded flexible side-tie space, improved fairway geometry, and infrastructure that better supports recreational and commercial vessels. The Market Analysis provides the basis for evaluating redevelopment concepts that respond to these conditions.

## **4. COMMUNITY & STAKEHOLDER INPUT**

An Advisory Committee was established early in the Master Plan process to help guide development of the West Boat Haven concepts and provide input at key milestones. The committee was composed of approximately 24 individuals representing a broad range of interests and user groups within the West Basin, including marina tenants, commercial fishing, Tribal governments, marine trades, the yacht club, community boating programs, and youth sailing organizations.

Over the course of this study, three Advisory Committee meetings were held at major project milestones, supported by follow-up coordination and review of key deliverables. Committee members were asked to provide practical, user-based feedback on existing conditions, concept alternatives, operational needs, and feasibility considerations. Their role was advisory in nature and focused on ensuring that the Master Plan concepts reflected real-world use, community priorities, and long-term functionality of the marina.

The Advisory Committee and public played an essential role in shaping the direction of the Master Plan. Their insights helped identify long-standing issues, prioritize needs, and evaluate how alternatives responded to community expectations.

## 4.1 ADVISORY COMMITTEE PRIORITIES

Throughout two Advisory Committee meetings and follow-up communications, several clear themes emerged:

- **Wind and Maneuverability:** Members consistently emphasized the need to reorient slips to align with prevailing westerly winds. The current north–south configuration exposes vessels to crosswinds, making docking difficult—especially in winter.
- **Slip-mix:** There was broad agreement that the marina needs fewer small slips and more slips in the 30–50 ft range. This aligns with the Market Assessment and moorage waitlist data.
- **Support for Commercial Uses:** Advisory Committee members stressed the importance of supporting commercial marine activity with adequate side-ties, appropriate maneuvering space, robust utility infrastructure, and better circulation.
- **Youth Sailing and Community Programs:** Stakeholders highlighted the need to improve access and facilities for youth sailing programs, which currently work around infrastructure constraints.
- **Boathouses:** Committee members acknowledged that boathouses remain an important feature for many users but also noted challenges related to shading, aging structures, and how they fit into long-term marina planning.

## 4.2 PUBLIC INPUT

Comments submitted following the second Advisory Committee meeting provided detailed feedback on slip demand, slip-mix, marina configuration, and the draft concept alternatives.

A recurring theme in the comments was the high demand for 25 to 35-ft slips. Several commenters expressed concern that Options A and B increased the number of 20-ft slips, which were consistently identified as a lower-demand size. Commenters also noted that smaller-boat owners often rely on the Port Angeles Boat Ramp (West Boat Haven) and Ediz Hook Boat Launch rather than year-round moorage, which further reduces demand for 20-ft slips.



Many commenters emphasized the importance of serving local boaters, noting that most current users reside in Clallam County. Comments expressed concern that increasing the number of larger slips could shift the marina toward accommodating more non-local vessels, potentially reducing access for local residents.

There was also strong support for Option C, which commenters viewed as the most balanced and practical of the alternatives. Commenters cited its improved slip-mix, reduced emphasis on low-demand small slips, and alignment with wind and maneuverability concerns raised by both boaters and the Advisory Committee.

A number of broader topics were raised that fall outside the scope of the West Basin Master Plan. These included:

- Parking constraints at the marina
- The condition and usability of the Port Angeles public boat ramp
- Stacked storage for small vessels
- Webcams for weather and traffic visibility
- The role and utilization of the East Basin
- Derelict vessels and their effect on slip availability
- The influence of the West Boat Ramp and Ediz Hook Launch on small-vessel moorage demand

These items were acknowledged by the Port but are not addressed within this study.

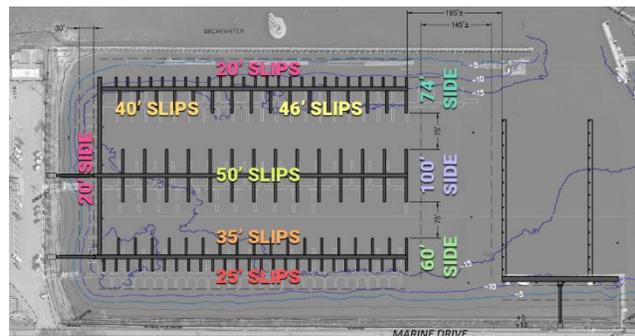
Overall, the advisory committee feedback reinforced several themes, particularly the need for a slip-mix that reflects actual demand, improvements to maneuverability, and a marina configuration better aligned with wind conditions and community priorities. This input played a significant role in narrowing the range of viable alternatives and identifying key design considerations for redevelopment.

## 5. CONCEPT DEVELOPMENT & EVALUATION

Concept development began with three initial alternatives (A, B, and C), each exploring different approaches to improving slip-mix, maneuverability, and overall marina performance. These early concepts were intended to test different ideas, ranging from minor adjustments to complete structural realignment. Advisory Committee then guided refinement into the A1 and C1 alternatives. The refined options focus on improving wind alignment, addressing slip-size imbalances, and enhancing circulation and operational efficiency within the basin. See appendix A for more details.

### 5.1 OPTION A: RETAIN THE EXISTING ORIENTATION

Option A modernizes the West Basin while preserving the current north-south slip orientation. Improvements include adjusting the slip-mix, widening select fairways, and making more efficient use of the existing footprint. Because the overall framework remains the same, this option may allow for more flexible and less disruptive construction sequencing.



Option A also revises the slip-mix to better reflect observed demand. The table below compares the existing slip inventory, the recommended distribution, and the slip counts proposed under Option A. The layout modestly reduces 20-ft slips and increases 25 and 30-ft slips, but it does not fully match the recommended distribution. Mid-sized slips remain undersupplied, and small slips remain higher than suggested by the market analysis.

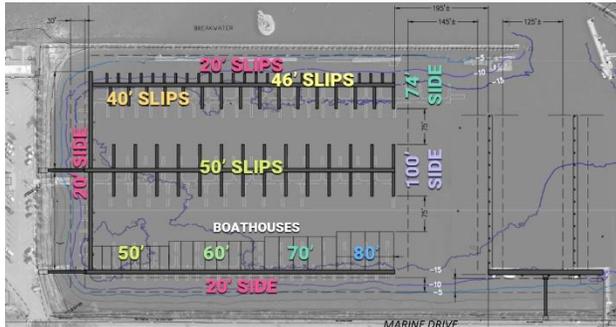
		WEST FLOATS												
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot
CURRENT	<b>Count</b>	70	24	81	7	-	23	60	-	-	2	1	7	275
	<i>Occupancy</i>	33%	76%	86%		98%		96%	83%			-	-	
<i>Recommended</i>		25	41	75	19	17	22	58	-	-	2	1	-	260
<b>OPTION A</b>		66	51	-	36	11	22	56	1	1	-	1	-	245

These adjustments improve on existing conditions but do not fully resolve the imbalance between low demand small slips and high demand mid-sized slips.

Retaining the existing orientation also preserves the maneuverability challenges created by prevailing westerly winds. Crosswinds continue to affect docking and departure, particularly during winter conditions or for less maneuverable vessels.

Overall, Option A provides incremental improvements and maintains a familiar layout but does not resolve the wind related maneuverability concerns identified through stakeholder outreach.

## 5.2 OPTION B: BOATHOUSE FOCUSED LAYOUT



Option B places the highest priority on maintaining accommodation for existing boathouses. To achieve this, slip and fairway geometry are constrained in several areas. Slip distribution becomes less adaptable to modern vessel trends, and the fairway layout provides limited improvement for larger boats or commercial users.

Because the layout must accommodate the current boathouse arrangement, there is little flexibility to adjust slip sizes. The table below compares the current slip inventory, the recommended distribution, and the slip counts developed for this concept. The values highlight how difficult it is to achieve a slip-mix that aligns with demonstrated demand when the boathouse configuration is maintained.

		WEST FLOATS												
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot
CURRENT	<b>Count</b>	70	24	81	7	-	23	60	-	-	2	1	7	275
	<i>Occupancy</i>	33%	76%	86%		98%		96%	83%			-	-	
<i>Recommended</i>		25	41	75	19	17	22	58	-	-	2	1	-	260
<b>OPTION B</b>		94	-	-	-	11	22	56	-	1	6	1	-	216

The resulting slip-mix does not significantly reduce the number of 20-ft slips or expand mid-sized slips,

both of which were identified as priorities in the market analysis. The constrained geometry also limits opportunities to improve maneuverability and operational efficiency.

This concept was useful in illustrating the tradeoffs associated with retaining extensive boathouse coverage. However, it does not align with market demand or Advisory Committee priorities related to slip-mix, circulation, and commercial support, and it was not advanced beyond the initial concept stage.

### 5.3 OPTION C: REORIENTATION OF THE MARINA

Option C proposes a complete reorientation of the slip field from north–south to east–west. This adjustment directly aligns the slips with prevailing westerly winds and significantly improves maneuverability throughout the basin. Reorientation also makes more efficient use of the basin width, enabling wider fairways and a more flexible slip layout.



This concept also includes adjustments to slip sizes intended to better match demonstrated demand. The table below compares the existing slip inventory, the recommended distribution, and the slip counts developed for this concept. These values illustrate how the reoriented layout supports an improved balance of slip sizes, particularly for mid-sized categories that show the strongest utilization.

		WEST FLOATS												
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot
CURRENT	Count	70	24	81	7	-	23	60	-	-	2	1	7	275
	Occupancy	33%	76%	86%		98%		96%	83%				-	-
	Recommended	25	41	75	19	17	22	58	-	-	2	1	-	260
	<b>OPTION C</b>	29	31	67	19	15	15	52	-	-	-	-	-	228

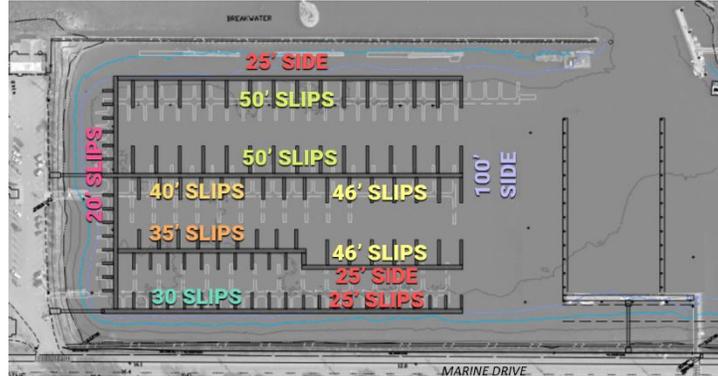
Although the option improves slip-mix distribution and maneuverability, it introduces a notable change by consolidating upland access to a single point. While this may simplify monitoring and security, it reduces the number of access locations compared to the existing layout, which some users may view as a drawback.

Because the reoriented configuration cannot be constructed around the existing north-south floats, phased construction may be more challenging. This concept may require temporarily relocating vessels during build out and could limit the ability to maintain normal operations during construction.

Option C represents a substantial operational improvement and addresses the priorities identified in stakeholder outreach. However, the change in orientation introduces sequencing challenges that would require more detailed evaluation in later stages of planning.

### 5.4 OPTION A1: REFINED EXISTING ORIENTATION

Option A1 is an updated version of Option A and incorporates revisions based on Advisory Committee feedback. The layout provides the recommended number of slips in several key size categories and brings the overall slip-mix closer to the recommended balance.



The table below compares the existing slip inventory, the recommended distribution, and the slip counts developed for this concept. The values show improvements in mid-sized slip categories and a reduction in low demand small slips, but the distribution does not fully align with the recommended mix, particularly for the 30-ft category where demand remains strongest.

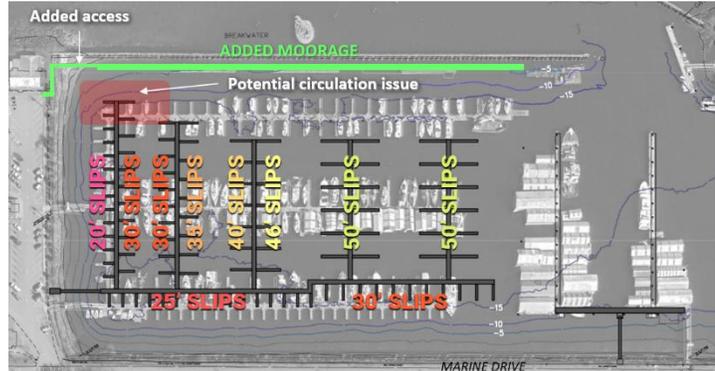
		WEST FLOATS													
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot	
CURRENT	Count	70	24	81	7	-	23	60	-	-	2	1	7	275	
	Occupancy	33%	76%	86%		98%	96%		83%				-	-	
	Recommended	25	41	75	19	17	22	58	-	-	2	1	-	260	
	<b>OPTION A.1</b>	30	43	52	19	19	27	59	-	-	-	1	-	251	

Fairway distances are improved compared to the existing layout; however, they remain slightly narrower than those shown in earlier concepts and below current design recommendations by roughly 10%. This may result in some circulation limitations for larger vessels, although overall maneuverability is still improved relative to current conditions.

This concept also preserves the existing north–south slip orientation, which may provide more flexibility for construction sequencing and maintains a familiar layout. However, it also continues to carry maneuverability challenges associated with prevailing westerly winds.

### 5.5 OPTION C1: REFINED REORIENTED MARINA

Option C1 represents a refinement of the reoriented layout introduced in Option C and incorporates several modifications based on Advisory Committee feedback. A major enhancement is the addition of a float positioned adjacent to the existing breakwater. This float provides about seven hundred feet of single side-tie moorage intended for small, low draft vessels, offering capacity that better supports dinghies, small boats, and other small craft users who are currently underserved in the basin. Because this area is well suited to instructional and youth programs, it may also support organizations such as the Sea Scouts and other community groups that rely on accessible small craft facilities.



This concept also adjusts the slip-mix in a way that more closely aligns with demonstrated demand. The table below compares the existing slip inventory, the recommended distribution, and the slip counts proposed under this concept. As shown, the layout provides fewer small slips and increases the number of mid-sized slips, which reflects the strongest areas of demand identified in the market analysis.

		WEST FLOATS												
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH	Tot
CURRENT	Count	70	24	81	7	-	23	60	-	-	2	1	7	275
	Occupancy	33%	76%	86%		98%		96%	83%			-	-	
	Recommended	25	41	75	19	17	22	58	-	-	2	1	-	260
	<b>OPTION C.1</b>	29	31	67	19	15	15	52	-	-	-	-	-	228*

\*Total count does not include the additional slip counts gained from the approximately 700-ft of flexible single-sided side-tie moorage float added along the breakwater.

While not an exact match to the recommended distribution, the resulting slip-mix moves substantially closer to observed demand patterns and offers improved flexibility for both recreational and commercial users.

C1 also includes a new elevated platform and gangway to reach the small craft float. This arrangement improves circulation and creates a dedicated entry point for small vessel operations, reducing congestion on the primary docks and giving community programs a more functional area to stage activities.

Further refinements may be necessary as the concept progresses, particularly regarding access to the 20-ft slips during low tide conditions. Minor layout adjustments may be required to ensure reliable access and safe maneuvering for boats using both the new float and adjacent small slip areas.

Overall, C1 maintains the maneuverability and wind alignment advantages of a reoriented marina while adding dedicated small vessel capacity and community serving features that enhance long term

functionality. Based on stakeholder engagement, C1 appears to address several key priorities, including improved maneuverability, better alignment of slip sizes with demand, and increased operational flexibility.

## 6. ENVIRONMENTAL & PERMITTING FEASIBILITY

Redevelopment of the West Boat Haven will require coordination with federal, state, and local environmental regulatory agencies. While final permitting requirements will be determined during future design phases, several key considerations can be identified at this planning level. No major environmental constraints have been identified that would prevent redevelopment of the West Basin, and the project offers opportunities to modernize infrastructure and reduce long-term environmental impacts.



### 6.1 OVERWATER SHADING AND HABITAT

Overwater shading is a primary regulatory concern because it affects nearshore habitat used by juvenile salmonids, forage fish, and other marine species. Existing floats and boathouses create an overwater shading footprint that will need to be evaluated during permitting.

Redevelopment provides an opportunity to consider how float layout, structure consolidation, or other design choices may influence shading. As part of this planning-level review, approximate float-only overwater coverage was calculated for each concept alternative:

#### **Float Overwater Coverage (Rounded):**

*(Float coverage only; excludes boathouses and other overwater structures)*

- Existing condition: ~41,000 sq ft
- Option A: ~38,500 sq ft
- Option A1: ~64,500 sq ft
- Option B: ~33,400 sq ft
- Option C: ~33,800 sq ft
- Option C1: ~36,600 sq ft

While these values provide a preliminary comparison of float-related overwater coverage across alternatives, they do not represent a full shading analysis. The overall shading and habitat implications of each option may vary once structural dimensions, boathouse considerations, light-penetrating surfaces, and detailed float configurations are developed during later design phases. A complete evaluation will be required during environmental permitting.

## 6.2 IN-WATER WORK WINDOWS

In-water construction activities such as pile removal, pile driving, float anchoring, and demolition must occur within designated in-water work windows established to protect sensitive fish species and other aquatic resources. These work windows are typically determined through coordination with the National Marine Fisheries Service (NMFS), the Washington Department of Fish and Wildlife (WDFW), and the U.S. Army Corps of Engineers (USACE) as part of the ESA Section 7 process, Hydraulic Project Approval (HPA), and Corps permitting.

The purpose of the in-water work window is to avoid periods when juvenile salmonids, forage fish, or other protected species are most likely to be present and vulnerable to construction-related disturbance, noise, or turbidity. Work windows vary by region and resource designation, but they generally allow for several months of in-water activity each year.



These seasonal limitations do not affect the overall feasibility of redevelopment. Instead, they influence how the project must be scheduled. Construction activities that require work below the ordinary high water mark will need to be planned to fit within the approved timing window. Non-in-water work, such as upland utility installation, gangway fabrication, float assembly, or electrical upgrades, can occur year-round and can be sequenced to maintain progress when in-water activities are restricted.

