

An aerial night view of a busy port. In the foreground, a large container ship is docked at a pier, with several red gantry cranes positioned over it. The water is dark, reflecting some lights. In the background, a city skyline with numerous skyscrapers is visible under a dark sky. The overall scene is illuminated by the lights of the port and the city.

2015 Salish Sea Workshop

Risk Management of Vessel Traffic

Captain Mike Moore
Pacific Merchant Shipping Association
January 7, 2015

Risk Based Approach

- Evaluate Ship Traffic/Waterways
- Implement Risk Mitigation Measures
- International and Federal Standards for International and Coastal Shipping
- Regulatory and Non-Regulatory
- Implement Continuous Improvement



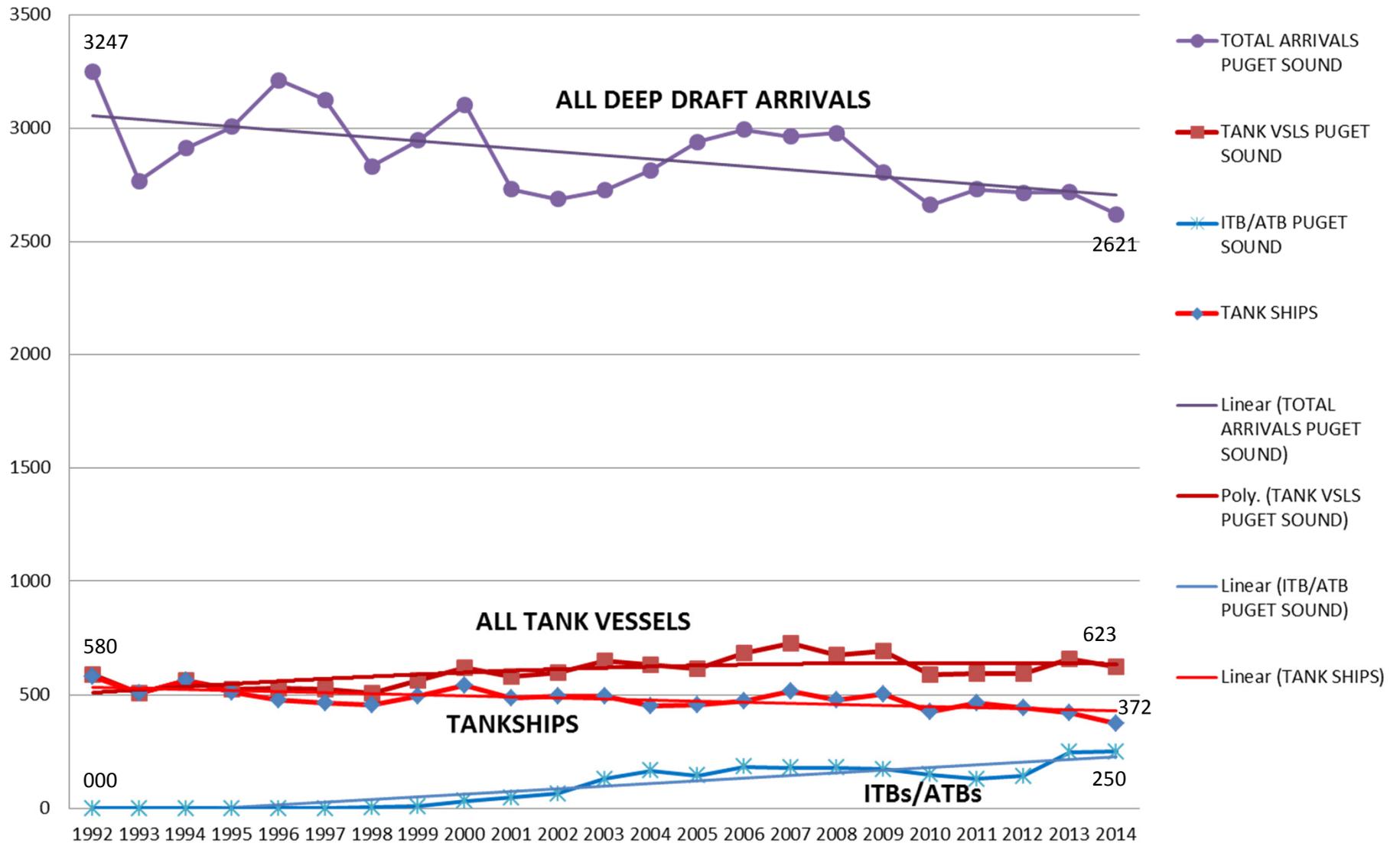
Diverse Vessel Traffic Mix

- ✓ Auto Carriers
- ✓ Bulkers
- ✓ Containerships
- ✓ Cruise
- ✓ General Cargo
- ✓ Refrigeration
- ✓ Roll On/Roll Off
- ✓ Tankers and ATB's
- ✓ Ocean-Going Tugs
- ✓ Special; Heavy Lift...