The presence of an in-water work window is a normal and expected component of marina redevelopment in Washington State. With appropriate planning and sequencing, the redevelopment of the West Boat Haven can be structured to meet these timing requirements without compromising project delivery.

## 6.3 SEDIMENT DISTURBANCE AND WATER QUALITY

Some sediment disturbance is expected during redevelopment, particularly during pile removal, pile installation, and anchoring for new floats. These activities can temporarily suspend fine sediments in the water column, resulting in short-duration increases in turbidity. This effect is typical of marina construction and is evaluated and managed through the permitting process. The extent and duration of turbidity will depend on sediment characteristics, the construction methods selected during final design, and how in-water work is sequenced.

Regulatory agencies including the U.S. Army Corps of Engineers, the Washington Department of Ecology, the National Marine Fisheries Service, and the Washington Department of Fish and Wildlife will review proposed construction activities to ensure compliance with water quality standards and protection of aquatic species. As part of permitting, the project will be required to identify appropriate measures for minimizing and monitoring turbidity and other potential water quality effects during construction.

In addition to temporary construction-related effects, redevelopment offers the opportunity to apply current design practices and material standards that support long-term environmental performance. Specific improvements will be identified during later design phases as the preferred concept advances.

## 6.4 BOATHOUSES

Boathouses introduce environmental considerations primarily related to overwater coverage and shading, both of which are evaluated during permitting. Existing boathouses contribute to the overall overwater footprint within the West Basin and would be considered alongside floats, piles, and other overwater structures during environmental review. In addition, some existing boathouses may rely on older flotation systems, including expanded polystyrene materials, which are commonly evaluated by regulatory agencies due to potential long-term durability and containment considerations.

Redevelopment creates an opportunity to evaluate how boathouses fit within the long-term configuration of the marina and how their location, extent, design, and flotation systems may influence permitting outcomes. This may include maintaining existing boathouses, replacing aging structures, modifying layouts, or consolidating coverage, depending on regulatory requirements, operational needs, and community priorities.

Any future decisions regarding the extent of boathouse retention or modification would be developed through a separate process involving the Port, boathouse owners, and regulatory agencies. These decisions will be guided by environmental considerations, community priorities, and permitting requirements.

## 6.5 RELATIVE PERFORMANCE OF ALTERNATIVES

At this planning level, only general observations can be made about how the alternatives may interact with environmental and permitting considerations. Alternatives A and A1 retain much of the existing marina configuration; however, they differ in float related overwater coverage. Option A results in slightly reduced coverage compared to existing conditions, while A1 increases coverage, which would likely trigger a need for mitigation during permitting. Alternatives C and C1 introduce a reoriented layout and different float arrangements, which may change how structures affect shading, pile locations, or interactions with the nearshore environment.

Environmental effects associated with shading, habitat considerations, in-water work, materials, and potential mitigation needs will be confirmed once schematic-level design defines key layout details (i.e., float dimensions, pile locations, and structural elements). Project-specific studies completed during subsequent permitting and design phases will provide the analysis necessary to evaluate these factors in detail.

## 7. FINANCIAL FEASIBILITY



Planning level cost estimates and market-based projections prepared for this study suggest that modernization of the West Basin may improve long term utilization and revenue potential. These indications are preliminary. A complete financial feasibility assessment is needed to determine whether redevelopment is financially sustainable for the Port in the long term. This assessment will allow

the Port to understand how different redevelopment approaches align with revenue expectations, capital costs, financing strategies, and overall policy goals.

A financial assessment typically examines the marina’s historical financial performance, including revenue trends, operating expenses, and the stability of slip occupancy. This information provides a baseline for understanding how changes in slip-mix, pricing, or operational strategy may affect future revenues. It also helps determine whether proposed configurations generate sufficient income to offset operating and capital costs.

The assessment will also need to examine how redevelopment could be funded. Marina modernization requires significant capital investment, and an evaluation of potential funding sources such as grants, loans, bonds, or internal Port funds will be necessary. The way these funds are combined influences the long-term financial profile of the project, including debt service requirements, rate adjustments, and operating margins. Understanding these financing pathways is an essential step before moving toward design and permitting.

Because the financial performance of a marina depends on both revenue and expenses, long-term operational and maintenance costs must also be projected. A life cycle perspective helps determine whether different materials or configurations create higher or lower maintenance demands over time. It also allows the Port to evaluate future capital reserve requirements and plan for ongoing reinvestment in the facility.

In support of decision making, the financial assessment may consider the following elements:

- Historical revenue and operating expenses
- Slip level revenue modeling
- Capital cost phasing and financing scenarios
- Rate structures and sensitivity testing
- Operating and life cycle cost projections
- Grant and loan funding opportunities
- Funding strategy comparisons for redevelopment options

The specific scope of the financial assessment will be defined by the Port and may be tailored to reflect funding strategy, policy objectives, and the level of detail needed to inform decision making. Until this assessment is completed, the Port cannot make a final determination regarding financial viability or select a preferred path forward for modernization.

## 8. FINDINGS & RECOMMENDATION

The feasibility analysis indicates that the West Boat Haven is well positioned for modernization. Existing infrastructure is nearing the end of its service life, market conditions support rebalancing the slip-mix, and environmental and permitting pathways appear achievable. Modern marina infrastructure used throughout the region can be constructed within the basin using standard materials and methods, and no technical constraints have been identified that would prevent redevelopment.



## 8.1 TECHNICAL FINDINGS FOR THE ALTERNATIVE

Evaluation of the concept alternatives shows that each layout satisfies the basic requirements for marina functionality within the West Basin. Differences among the alternatives relate primarily to slip-mix, maneuverability, wind alignment, and how well each configuration addresses stakeholder and operational needs.

Alternatives that reorient the marina may address prevailing wind exposure more directly and support a slip-mix that better reflects demonstrated demand. These layouts may require more detailed construction sequencing due to the change in alignment. Alternatives that retain the existing orientation provide more familiar geometry and may offer greater flexibility during construction, but they continue to reflect the wind-related maneuverability challenges noted during outreach, including reported difficulty navigating the marina and vessel contact incidents under prevailing westerly wind conditions.

These findings represent planning level observations. A final determination regarding a preferred configuration will require additional evaluation during the financial feasibility phase and further operational planning.

## 8.2 COMPARISON OF SLIP MIX AND COST

To support evaluation of the alternatives, the table below summarizes the slip mix proposed under each concept alongside the current inventory, the recommended distribution, and planning level cost ranges. This provides a consolidated view of how each option responds to demonstrated demand, operational priorities, and the approximate financial scale of redevelopment.

		WEST FLOATS												Tot	COST (\$M)
		20'	25'	30'	35'	40'	46'	50'	60'	74'	80'	100'	BH		
CURRENT	Count	70	24	81	7	-	23	60	-	-	2	1	7	275	
	Occupancy	33%	76%	86%		98%		96%	83%			-	-		
	Recommended	25	41	75	19	17	22	58	-	-	2	1	-	260	
	OPTION A	66	51	-	36	11	22	56	1	1	-	1	-	245	\$12.6-21.3
	OPTION A.1	30	43	52	19	19	27	59	-	-	-	1	-	251	\$17.5-29.6
	OPTION B	94	-	-	-	11	22	56	-	1	6	1	25	216	\$10.8-18.2
	OPTION C	29	31	67	19	15	15	52	-	-	-	-	-	228	\$11.5-19.4
	OPTION C.1*	29	31	67	19	15	15	52	-	-	-	-	-	228	\$12.5-21.1

\*Total count does not include the additional slip counts gained from the approximately 700-ft of flexible single-sided side-tie moorage float added along the breakwater.

Cost ranges shown in the table are based on present day values as of December 2025. These estimates include demolition and disposal of the West Basin floats and piles M, N, O, P, Q, R, X, and Y, as well as removal of the existing float access gangways and support platforms, and construction of new West Basin floats and piles consistent with the concept drawings. The cost ranges reflect an AACEI Class 4 maturity level with an expected accuracy range of -15% to +30%. They do not include costs associated with relocating or demolishing boathouses, improvements to the existing breakwater, or installation of utilities

such as electrical, water, or pumpouts. They also exclude dock boxes, life rings, safety ladders, slip signage, fire extinguishers, and professional services related to permitting, design, and construction support.

These assumptions should be considered when comparing cost ranges across alternatives, and actual project costs will be refined as the preferred concept advances into schematic design and the financial feasibility assessment.

### 8.3 NEXT STEP

While this Feasibility Analysis indicates that modernization of the West Basin appears technically achievable and responsive to market, operational, and environmental considerations, the decision to move forward requires a clear understanding of long-term financial viability. A comprehensive financial feasibility assessment is therefore the appropriate next step before entering design and permitting.

This assessment will evaluate how redevelopment costs, funding sources, rate structures, and operating expenses interact over time. Typical components include review of historical revenue and expenses, slip-level revenue projections, capital cost phasing, potential grant and loan funding, and long-term operating and lifecycle cost estimates. Together, these analyses will clarify the marina's projected financial performance under different redevelopment scenarios and establish the Port's expected net operating position.



The financial feasibility assessment will also support comparison of redevelopment alternatives, including A1, C1, or any future refinements, by placing their operational and environmental benefits within a consistent financial framework. This work will help determine the Port's capacity to fund modernization, identify feasible funding pathways, and evaluate whether rate adjustments or phased implementation strategies may be required.

Completion of this assessment will provide the financial insight needed for the Port to make an informed decision regarding whether modernization should proceed, which configuration is preferred, and the timing and structure of implementation. The next phase of the project, including the timing and scope of the financial assessment, will depend on the Port's Board of Commissioners.

## Appendix A. Alternative Layout Drawings



**SITE PLAN**



EXISTING - EQUIVALENT SLIP LENGTH													EXISTING - BOAT HOUSES							
DOCK	SLIP					SIDE						TOTAL QTY.	TOTAL LF (FT)	30'-39'	40'-49'	50'-59'	60'-69'	70'-80'	TOTAL QTY.	
	20-FT	25-FT	30-FT	46-FT	50-FT	20-FT	30-FT	36-FT	60-FT	80-FT	100-FT									
CENTER	I								3			3	180						5	
	J									3		3	240	4	1				5	
	K									3		3	240	1	2	4	1		8	
	L										3		240		1	1	4	4	10	
	Y						8						8	160						
	SUBTOTAL:	0	0	0	0	0	8	0	0	3	9	0	20	1060	5	5	8	6	4	28
WEST	M	57										57	1140							
	N					27			1		1	29	1466							
	O				23				2			25	1130		7				7	
	P					33			3			37	1858							
	Q			43							1	44	1370							
	R		12	37				1	1			51	1476							
	X	13	12									25	560							
	SUBTOTAL:	70	24	80	23	60	0	1	7	0	2	1	268	9000	#	7	0	0	0	7
CENTER + WEST TOTAL:		70	24	80	23	60	8	1	7	3	11	1	288	10060	5	12	8	6	4	35

**NOTES:**  
 1. VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'  
 2. BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.

TIDAL DATA	ELEV. (FT)
HIGHEST OBSERVED WATER LEVEL (01/02/2003)	+10.52
MEAN HIGHER HIGH WATER	+7.07
MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

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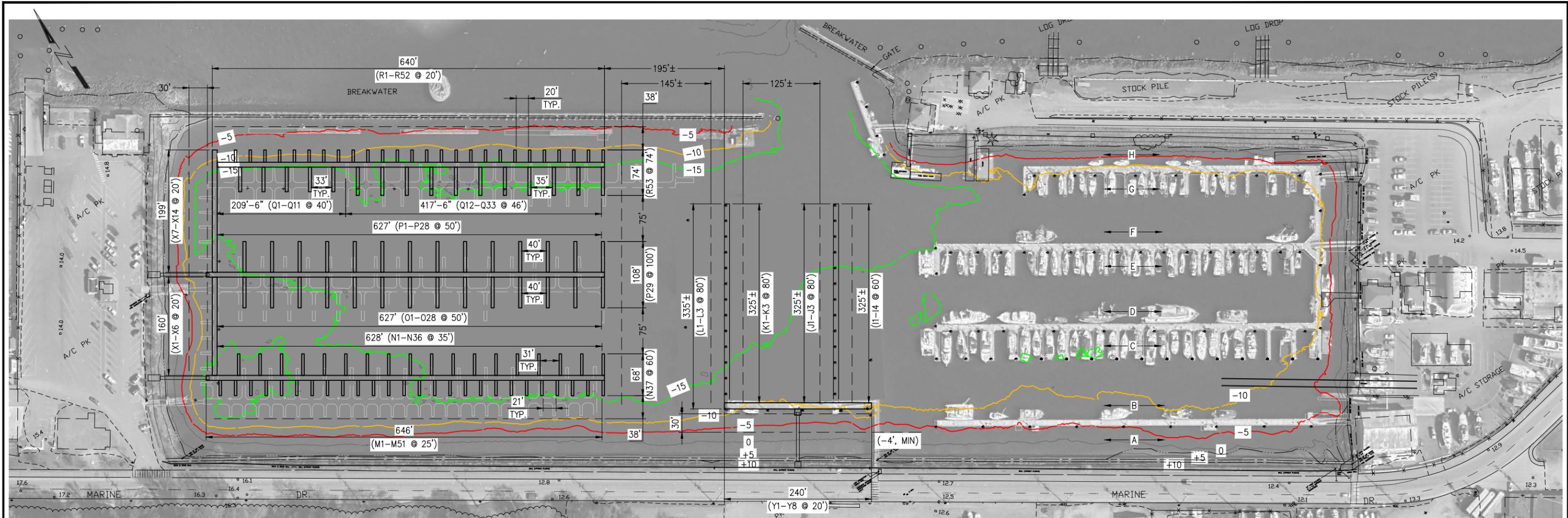
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REVISIONS		
REV	DATE	DESCRIPTION

PROJECT: **PORT OF PORT ANGELES WEST BOAT HAVEN MARINA MASTER PLAN**

TITLE: **BOAT HAVEN MARINA EXISTING SITE PLAN**

DESIGNED BY:	BP	PROJECT NO:	254016.01	SHEET NO:	1 OF 6
DRAWN BY:	GD	DATE:	SEPTEMBER 10, 2025	NOTED	
CHECKED BY:	TB	SCALE:	NOTED		



**SITE PLAN**



**OPTION A - EQUIVALENT SLIP LENGTH**

DOCK	SLIP						SIDE					TOTAL QTY.	TOTAL LF (FT)	
	20-FT	25-FT	35-FT	40-FT	46-FT	50-FT	20-FT	60-FT	74-FT	80-FT	100-FT			
CENTER	I							3				3	180	
	J								3			3	240	
	K								3			3	240	
	L								3			3	240	
	Y						8					8	160	
	<b>SUBTOTAL:</b>	0	0	0	0	0	8	3	0	9	0	20	1060	
WEST	M		51									51	1275	
	N			36				1				37	1320	
	O						28					28	1400	
	P						28				1	29	1500	
	Q				11	22						33	1452	
	R	52							1			53	1114	
	X							14				14	280	
	<b>SUBTOTAL:</b>	52	51	36	11	22	56	14	1	1	0	245	8341	
<b>CENTER + WEST TOTAL:</b>		52	51	36	11	22	56	22	4	1	9	1	265	9401

- NOTES:**
- VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'
  - BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.

TIDAL DATA	ELEV. (FT)
HIGHEST OBSERVED WATER LEVEL (01/02/2003)	+10.52
MEAN HIGHER HIGH WATER	+7.07
MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

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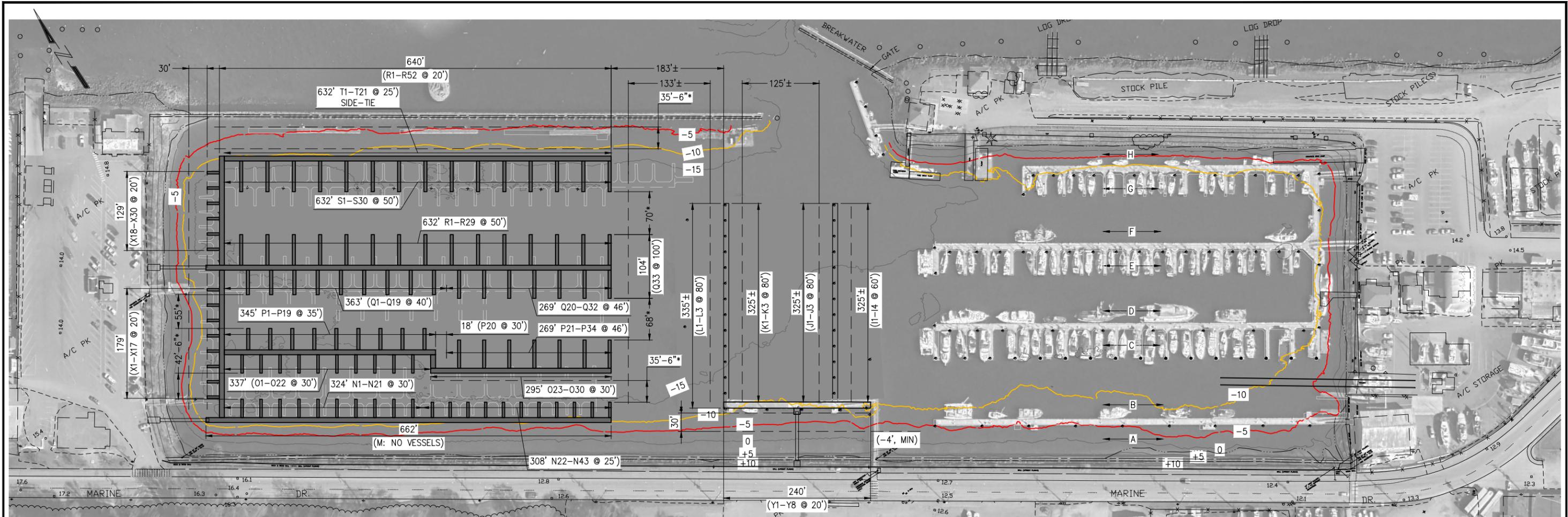
REVISIONS		
REV	DATE	DESCRIPTION

**PROJECT:** PORT OF PORT ANGELES  
**WEST BOAT HAVEN MARINA MASTER PLAN**

**TITLE:** BOAT HAVEN MARINA  
**OPTION A SITE PLAN**

DESIGNED BY:	BP	PROJECT NO:	254016.01	SHEET NO:	
DRAWN BY:	GD	DATE:	SEPTEMBER 4, 2025		
CHECKED BY:	TB	SCALE:	NOTED		

**2** OF **6**



**SITE PLAN**



**OPTION A.1 - EQUIVALENT SLIP LENGTH**

DOCK	SLIP							SIDE							TOTAL QTY.	TOTAL LF (FT)	
	20-FT	25-FT	30-FT	35-FT	40-FT	46-FT	50-FT	20-FT	25-FT	30-FT	60-FT	74-FT	80-FT	100-FT			
CENTER	I										3				3	180	
	J												3		3	240	
	K												3		3	240	
	L												3		3	240	
	Y							8							8	160	
SUBTOTAL:		0	0		0	0	0	0	0	0	3	0	9	0	20	1060	
WEST	M														0	0	
	N		22												43	1180	
	O			22						8					30	900	
	P			1	19		14								34	1339	
	Q					19	13								32	1458	
	R							29							29	1450	
	S							30							30	1500	
	T								21						21	525	
	X	30													30	600	
	SUBTOTAL:		30	22	44	19	19	27	59	0	21	8	0	#	0	#	249
CENTER + WEST TOTAL:		30	22	44	19	19	27	59	8	21	8	3	0	9	0	269	10012

- NOTES:**
- VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'
  - BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.
  - \*\*\*\*\*

TIDAL DATA	ELEV. (FT)
HIGHEST OBSERVED WATER LEVEL (01/02/2003)	+10.52
MEAN HIGHER HIGH WATER	+7.07
MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

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**REVISIONS**

REV	DATE	DESCRIPTION

**PROJECT:** PORT OF PORT ANGELES  
**WEST BOAT HAVEN MARINA MASTER PLAN**

**TITLE:** BOAT HAVEN MARINA  
**OPTION A.1 SITE PLAN**

DESIGNED BY: BP PROJECT NO: 254016.01 SHEET NO:  
 DRAWN BY: GD DATE: OCTOBER 8, 2025  
 CHECKED BY: TB SCALE: NOTED

**3 OF 6**

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**SITE PLAN**



OPTION B - EQUIVALENT SLIP LENGTH											OPTION B - BOAT HOUSES						
DOCK	SLIP				SIDE					TOTAL QTY.	TOTAL LF (FT)	50-FT	60-FT	70-FT	80-FT	TOTAL QTY.	
	20-FT	40-FT	46-FT	50-FT	20-FT	60-FT	74-FT	80-FT	100-FT								
CENTER	I					3					3	180				0	
	J							3			3	240				0	
	K							3			3	240				0	
	L							3			3	240				0	
	Y				8						8	160				0	
	SUBTOTAL:	0	#	#	#	8	3	0	9	0	20	1060	0	0	0	0	
WEST	M				26						26	520				0	
	N							6			6	480	8	8	5	4	25
	O				28						28	1400					0
	P				28					1	29	1500					0
	Q		11	22							33	1452					0
	R	52						1			53	1114					0
	X				16						16	320					0
		SUBTOTAL:	52	11	22	56	42	0	1	6	1	191	6786	8	8	5	4
	CENTER + WEST TOTAL:	52	11	22	56	50	3	1	15	1	211	7846	8	8	5	4	25

**NOTES:**  
 1. VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'  
 2. BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.

TIDAL DATA	ELEV. (FT)
HIGHEST OBSERVED WATER LEVEL (01/02/2003)	+10.52
MEAN HIGHER HIGH WATER	+7.07
MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

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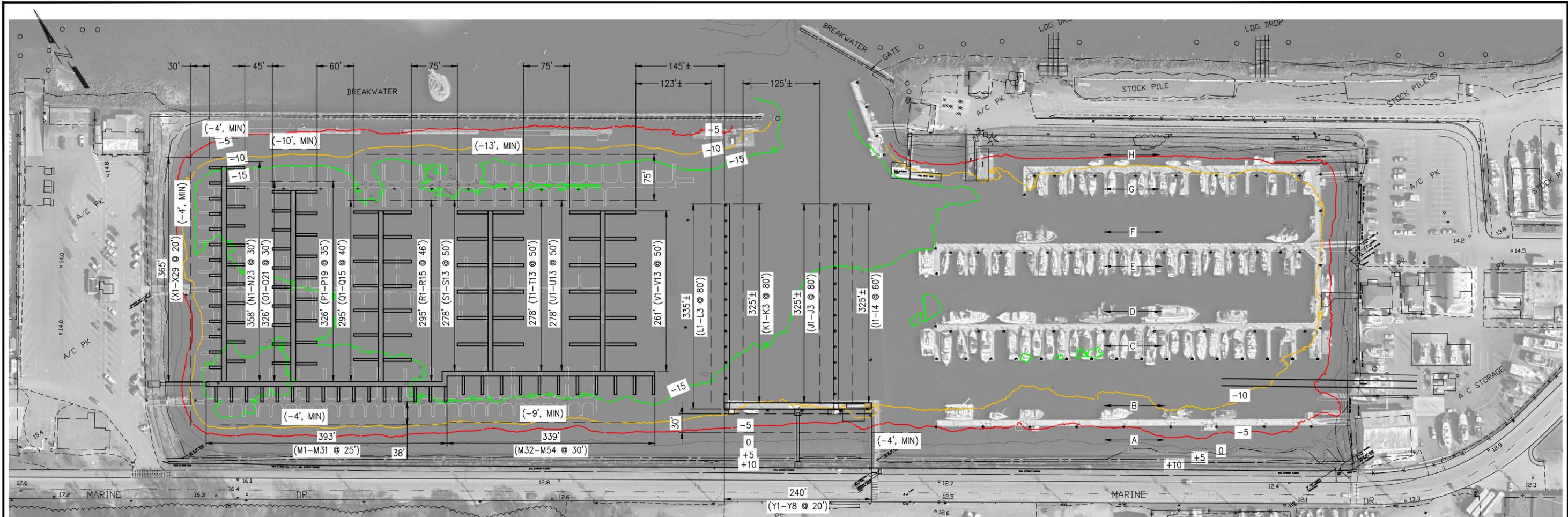
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REV	DATE	DESCRIPTION

PROJECT: **PORT OF PORT ANGELES WEST BOAT HAVEN MARINA MASTER PLAN**

TITLE: **BOAT HAVEN MARINA OPTION B SITE PLAN**

DESIGNED BY:	BP	PROJECT NO:	254016.01	SHEET NO:	4 OF 6
DRAWN BY:	GD	DATE:	SEPTEMBER 4, 2025		
CHECKED BY:	TB	SCALE:	NOTED		



### OPTION C - EQUIVALENT SLIP LENGTH

DOCK	SLIP							SIDE				TOTAL QTY.	TOTAL LF (FT)	
	20-FT	25-FT	30-FT	35-FT	40-FT	46-FT	50-FT	20-FT	60-FT	80-FT	100-FT			
CENTER	I								3				3	180
	J									3			3	240
	K									3			3	240
	L									3			3	240
	Y								8				8	160
SUBTOTAL:		0	0	0	0	0	0	0	8	3	9	0	20	1060
WEST	M		31	23									54	1465
	N			23									23	690
	O			21									21	630
	P				19								19	665
	Q					15							15	600
	R						15						15	690
	S							13					13	650
	T							13					13	650
	U							13					13	650
	V							13					13	650
X	29											29	580	
SUBTOTAL:		29	31	67	19	15	15	52	0	0	0	0	228	7920
CENTER + WEST TOTAL:		29	31	67	19	15	15	52	8	3	9	0	248	8980

### SITE PLAN



- NOTES:**
- VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'
  - BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.

TIDAL DATA	ELEV. (FT)
HIGHEST OBSERVED WATER LEVEL (01/02/2003)	+10.52
MEAN HIGHER HIGH WATER	+7.07
MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

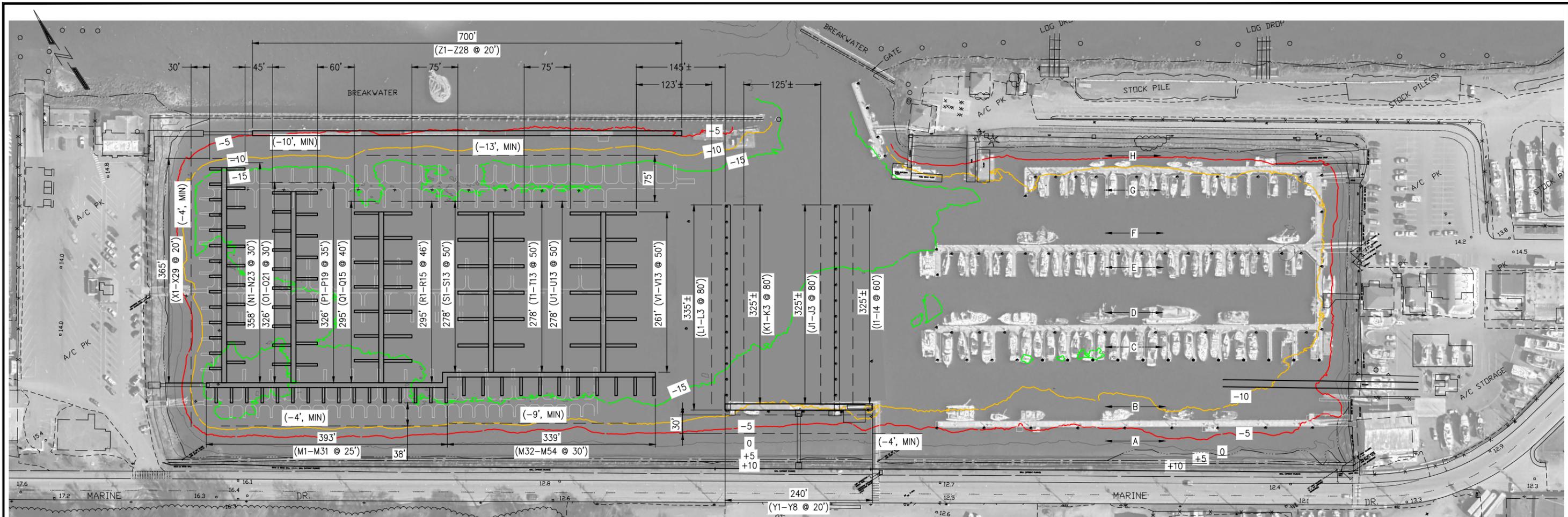
Drawings\2025\254016 PoPA WBH Master Plan\Preliminary\254016-01.dwg

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REVISIONS		
REV	DATE	DESCRIPTION

PROJECT:		<b>PORT OF PORT ANGELES WEST BOAT HAVEN MARINA MASTER PLAN</b>	
TITLE:		<b>BOAT HAVEN MARINA OPTION C SITE PLAN</b>	
DESIGNED BY:	BP	PROJECT NO:	254016.01
DRAWN BY:	GD	DATE:	SEPTEMBER 10, 2025
CHECKED BY:	TB	SCALE:	NOTED
SHEET NO:		<b>5 OF 6</b>	



**OPTION C.1 - EQUIVALENT SLIP LENGTH**

DOCK	SLIP							SIDE				TOTAL QTY.	TOTAL LF (FT)	
	20-FT	25-FT	30-FT	35-FT	40-FT	46-FT	50-FT	20-FT	60-FT	80-FT	100-FT			
CENTER	I												3	180
	J								3	3			3	240
	K									3			3	240
	L										3		3	240
	Y								8				8	160
SUBTOTAL:	0	0	0	0	0	0	0	8	3	9	0	20	1060	
WEST	M		31	23									54	1465
	N			23									23	690
	O			21									21	630
	P				19								19	665
	Q					15							15	600
	R						15						15	690
	S							13					13	650
	T							13					13	650
	U							13					13	650
	V							13					13	650
	X	29											29	580
Z								28				28	700	
SUBTOTAL:	29	31	67	19	15	15	52	0	0	0	0	228	8620	
CENTER + WEST TOTAL:	29	31	67	19	15	15	52	8	3	9	0	248	9680	

**SITE PLAN**



- NOTES:**
1. VERTICAL DATUM: MEAN LOWER LOW WATER = 0.0'
  2. BATHYMETRY FROM REID MIDDLETON SURVEY JUNE 16, 2006. OTHER UPLAND AND EXISTING DOCK AND BOAT HOUSE LOCATIONS PROVIDED BY PORT OF PORT ANGELES BASED ON AERIAL SURVEY.

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MEAN HIGH WATER	+6.52
MEAN SEA LEVEL	+4.25
MEAN TIDE LEVEL	+4.22
MEAN LOW WATER	+1.93
NORTH AMERICAN VERTICAL DATUM OF 1988	+0.43
MEAN LOWER LOW WATER	0.00
LOWEST OBSERVED WATER LEVEL (05/06/2008)	-4.56

NOTE: TIDAL DATA PER NOAA STATION 9444090, EPOCH 1983-2001

Drawings\2025\254016 PoPA WBH Master Plan\ Preliminary\254016-01.dwg

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REVISIONS		
REV	DATE	DESCRIPTION

**PROJECT:** PORT OF PORT ANGELES  
**WEST BOAT HAVEN MARINA MASTER PLAN**

**TITLE:** BOAT HAVEN MARINA  
**OPTION C.1 SITE PLAN**

DESIGNED BY:	BP	PROJECT NO:	254016.01	SHEET NO:	
DRAWN BY:	GD	DATE:	SEPTEMBER 10, 2025		
CHECKED BY:	TB	SCALE:	NOTED		

**6** OF **6**

## Appendix B. Market Assessment

**BST Associates**

**Port of Port Angeles Boat Haven  
Market Assessment – Revised Final Draft**

**January 6, 2026**

# Outline

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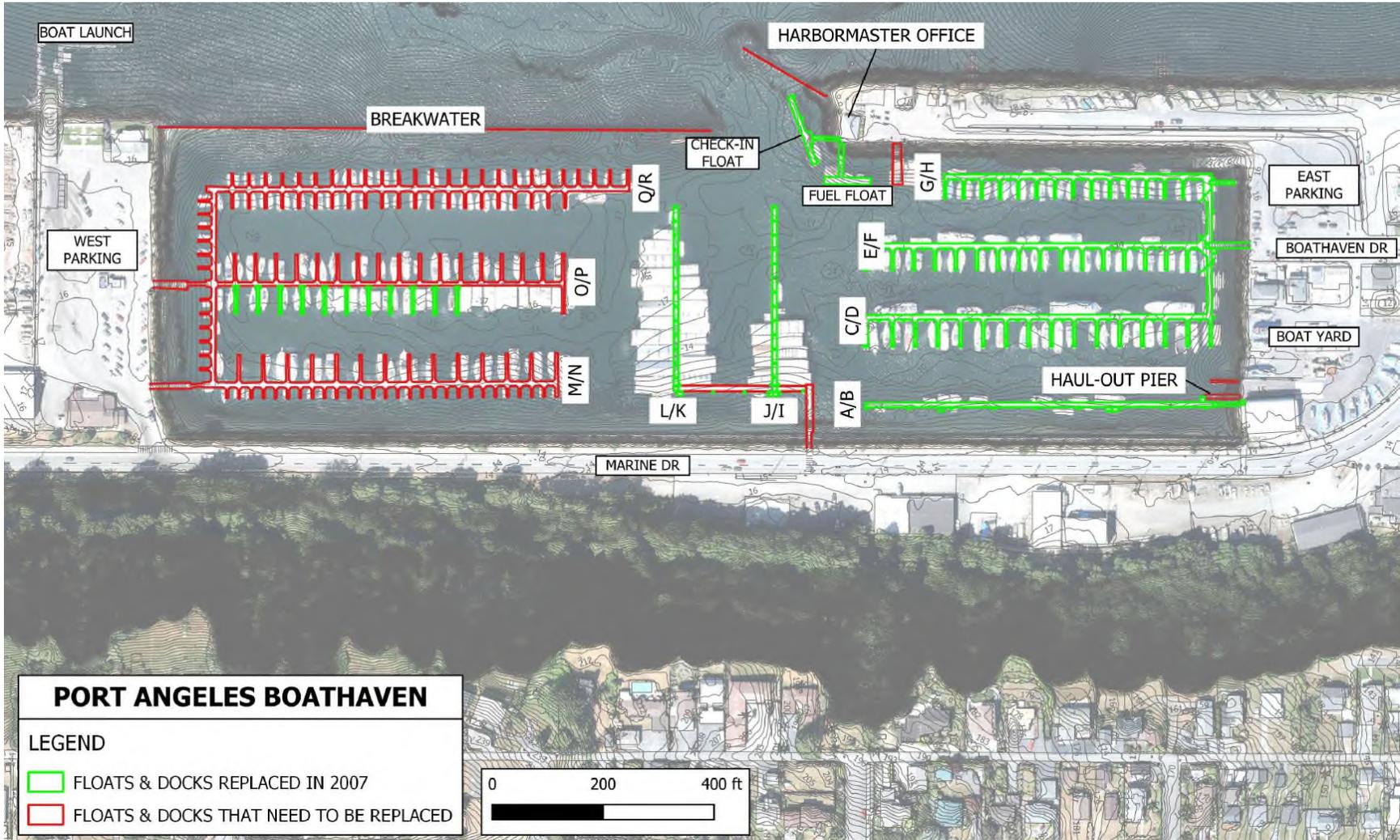
Purpose of study – review options to rebuild the West Basin

Market factors

- Markets served
- Growth in fleet
- Occupancy
- Waitlist
- Outreach
- Conclusions

Options for rebuilding

Economic Impact



# Port Angeles Boat Haven Moorage Inventory

Type	West	Center	East	Total
<b>Slip Equivalents</b>				
Slips	257	-	90	347
Sidetie	11	8	39	58
Boathouses	7	29	-	36
<b>Total</b>	<b>275</b>	<b>37</b>	<b>129</b>	<b>441</b>
West share	62%	8%	29%	100%
<b>Linear feet</b>				
Slips	8,458	-	3,778	12,236
Sidetie	542	616	1,586	2,744
Boathouses	322	770	-	1,092
<b>Total</b>	<b>9,322</b>	<b>1,386</b>	<b>5,364</b>	<b>16,072</b>
West share	58%	9%	33%	100%
Avg. slip length	33.9	37.5	41.6	36.4

Port Angeles Boat Haven moorage includes slips, side-ties, end-ties, and boathouses.

In this analysis, side-ties, end-ties, and boathouses are referred to as slip equivalents.

There are ~441 slip equivalents in the Boat Haven with:

- 275 slip equivalents are in the West Basin (62% of Boat Haven total). [268 exc. BHs]
- 9,322 linear feet of moorage space (58% of Boat Haven total).
- The average slip length is 33.9 feet, which is shorter than in the Central Basin and East basins.

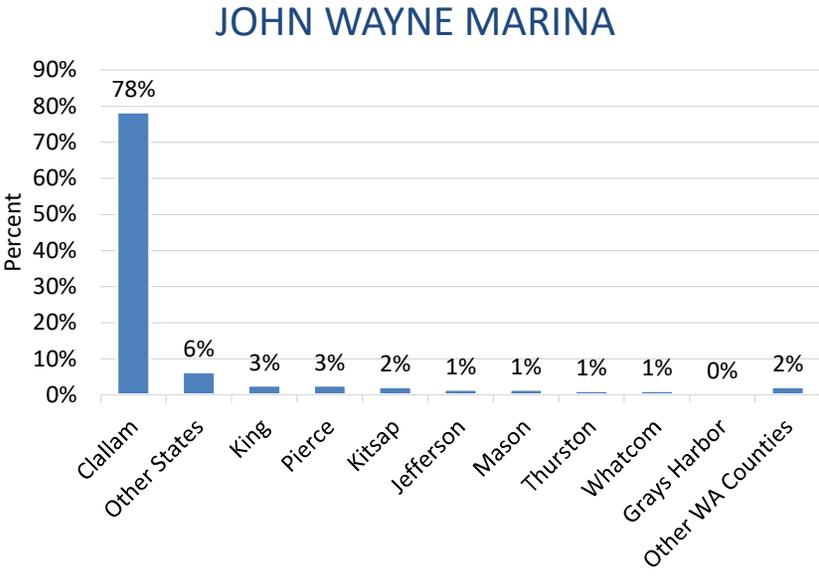
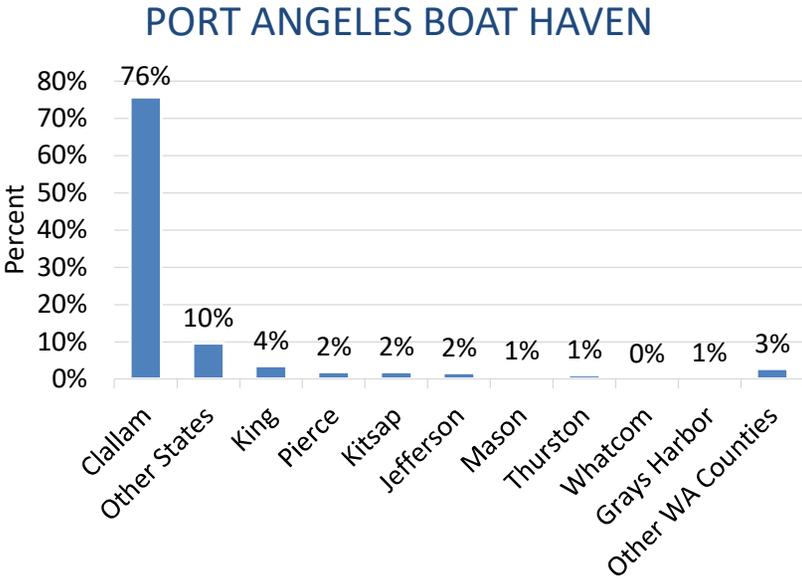
# West Basin – Existing Layout

Number of Slip Equivalents (Slips, Side-Ties; excludes Boathouses)									
Dock	20 ft	25 ft	30	36 ft	46 ft	50 ft	80 ft	100 ft	Total
M	57	-	-	-	-	-	-	-	57
N	-	-	-	1	-	27	1	-	29
O	-	-	-	2	23	-	-	-	25
P	-	-	-	3	-	33	-	1	37
Q	-	-	43	-	-	-	1	-	44
R	-	12	38	1	-	-	-	-	51
X	13	12	-	-	-	-	-	-	25
<b>Total</b>	70	24	81	7	23	60	2	1	268

There are 25 commercial boats and slips for 243 recreational boats in the West Basin.

Source: Port of Port Angeles

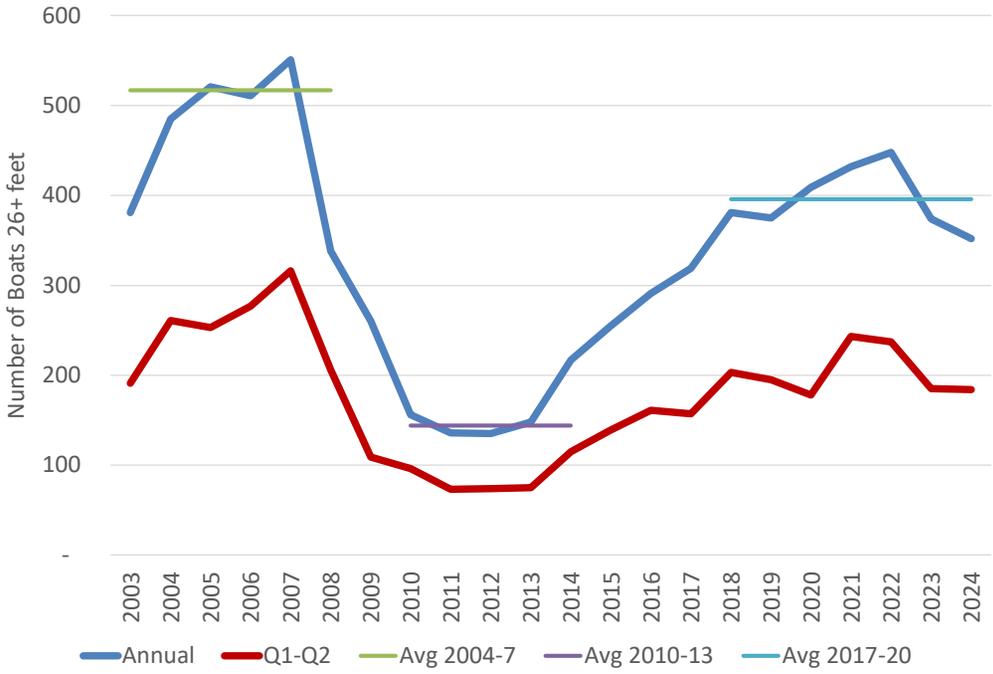
# Markets Served by Port of Port Angeles Marinas



Port of Port Angeles marinas primarily serve the local Clallam County market, with the next largest market are other states and then other WA counties. The largest WA county is King, which has 13 tenants at BH and 7 at JWM. The recreational fleet is dominated by Clallam County.

Source: Port of Port Angeles

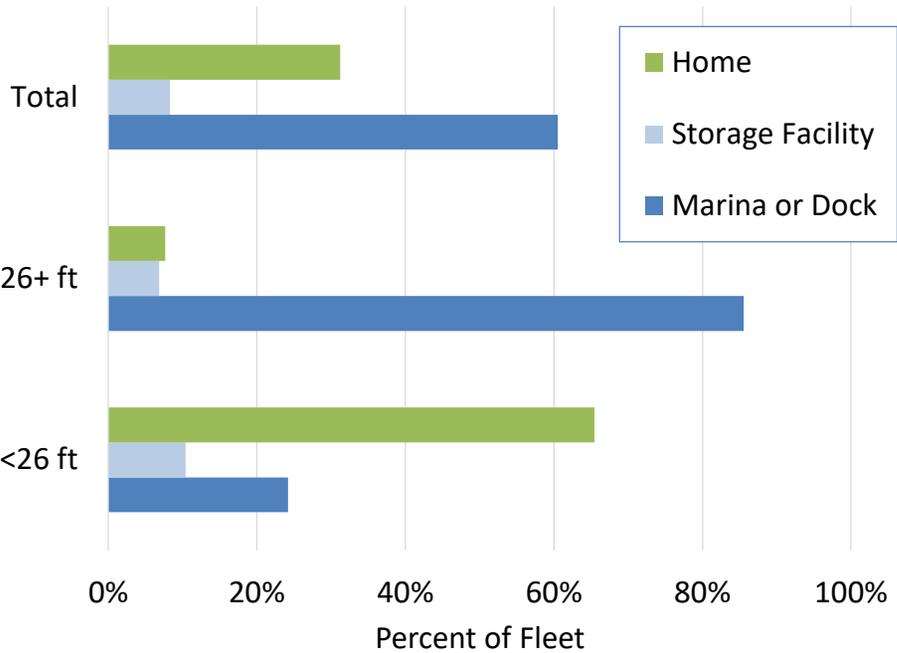
# Sales of New Boats Washington State



Source: NMTA, Washington State SeaGrant

- 1. Boating is discretionary – sales of new boats increase or decrease depending on economic conditions
- 2. Pre-2008, sales accelerated due to increased credit purchases
- 3. Boat sales fell following the 2008 Great Recession and stayed low until 2012, longer than other retail/service products
- 4. Recent increases in sales, driven by Covid in 2020/2021, declined slightly from the 2022 peak
- 5. These trends can be seen in Clallam County

# Where Boats are Stored



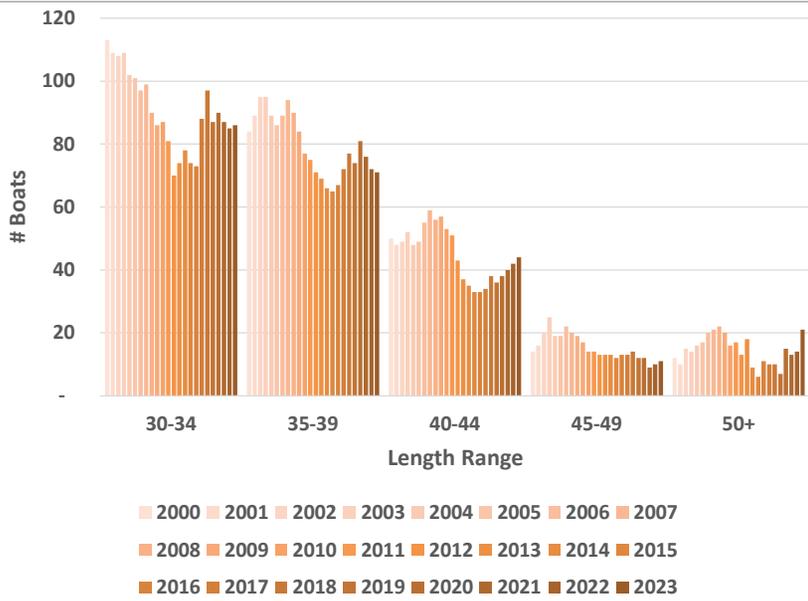
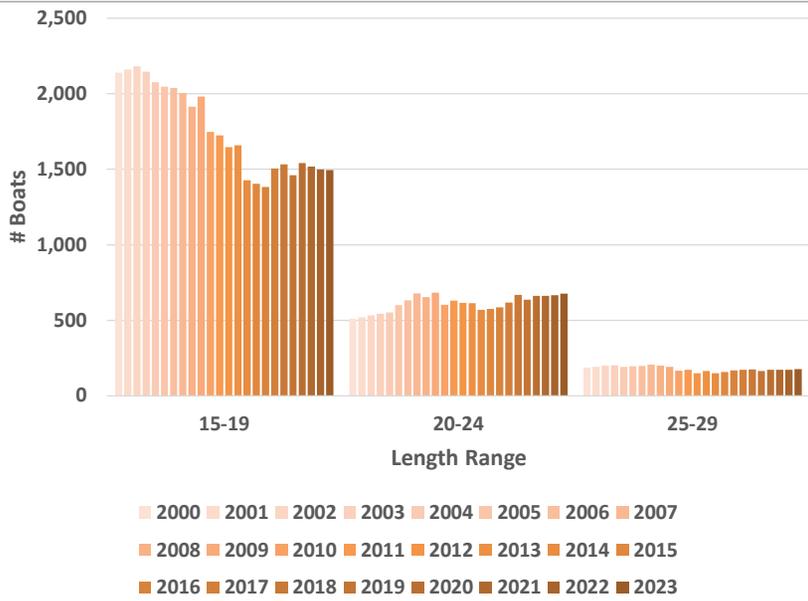
### Where do you store your boat?

- Most boats under 26 feet are trailerable and are stored at home or in storage.
- Some 26- to 30-foot boats are also stored in dry storage facilities.

Source: WA Recreational Boat Pumpout Study

# Clallam County Recreational Boat Trends

## 15+ Feet (2000 to 2023)



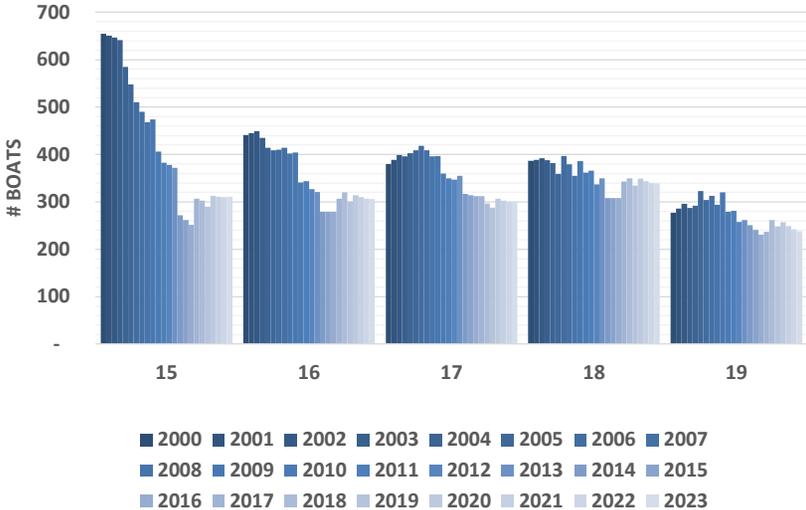
Clallam County was impacted by the recession of 2008, which dramatically impacted the size of the recreational fleet. The 20-24 foot and 50+ ranges were the only two groups that were larger in 2023 than in 2000. However, other ranges did experience growth from 2016 to 2023.

Source: WA Dept of Licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

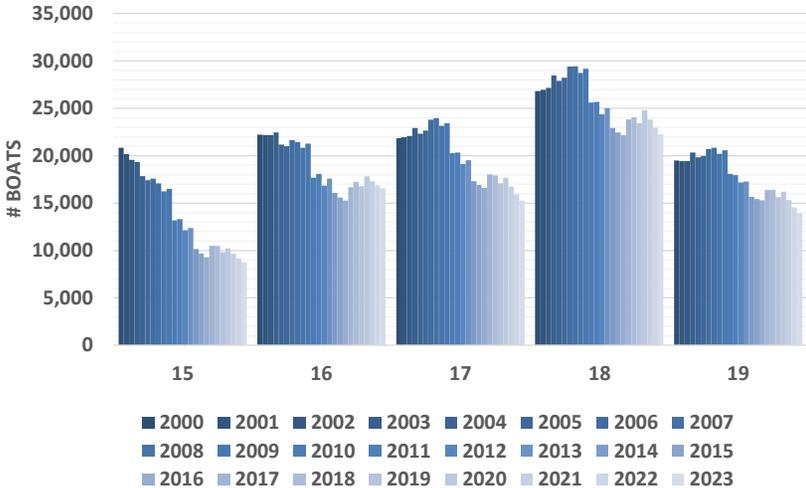
# Clallam County Registered Boat Trends

## 15 feet to 19 feet (2000 to 2023)

CLALLAM COUNTY



WASHINGTON STATE



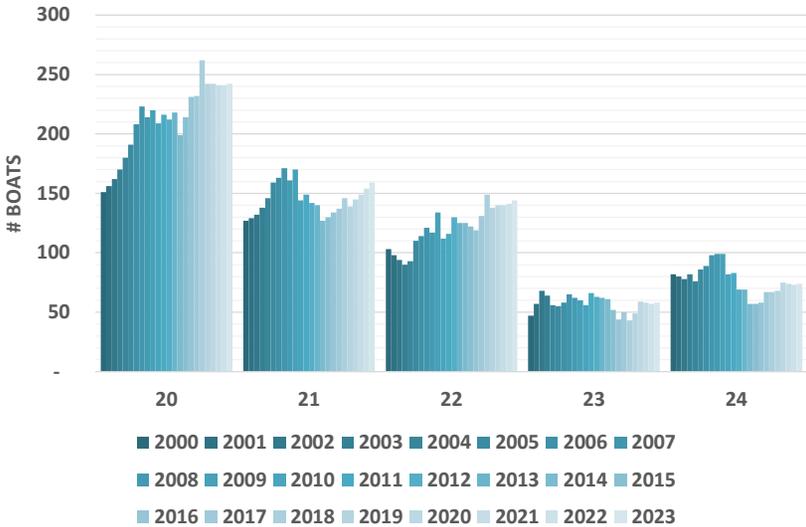
Clallam County vessels from 15 feet to 19 feet declined in numbers from 2000 to 2014, increased slightly in 2017 and is holding steady. Similar trend in Washington State. These boats are sometimes accommodated by 20-foot slips but generally are launched at boat ramps.

Source: WA Dept of Licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

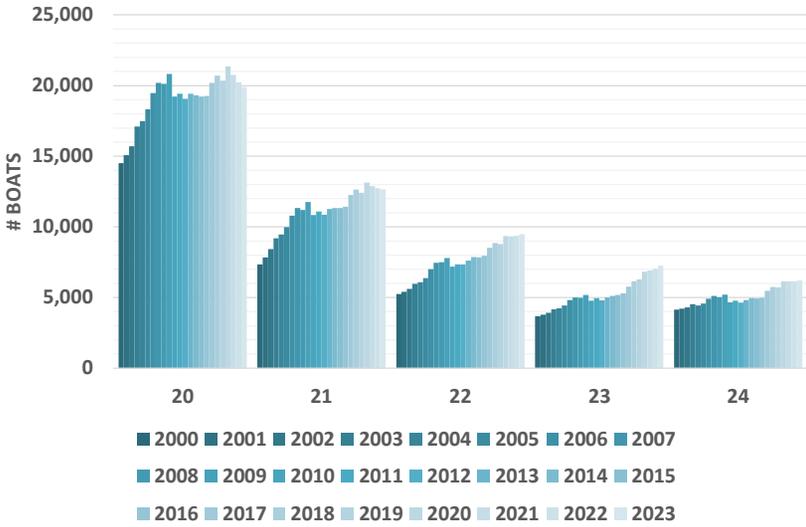
# Clallam County Registered Boat Trends

## 20 feet to 24 feet (2000 to 2023)

CLALLAM COUNTY



WASHINGTON STATE

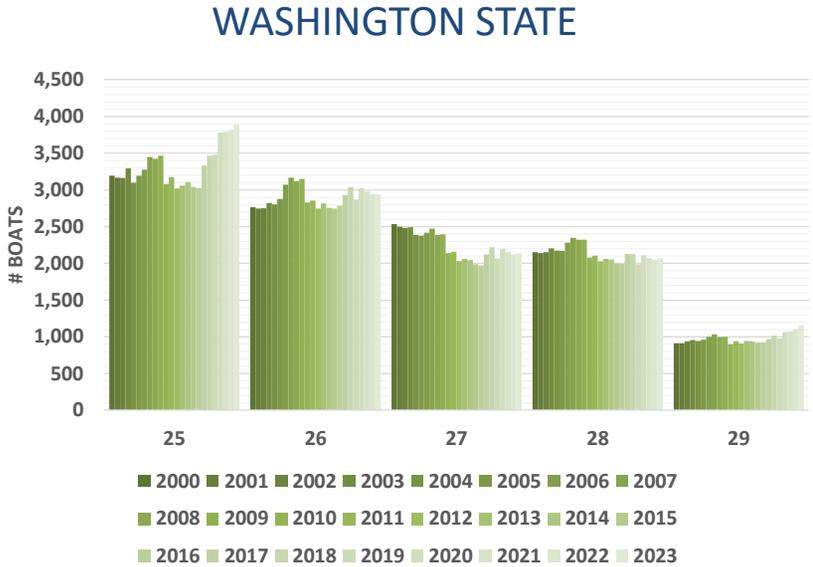
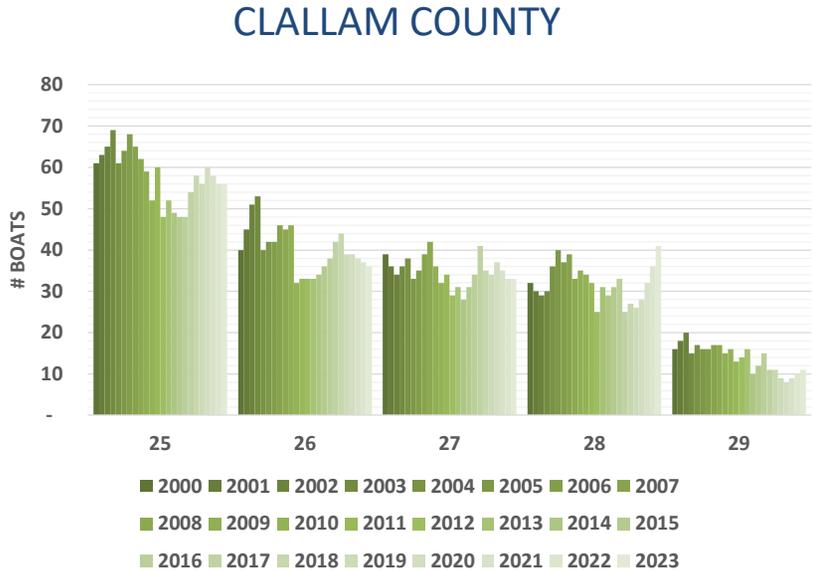


Clallam County vessels from 20- to 22-feet have increased in number. In Washington State, all length ranges increased. These boats are sometimes accommodated by 25-foot slips but generally are launched at boat ramps.

Source: WA Dept of Licensing, BST Associates ; note DOL lengths are hull length, not LOA (See Appendix)

# Clallam County Registered Boat Trends

25 feet to 29 feet (2000 to 2023)

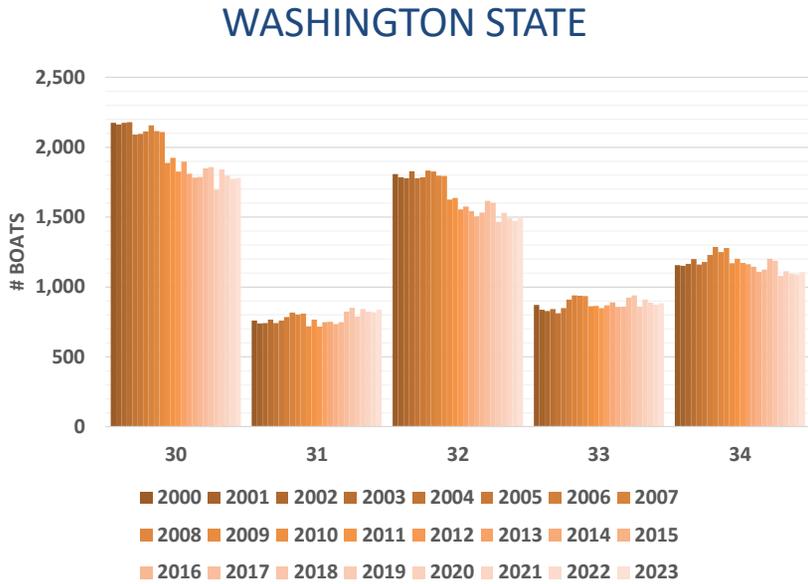
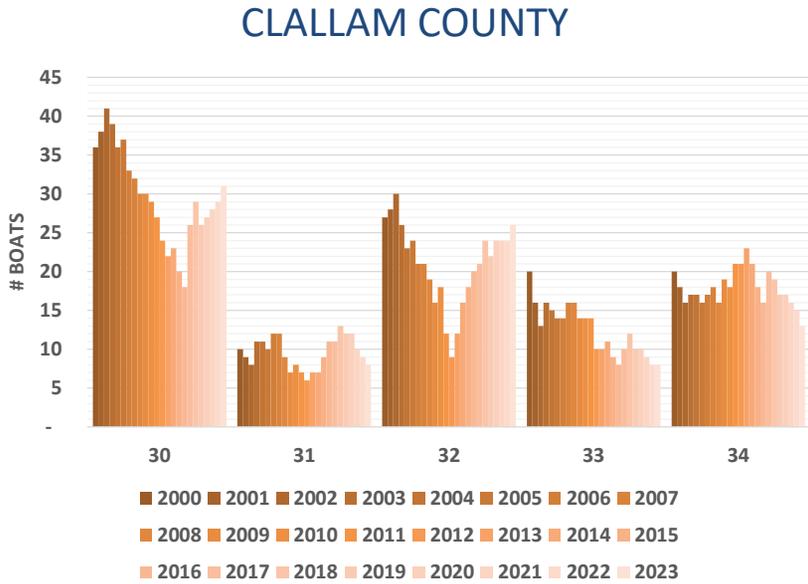


Clallam County vessels from 25 feet to 29 feet have generally decreased from 2000 to 2023, while 28-foot boats have grown in number. Similar trends in Washington State. These boats are sometimes accommodated by 28-, 30- or 32foot slips.

Source: WA Dept of Licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

# Clallam County Registered Boat Trends

## 30 feet to 34 feet (2000 to 2023)



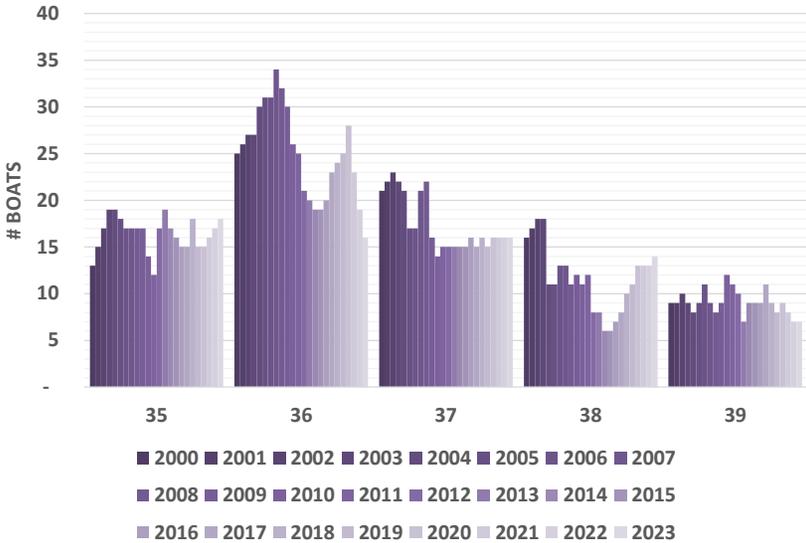
Clallam County vessels from 30 feet to 34 feet have mostly decreased in number from 2000 to 2023. Washington State trends show decline for 30- and 32-foot boats but steady trends for others in the range. These boats are sometimes accommodated by 32-foot or 35/36-foot slips.

Source: WA Dept of Licensing, BST Associates ; note DOL lengths are hull length, not LOA (See Appendix)

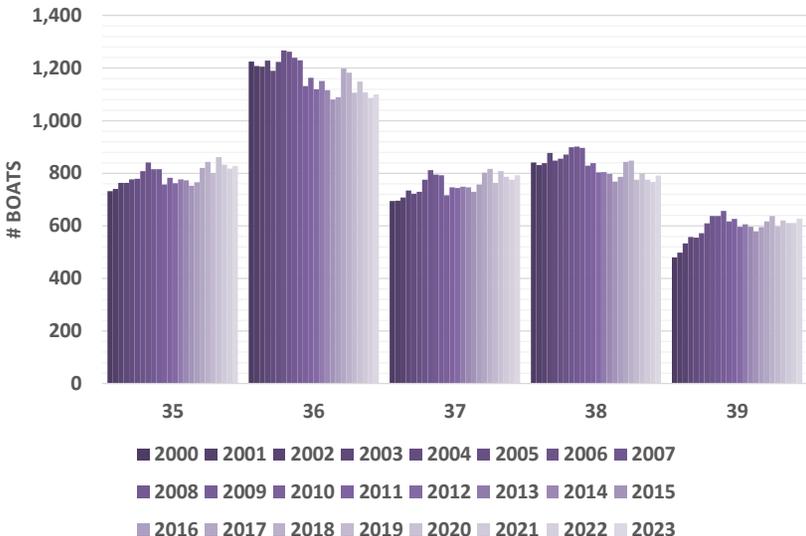
# Clallam County Registered Boat Trends

## 35 feet to 39 feet (2000 to 2023)

CLALLAM COUNTY



WASHINGTON STATE



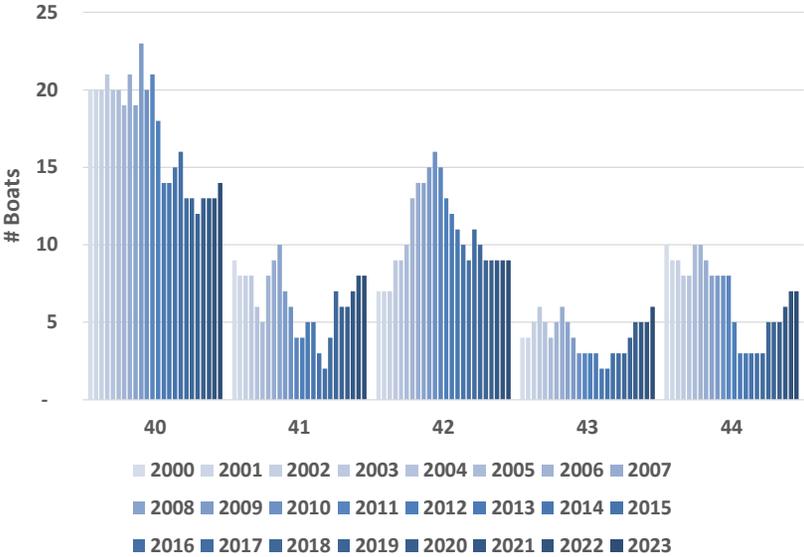
The Clallam County of vessels from 35 feet to 39 feet have remained relatively stable or declined from 2000 to 2023. In Washington State, boats in this range experienced modest growth. These boats are generally accommodated in 38-foot to 40- or 42-foot slips.

Source: WA Dept of licensing, BST Associates: note DOL lengths are hull length, not LOA (See Appendix)

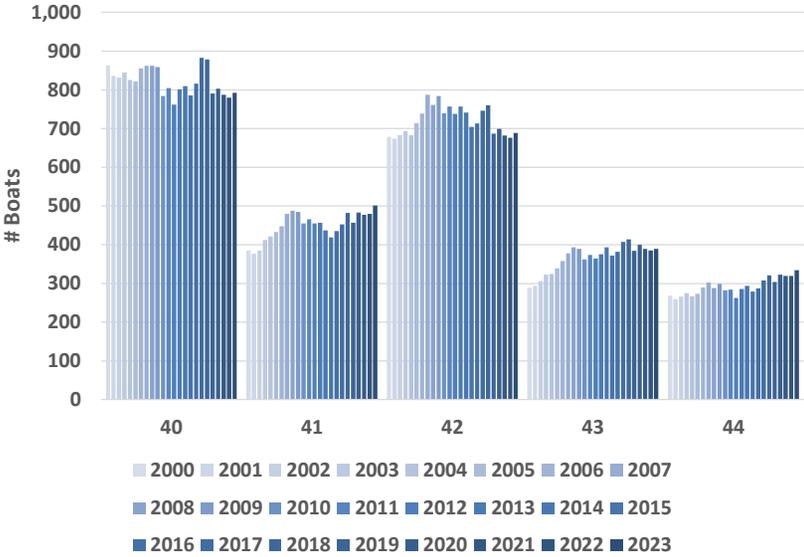
# Clallam County Registered Boat Trends

## 40 feet to 44 feet (2000 to 2023)

CLALLAM COUNTY



WASHINGTON STATE

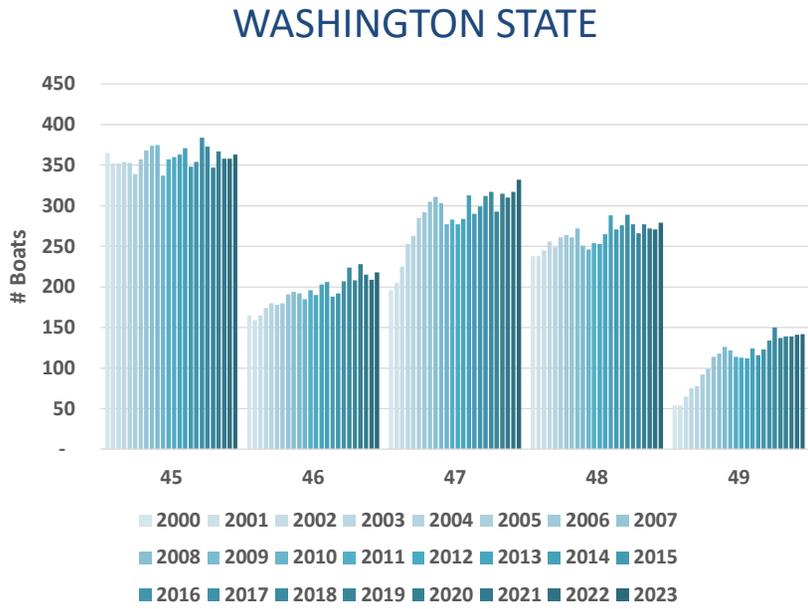
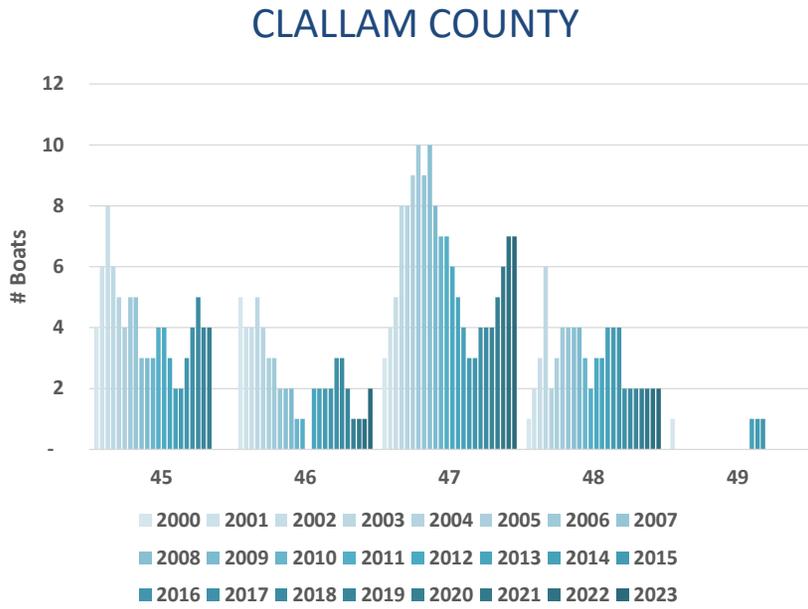


The Clallam County of fleet (40 feet to 44 feet) generally declined 2000 to 2023. Washington State boats in this range remained stable or grew modestly. These boats are generally accommodated in 42-foot or 45/46-foot slips.

Source: WA Dept of licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

# Clallam County Registered Boat Trends

## 45 feet to 49 feet (2000 to 2023)

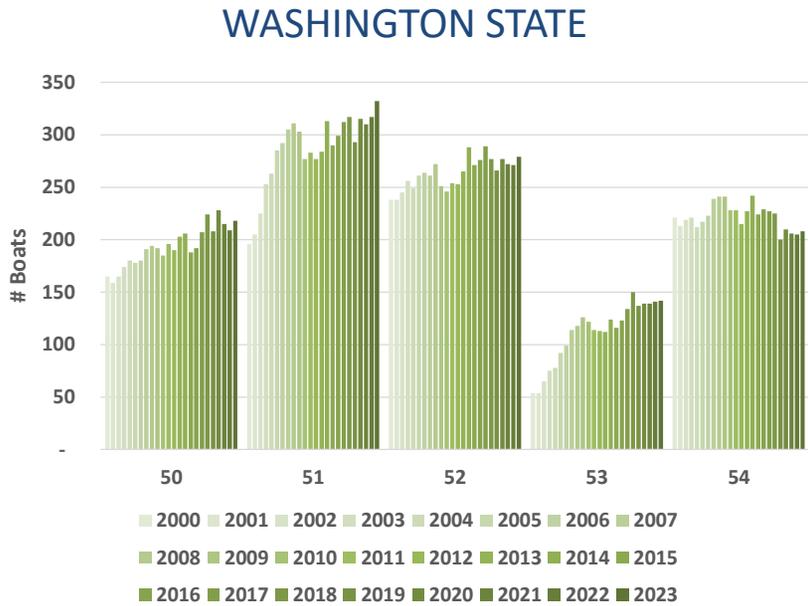
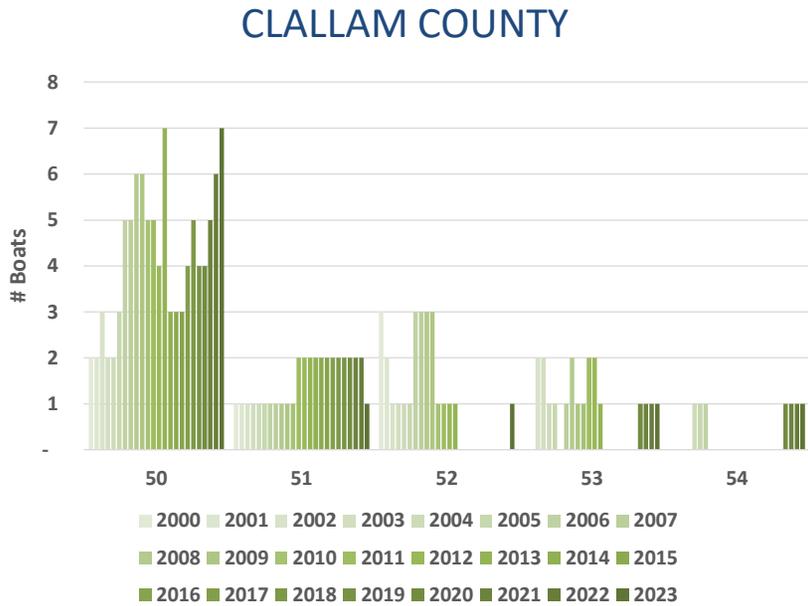


The Clallam County fleet of vessels from 45 feet to 49 feet is very small (under 10 boats) and has declined during the period. Washington State has experienced rapid growth in boats 46- to 49-foot. These boats are typically accommodated in 48-foot to 52- to 55-foot slips

Source: WA Dept of Licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

# Clallam County Registered Boat Trends

## 50 feet to 54 feet (2000 to 2023)



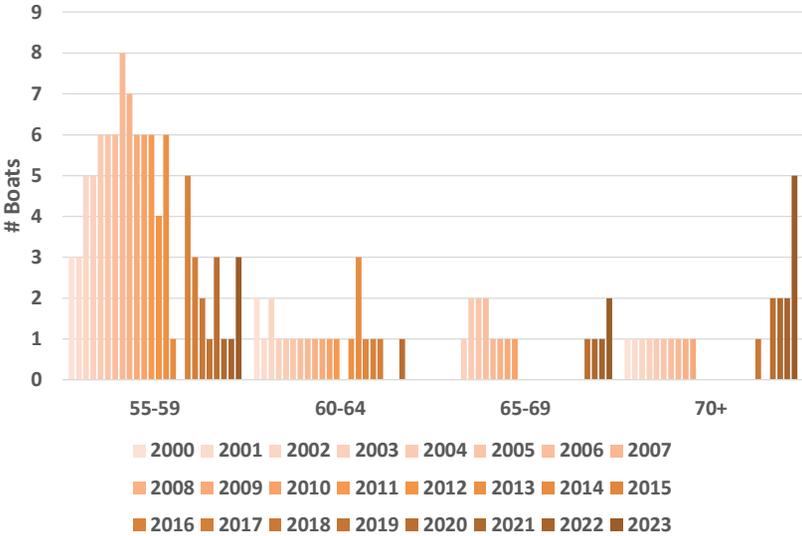
The Clallam County fleet of vessels from 50 feet to 54 feet is small (under 10 boats) but has experienced growth. Washington State has experienced rapid growth in these boats, which are typically accommodated in 54-foot to 58- or 60-foot slips

Source: WA Dept of Licensing, BST Associates ; note DOL lengths are hull length, not LOA (See Appendix)

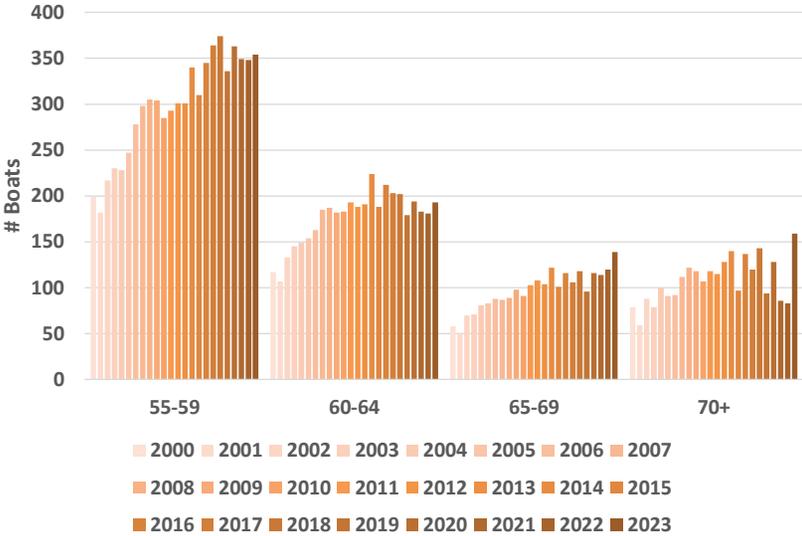
# Clallam County Registered Boat Trends

## 55+ feet (2000 to 2023)

CLALLAM COUNTY



WASHINGTON STATE



The Clallam County fleet of vessels over 55 feet long is also small (9 boats in 2023). Washington State has experienced rapid growth in these boats, which are typically accommodated in 60+ foot slips.

Source: WA Dept of Licensing, BST Associates; note DOL lengths are hull length, not LOA (See Appendix)

# West Basin Occupancy 20-ft and 25-ft Slips

## Current number of slips

- 20 foot – 70 slips (West); 94 slips (total)
- 25 foot – 24 slips (West); 32 slips (total)

Very popular with fishermen during fishing season

## Average Occupancy (2022-24)\*

- 20-foot = 33%
- 25-foot = 76%

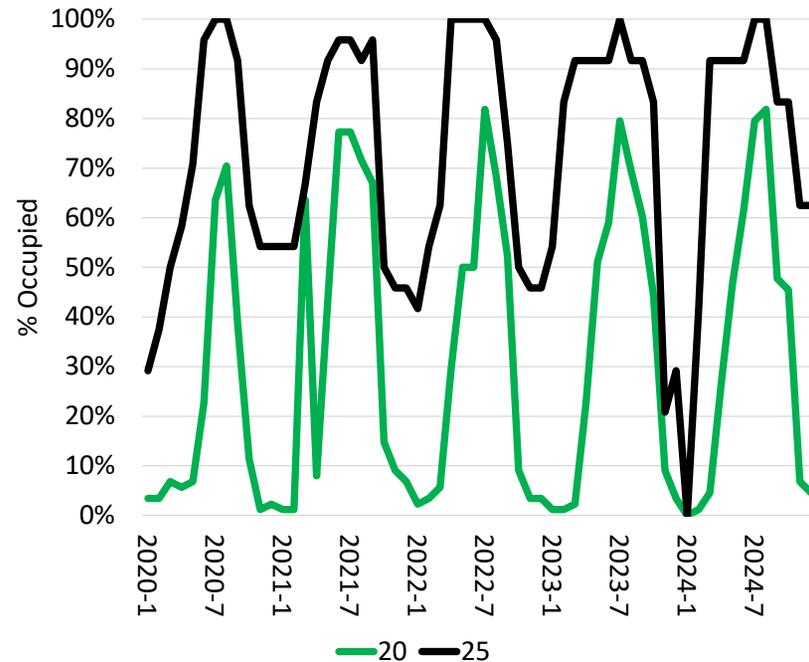
## Average Wait List (2022-24)

- 20-foot = 0.2
- 25-foot = 0.4

20-foot slips in M, X, 25-foot slips in R, X

\* Excludes boathouses

Occupancy Trends



Source: Port of Port Angeles

# West Basin Occupancy 30-ft and 36-ft Slips

## Current number of slips:

- 30 foot – 79 slips (West); 104 slips (total)
- 36 foot – 16 slips (West); 46 slips (total)

## Average Occupancy (2022-24)\*

- 30-foot = 78%
- 36-foot = 94%

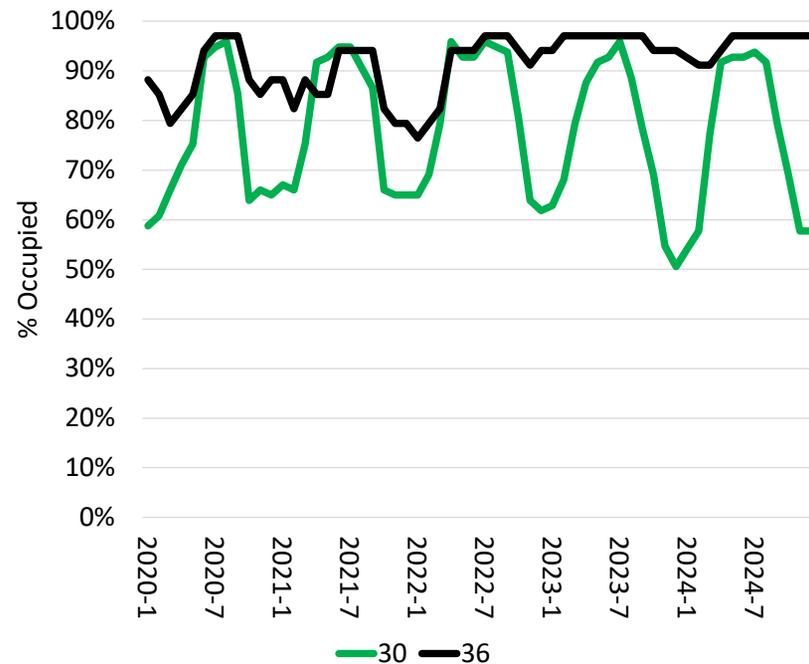
## Average Wait List (2022-24)

- 30-foot = 0.9
- 36-foot = 8.3

30-foot slips in Q, R, 36-foot slips in O, P and R.

\* Excludes boathouses

Occupancy Trends



Source: Port of Port Angeles

# West Basin Occupancy 40-ft and 46-ft Slips

## Current number of slips:

- 40 foot – 1 slips (West); 32 slips (total)
- 46 foot – 17 slips (West); 17 slips (total)

## Average Occupancy (2022-24)\*

- 40-foot = 97%
- 46-foot = 98%

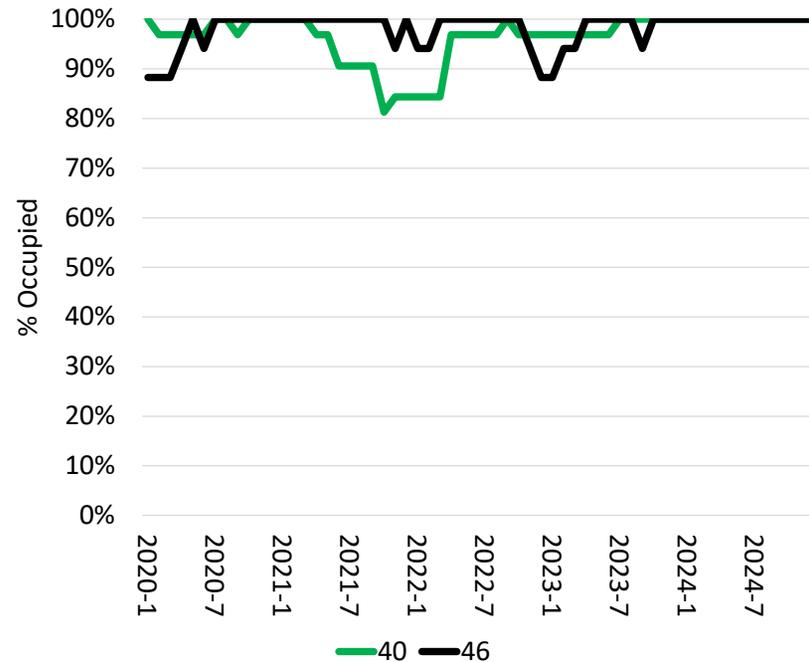
## Average Wait List (2022-24)

- 40-foot = 6.5
- 46-foot = 0.0

40-foot slip in N, 46-foot slips in O.

\* Excludes boathouses

Occupancy Trends



Source: Port of Port Angeles

# West Basin Occupancy 50-ft Slips

Current number of slips:

- 50 foot – 60 slips (West); 91 slips (total)

Average Occupancy (2022-24)\*

- 50-foot = 96%

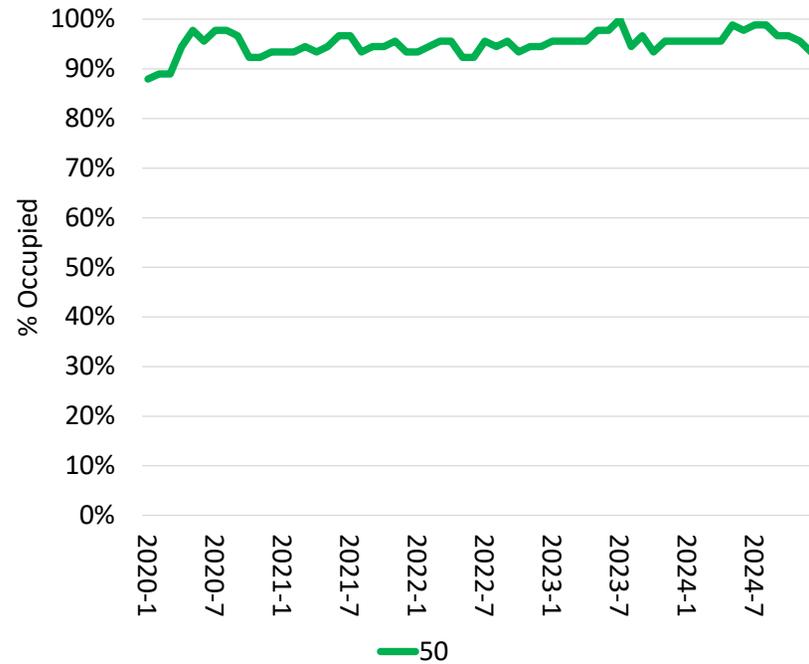
Average Wait List (2022-24)

- 50-foot = 2.9

50-foot slip in N and P

\* Excludes boathouses

Occupancy Trends



Source: Port of Port Angeles

# West Basin Occupancy 60+ foot slips

## Current number of slips

- 60 foot – 0 slips (West); 1 slip (total)
- 75 foot – 0 slips (West); 8 slips (total)
- 80 foot – 2 slips (West); 2 slips (total)
- 100 foot – 1 slip (West); 2 slips (total)
- 200 foot – 0 slips (West); 2 slips (total)

## Average Occupancy (2022-24)\*

- 60+-foot = 83%

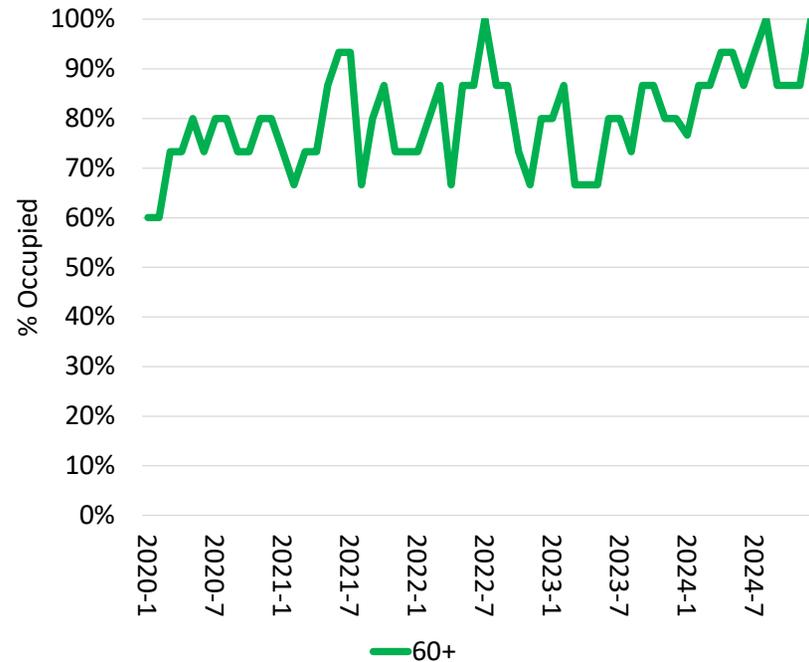
## Average Wait List (2022-24)

- 60+ foot = 2.1

60+ foot slips in N, P and Q.

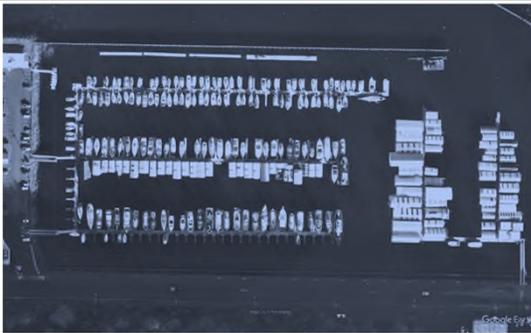
\* Excludes boathouses

Occupancy Trends

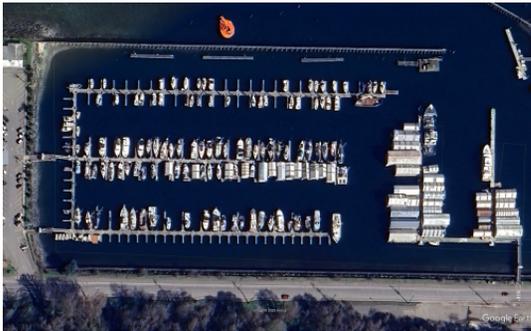


Source: Port of Port Angeles

# Boathouses



2000 – 75 boathouses



2024 – 44 boathouses; (2025 = 41)

The number of boathouses decreased from 75 in 2000 to 41 in 2025

- More are expected to leave due to poor condition and problems with flotation
- There is interest in boathouses, but there are still too many
- Boathouse use of Dock O and Docks I-L preclude using those side-ties to meet other pressing demands (commercial and recreational)

## Considerations for Port

- Require physical inspection to document boathouse condition, (see Olympia Yacht Club checklist)
- Rate structure could be changed to \$/sq ft
- Permits for the marina will require mitigation to address coverage (shade). One method to address is to reduce coverage (Boathouses).

# Boat Haven Transient Moorage

Transient moorage is an important component of Boat Haven activity.

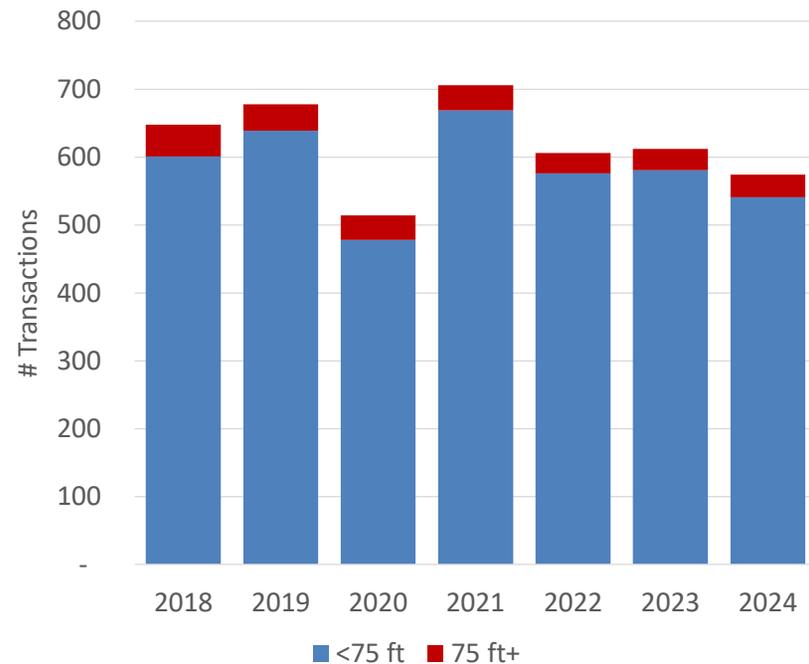
From 2018 to 2024, there were an average of 620 transactions per year

- Revenue to the Port of ~\$100,000 in 2024

There is a direct link between transient moorage and economic activity in Port Angeles

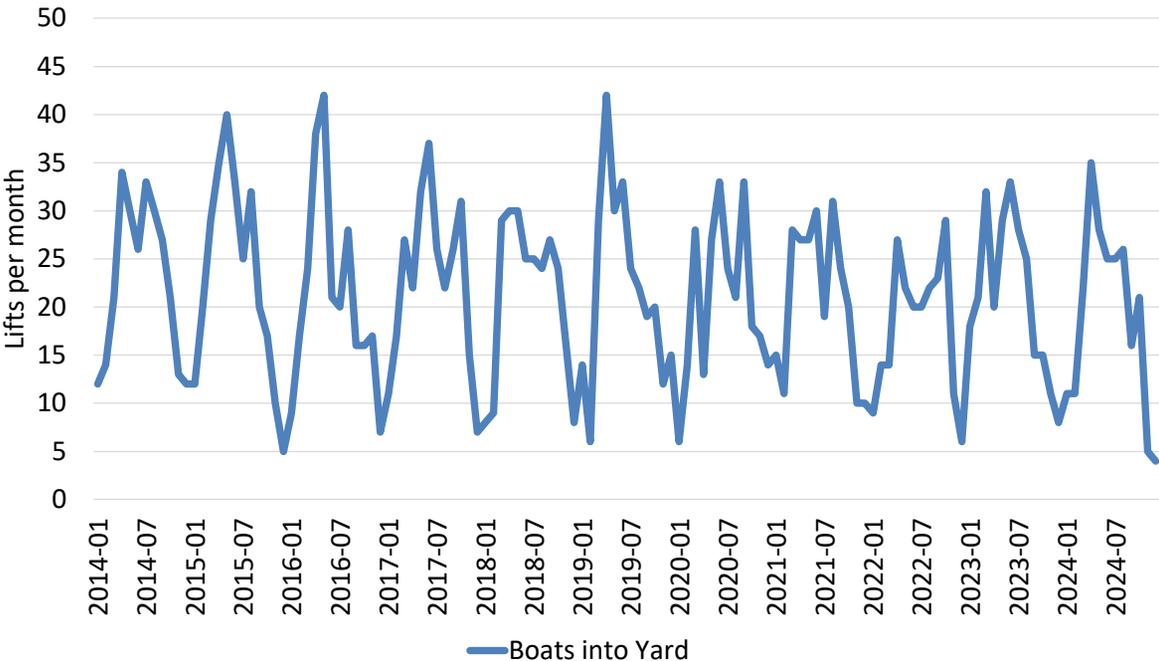
- Boat repair and servicing
- Fuel and other retail purchases, etc.

The ability to increase this activity is linked to redevelopment of the West Basin



Source: Petrocard, Port of Port Angeles

# Boatyard Monthly Lifts



- The boatyard at the Boat Haven averaged ~234 lifts per year from 2022 through 2024.
- The boatyard provides services to commercial and recreational tenants, as well as to visiting boaters.

Source: Port of Port Angeles

# Outreach

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BST Associates interviewed 18 stakeholders at the Boat Haven for their insights

- Conditions
- Challenges
- Opportunities

## Marina Design

- Wind
  - Downwind slips are the best
  - Due to wind, distance between boats on side-ties is greater than at other marinas
- Slip breakdowns:
  - 20 ft – too many
  - 25 ft – filled up in January this year
  - 30 ft – about right
  - 36 ft and 40 ft – high demand
  - 50 ft – P dock too narrow; N dock has good width
  - Boathouses – 50% used for older wooden boats
  - Commercial – extensive use by a variety of companies

# Outreach (continued)

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## Boatbuilding and Boat Repair

- Firms are considering expansion in recreational, commercial and government vessels
- Expansion plans are underway – plans to construct 70-80+ foot boats
  - Additional long slips to undertake repair and sea trials – the Center (L/K and J/M) would work well
  - Need for boathouse near moorage to support operations (pre-stage materials, furniture etc.)
  - Additional areas for hot work would be helpful
  - Concern expressed about the condition of the breakwater and the size of the entrance (too small).
  - Concern about funding for the redevelopment project and impact on rates.
- Amenities:
  - Office building for crew of large vessels would be helpful (crew quarters, concierge services, order provisions, internet service etc.)
  - Parking is tight
  - Weather station at the Boat Harbor
  - Bikes or golf carts to access downtown
  - Restaurant

# Outreach (continued)

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## Boat Repair and Service Operators

- Need to attract boats to grow the repair business.
- There is an opportunity to attract additional vessels to the area. This includes boats from Puget Sound and from west Clallam County.
- Should promote winter moorage as an opportunity for growth.
- Boats from 40 feet and longer are key for the repair industry.
- Concern about boathouses, impacting water quality (Styrofoam floatation). Consider reducing the number of boathouses.
- Consider beautification plan for uplands.
- Concern that liveaboards are not using pump-outs. Some marinas require proof of pumpout to qualify for liveaboard status.
- Amenities:
  - Place to get food and supplies,
  - Improve waterfront trail to town,
  - Lack of affordable housing constrains the ability to attract new workers.

# Outreach (continued)

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## Recreational & Commercial Fishing

- Fishing is a key industry in Port Angeles.
  - Sport fishermen (25-feet to 40-feet)
  - Local harvest (34-foot to 42-foot)
- Consider attracting winter moorage (from La push, Neah bay and elsewhere).
- Amenities:
  - Washdown system (Westport has a coin operated system that works well).
  - Need to dredge the area in front of the Travelift.
  - Need cold storage facilities.
  - Restaurant or convenience store.
  - Appreciates the cardkey access.

# Outreach (continued)

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## Boating Programs

- Junior sailing is very important to the community. Programs are growing but reaching capacity (have 24 boats, looking to grow to 40 boats).
- Would like a dedicated area for youth docks. Shilshole Bay facilities are a good example.
- Moorage issues:
  - Westerly wind is critical concern for boaters. Consider rotating the West Basin to have slips east-west.
  - Sidetie utilization is limited at docks A, B and H.
  - Need more 30-40 foot slips.
  - Q/R have deepest water – should be used by longer boats.
  - Reduce the number of boathouses – underutilized and present a hazard.
  - Several boats in the Boat Haven are in bad condition.
- Other:
  - Bring back the ramp in the East end.
  - Would like storage in the boat yard.
  - Amenities (restaurant...)

# Outreach (continued)

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## Yacht Club

- Yacht club has 180 family members (could be 1-2 in the family)
- About half are boat owners
  - Approximately 30 to 40 slips in the Boat Haven
  - 50/50 power versus sail
- Most sailing is in the harbor – large area to sail
- Yacht Club would like to have at least one dedicated slip for reciprocal moorage with other yacht clubs
- Yacht Club active in community boating, need for dinghy dock storage in winter
- Slip needs
  - More variety in longer slips (like a 45-foot slip)
  - Boat Haven was not designed for westerly winds, should be east-west orientation
- Amenities
  - Update eastside restroom and laundry room
  - Consider floating restroom
  - Easier access from east to west side
  - Revive westside – maybe a park

# Outreach (continued)

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## Small boat operators

- Emphasized the importance of the boat ramps and small slips for hundreds of local and visiting fishermen
- Seasonal peaking during the fishing season. Wants to see an adequate number of small slips. During peak season, boats launch at 3am to 4am to get parking for truck and trailer. Need more slips.
- Overhangs make it difficult to transit the west side (X docks)
  - Especially during low tides and high winds which impact maneuverability
  - Consider moving the docks out farther to accommodate small boats
- More parking required
- Another cleaning station is needed

# Outreach (continued)

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## Waterfront development

- Advocating for tourism development as a part of Boat Haven improvements
  - Island adventure was using Port Angeles, may still be interested
  - Whale watching/sunset cruises/dinner charters
  - Many have tried but difficult to sustain
- Develop waterfront trail to the Boat Haven
- Waterfront District is applying for Main Street designation
  - Murals on industrial buildings
  - Banners, other improvements, et al.
  - Small ramp for YC to use year round
  - Coffee shop, food trucks, containers (house shops)
  - Pop-up events
  - Picnic tables

# Outreach (continued)

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## Boathouse owners

- Fix the breakwater before dredging
- Some boathouses are not used at total
- Stricter enforcement by state on Styrofoam
- Mentioned Steve Ikume as an expert on boathouses in PA (built most, repaired many)
- Most boathouses are very old, wouldn't suggest more boathouses
- Some boathouses are for sale with a wooden boat
- Thought expansion of marina should be considered
- Amenities
  - Kayak ramp at east end

# Stakeholder Interviews

- Commercial Fishing Joe Cammack
- Boat House Owners The Scannell's
- Waterfront District Sam Grello
- PetroCard Erik Widsteen/  
Ryan Smith
- Waste Removal Evan Boyd
- Port Commissioner Steve Burke
- Arrow Launch Jack Harmon & Jeramey
- Brix Marine Charlie Crane
- Dept of Fish & Wildlife Tierra Olds
- Platypus Amanda Kennedy

- Westport Daryl Wakefield/  
Dave Hagiwara
- PA Yacht Club Erika Hanson
- Community Boating Program Eric Lesch
- City of Port Angeles Calvin Goings
- Boat Yard Contractor Eric Bert
- Sea Scouts Jared Minard
- Customs Border Protection Angel Martinez
- Puget Sound Anglers  
/North Olympic Anglers Dave Croonquist

Thanks to 18 stakeholder groups for providing their insights on the current conditions and future outlook for the Port Angeles Boat Haven.

# Economic Impact

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This section provides an estimate of the economic impacts associated with redevelopment of the West Basin based on:

- Commercial boats
  - Fishing boats, based on data provided by WDFW, NOAA, Petrocard
  - Other commercial vessel expenditures, based on actual employment and estimated revenue
- Recreational boats
  - Recreational anglers' expenditures, based on estimated expenditures per day and number of days and, data from WDFW
  - Estimated annual expenditures for longer recreational boats, based on updates of the 2013 economic impact study, prepared by BST Associates for the Port of Port Angeles.

# Commercial

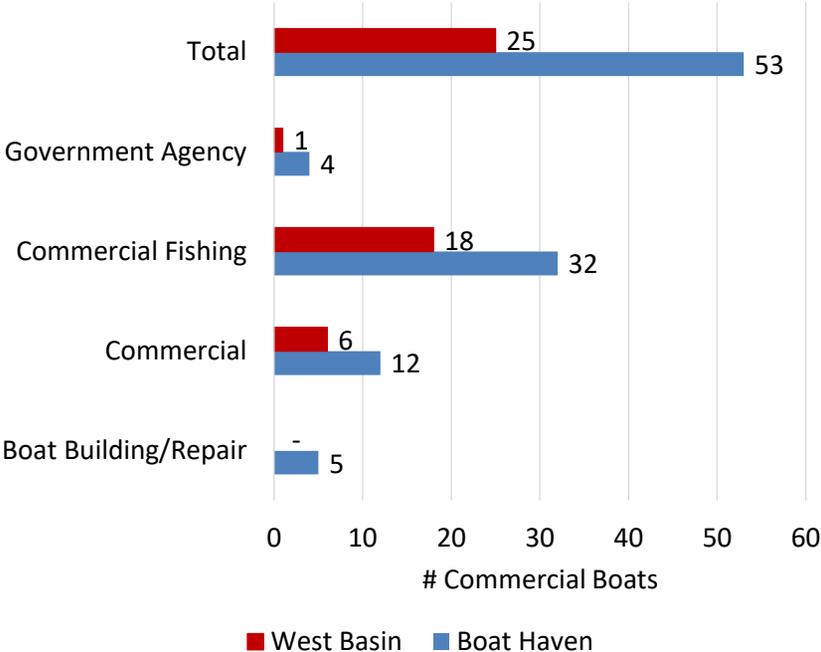
There are 53 commercial slips in the Boat Haven, with 25 located in the West Basin (55%).

Slips are used by:

- Commercial fishing boats (treaty and non-treaty fishermen)
- Commercial vessels that support Port activities
- Government agencies, among others

Commercial tenants generate:

- 43 direct FTEs including skippers, crew, etc.
- \$4.0 million in direct revenue:



FTE means a full-time equivalent job

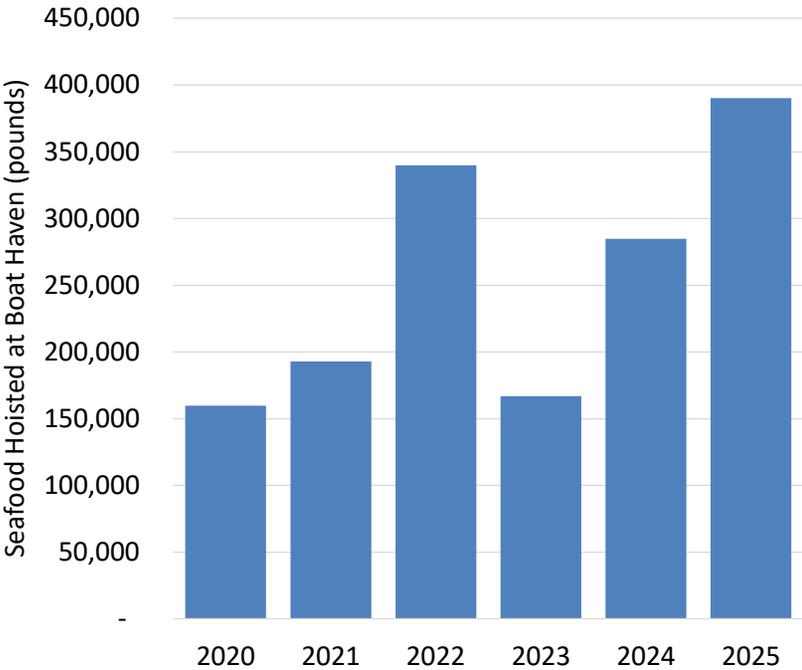
# Commercial (Continued)

## Fishing Impacts

- Boat Haven hoist volume ranged from 150,000 pounds in 2020 to nearly 400,000 pounds in 2025 (ytd). Some landings are also carried or wheeled up the docks.
- Harvest includes: Geoduck Clams, Red and Green Sea Urchin, Dungeness Crab, Sea Cucumbers, Pacific Halibut, Chinook Salmon and Lingcod, among other species
- Harvest value for West Basin vessels is estimated at \$2.6 million for 2023

## Other Commercial

- Value of other commercial boats was estimated at \$1.3 million based upon revenue per employee.



Source: Petrocard, NOAA, WDFW

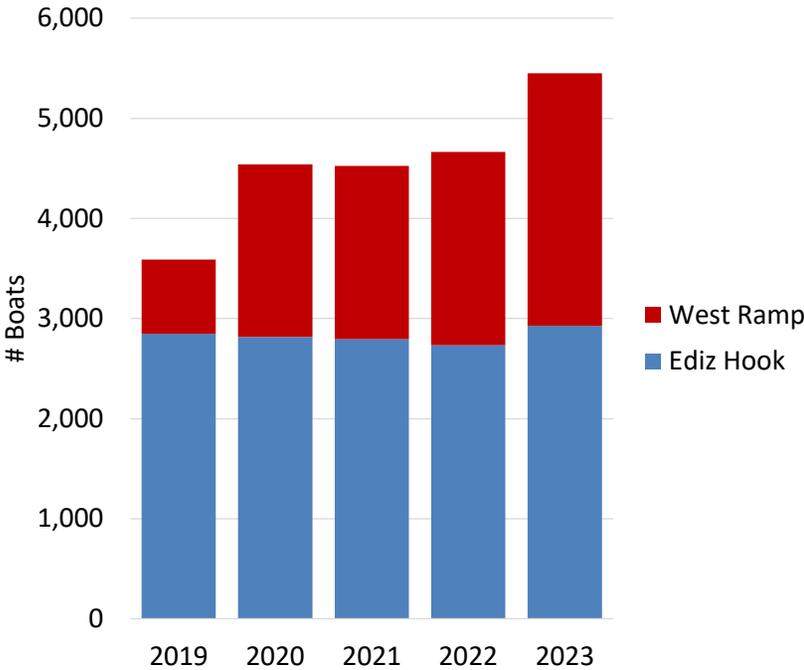
# Recreational

## Anglers

- Launches of fishing boats (Ediz Hook Ramp and West Ramp) grew from ~3,600 in 2019 to ~5,500 in 2023. The number of anglers increased from ~7,400 to ~11,600 during the same period
- Some of the boats using the ramps are also Boat Haven tenants, and account for much of the demand for 20-foot and 25-foot slips
- The vessels using the West Basin are estimated to generate ~\$1.0 million in recreational value

## Other recreational

- Other recreational vessels spend an estimated \$2.5 million per year on goods and services (based on the 2013 economic impact studies, updated to 2025 dollars).



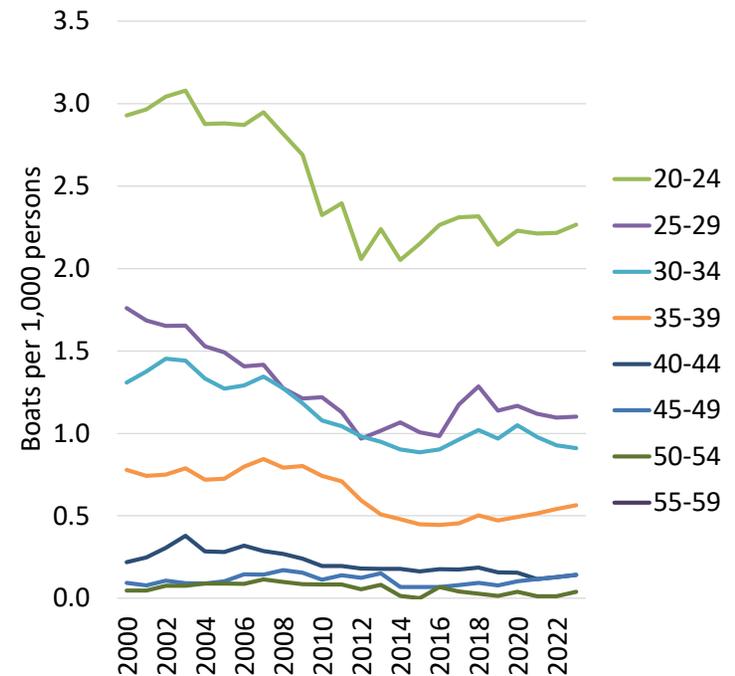
Source: WDFW, BST Associates

## Findings

# Key Market Findings

## Outlook for the Port Angeles Boat Haven

- Recreational
  - Boaters that live in Clallam County are already well-served by the facilities at the Boat Haven and John Wayne Marina
  - The growth rate in boat ownership has been slower than the population growth rate in Clallam County from 2000 to 2023
  - Future boat ownership is expected to remain near current levels
  - We expect that Port Angeles will attract few recreational boats from other areas
- Commercial
  - There are opportunities to retain and grow commercial activity in the Boat Haven
  - Vessel repair operations are growing as is the need moorage space at the Boat Haven
  - Other commercial uses are expected to remain stable or increase slightly



# Supply of Moorage

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- Most marinas in Western Washington are over 40 years old
- Many reaching the end of their useful life
- The expense to rebuild or build new marinas could be prohibitive
- Most marinas do not have the ability to fund marina redevelopment
- The supply of wet moorage is likely to decline
- The Port should consider
  - Initial steps to increase the supply of moorage
    - Removal of unseaworthy boats and boathouses
    - Hot-berthing smaller boats in larger slips when vacant
  - The funding required to cover the cost of alternative layouts

# Usage Trends

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## Occupancy trends and wait list trends (2022-2024)

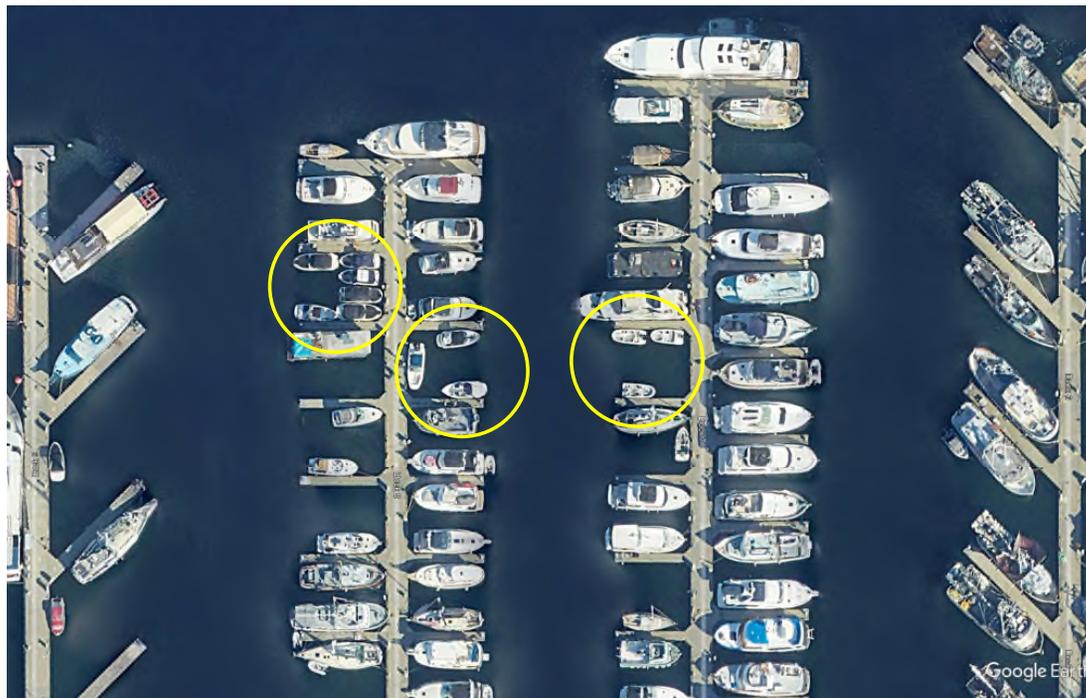
- Acceptable occupancy rate (75% plus)
  - 25 ft - 76% (waitlist = 0.4)
  - 30 ft - 78% (waitlist = 0.9)
  - 36 ft - 94% (waitlist = 8.3)
  - 40 ft - 97% (waitlist = 6.5)
  - 46 ft - 98% (waitlist = 0)
  - 50 ft - 96% (waitlist = 2.9)
  - 60+ ft - 83% (waitlist = 2.1)
- Unacceptable occupancy rates (under 75%)
  - 20 ft – 33% (waitlist = 0.2)

## Recommendations

- Reduce # of small slips
- Keep other slip sizes at current levels or increase slightly depending on the optional layout

## Findings

# Small Boat Moorage Option



- An option to increase moorage for small boats is to use larger slips while the tenant is away – “hot berthing”
- The photo shows moorage for smaller boats at Fishermen’s Terminal in Seattle.

# Discussion

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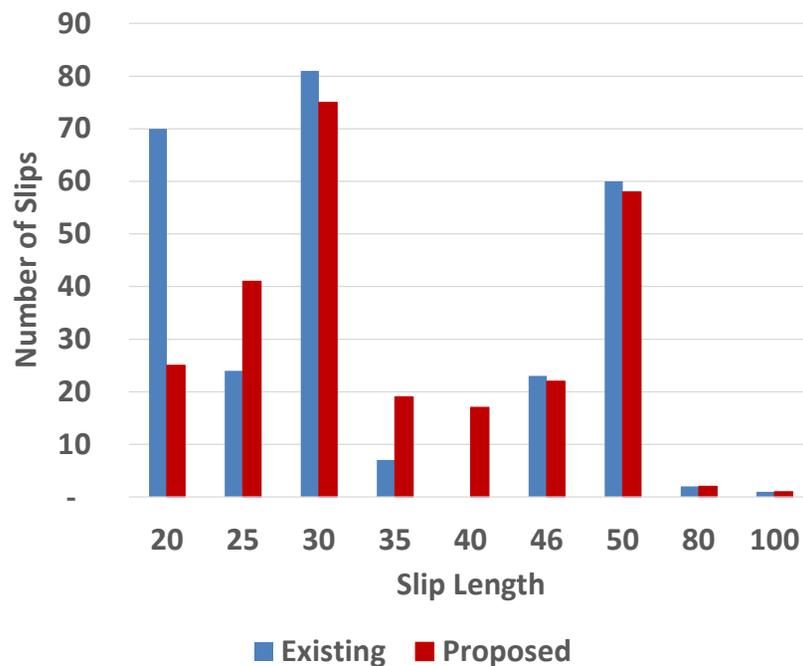
## Reconfigure

- Same general layout (floats east to west; slips north to south)
  - Place 25-foot slips closest to breakwater with longer slips next in the deeper water
    - See if the 25-foot slips can be placed closer to the breakwater (or floats placed there in winter)
    - Eliminate 20-foot slips adjacent to the west bank, use the area for side-tie
- New layout to moderate the influence of the wind (orient floats north-south with slips east-west)
  - Similar slip distribution

## Remove

- Move some boathouses from Dock O and Docks I-L to meet the needs of the commercial operators

# Market - Slip Distribution



Recommendations - based on market analysis:

- Reduce number of small slips
- Keep other slip sizes at current levels or increase slightly depending on the optional layout

This slip distribution is proposed as guidance for the design, which will take into account the number of slips that can be fit into the West Basin taking into account:

- Bathymetry (water depth),
- Proximity to channel entrance and breakwater,
- Recommended distances between slips,
- Recommended width of fairways, and other design criteria.

## Findings

# Comparison of Options Slips and Occupancy Rate

Option	Slips	Boats	Occupancy
Existing	275	205	75%
Option A1	250	228	91%
Option C1	242	221	91%

Options A1 and C1 were developed by PND Engineers to best approximate the recommended slip mix:

- Although the existing layout has more slips, it has too many small slips, which are not well utilized.
- The two options are expected to have a higher occupancy rate (91% as compared with 75% in the existing layout).
- The options are projected to have 221 boats (C1) and 228 boats (A1) moored as compared with 205 under the existing layout.

Source: PND Engineers, BST Associates

# Comparison of Options

## Direct Economic Impact - Recreational

---

Key factors in the economic impact assessment for recreational boats include:

- **Anglers**
  - Anglers primarily consist of boats in 20 and 25-foot slips.
  - In the most recent period available (2023-24), there were approximately 56,000 angler trips in boats in marine area 6.
  - We assumed that 25% of the effort could be assigned to the Port Angeles Boat Haven, resulting in around 14,000 user days.
  - The value per user days was estimated to be \$73.13 (WDFW 2006, updated using CPI to 2024 dollars).
  - The estimated revenue from angler trips was around \$1.0 million, which generated approximately 5 FTEs.
- **Other recreational boats**
  - The impact of other recreational boats (longer than 25 feet) was estimated using the results of the 2012 Port of Port Angeles Economic Impact Study, updated using CPI.
  - This includes 144 boats that are estimated to spend an average of around \$17,000 per year for moorage, repair/maintenance, supplies and other expenses in owning and using their boats. The annual revenue is estimated at \$2.5 million and generates around 16 jobs.

# Comparison of Options

## Direct Economic Impact - commercial

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Key factors in the economic impact assessment for commercial boats include:

- **Commercial fishermen**
  - There are 18 fishing boats moored in the West Basin, accounting for 60% of the fishing boats in the Boat Haven.
  - The harvest value for the area was estimated at \$4.4 million in 2023 (NOAA).
  - The estimated revenue from commercial fishermen in the West Basin was estimated at ~\$2.6 million.
  - Interviews indicated that there were between 1 and 5 crew per fishing boat. We used ~2 crew per boat (FTE), which amounted to approximately 39 FTEs.
- **Other commercial boats**
  - There are a few other commercial boats that are tenants in the West Basin, including: Clean Harbors, Global Diving & Salvage, MSRC and National Response Corp (Foss Enviro).
  - We estimated employment related to the West Basin to include 4 jobs and revenue of \$1.3 million.

# Comparison of Options

## Direct Jobs and Business Revenue

Option*	Direct Jobs FTEs	Direct Revenue (\$mils)
Existing	63	\$7.5
Option A1	66	\$8.5
Option C1	66	\$8.3

\* The differences between options are due to the number of slips and occupancy rate for recreational boats (see slide 47). The economic impact for commercial boats was the same for all layouts considered.

Source: BST Associates

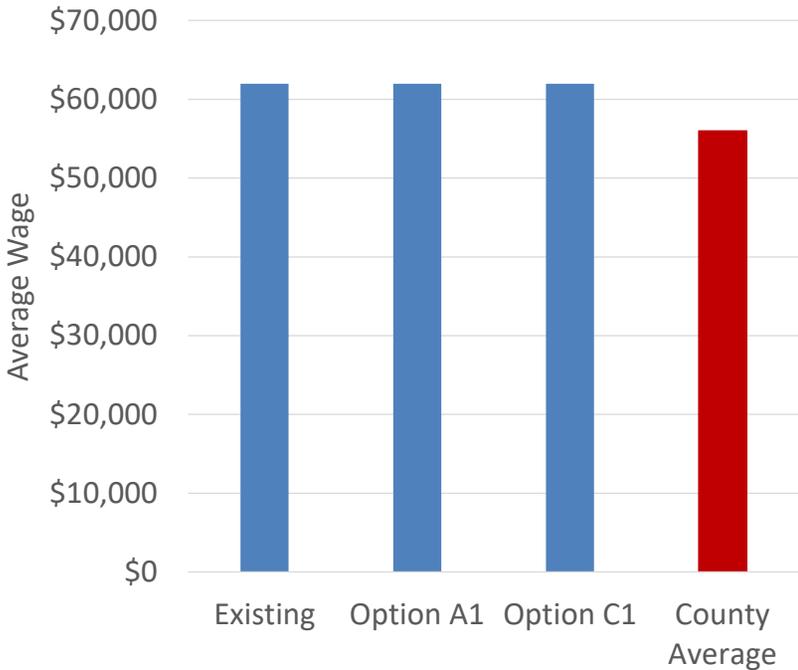
As noted above, the West Basin is reaching the end of its expected lifetime. Redevelopment is required to retain the economic activity.

Options A1 and C1 were selected by the Port Commission and Advisory group as best meeting the Port/community needs.

These options are compared with the existing marina layout:

- The existing layout is estimated to generate approximately 63 full-time equivalent jobs (FTEs) and \$7.5 million in associated revenue.
- Option A1 is estimated to generate 66 FTEs and \$8.5 million in associated revenue.
- Option C1 is estimated to generate 66 FTEs and \$8.3 million in associated revenue.

# Comparison of Options Average Income



The average wage from covered employment in Clallam County is \$55,900 in 2024 (Washington State Employment Security Department).

The current conditions and the two optional layouts have full-time equivalent jobs with an average wage of approximately \$62,000 per year at the West Basin, which is 11% higher than the county average.

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# *Questions?*

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## Definition of LOA

# Vessel Dimensions



The Washington State Department of Licensing measures the length of the hull from bow to stern (buoyant hull envelope).

Marina operators measure length overall (LOA) which includes bowsprits, rudders, outboard motor brackets, swim platforms and other similar fittings and attachments.