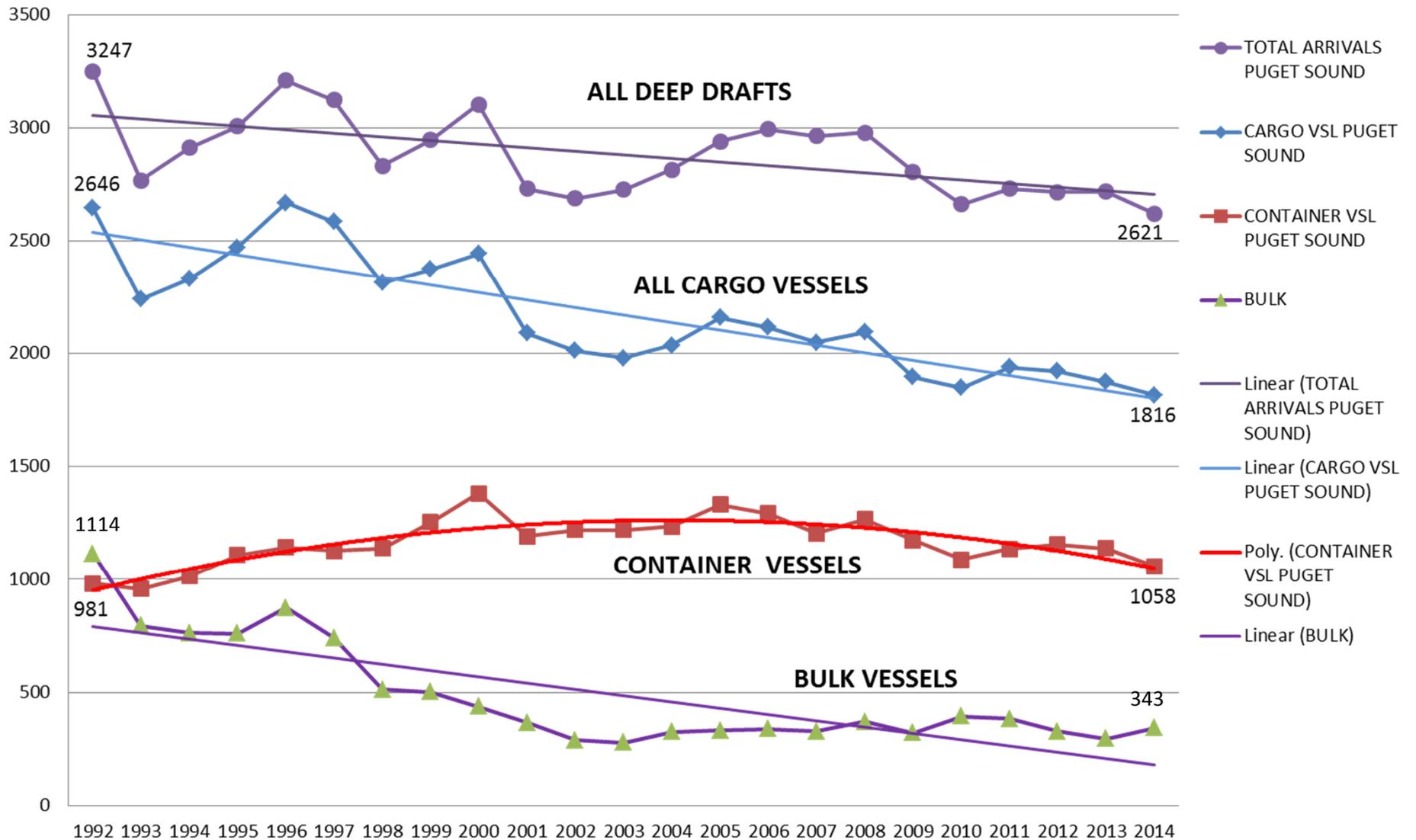
TANK VESSEL ARRIVALS

1992 THRU 2014



CARGO SHIP ARRIVALS

1992 THRU 2014



Vessel Arrival Traffic Decreased from Peak

Puget Sound Ports – Deep Draft Arrivals Only 1992 to 2014

- ✓ Cargo Vessels Down 830 from Peak
- ✓ Cruise Up from zero to an average of 200
- ✓ Tankers Down 216 from Peak in Yr 2000
- ✓ ATB Traffic Up from Zero to 250

FUTURE?

- Intensifying Port Competitiveness Impact?
- New Proposed Projects Impact?

How is Vessel Risk Managed?

Comprehensive Marine Safety System

- International, Federal & Other Standards
- Vessel Traffic System - Deep, Wide Waterways, Cooperative VTS Management between US/Canada
- Monitoring, Inspections, Enforcement
- Port State Control – Eliminate Substandard Vessels
- Tug Escort, Tug Assist, Pilots
- Double Hulls for Tankers & Cargo Vessel Fuel Tanks
- Enhanced Navigation & Crew Competency
- Harbor Safety Plan – Standards of Care

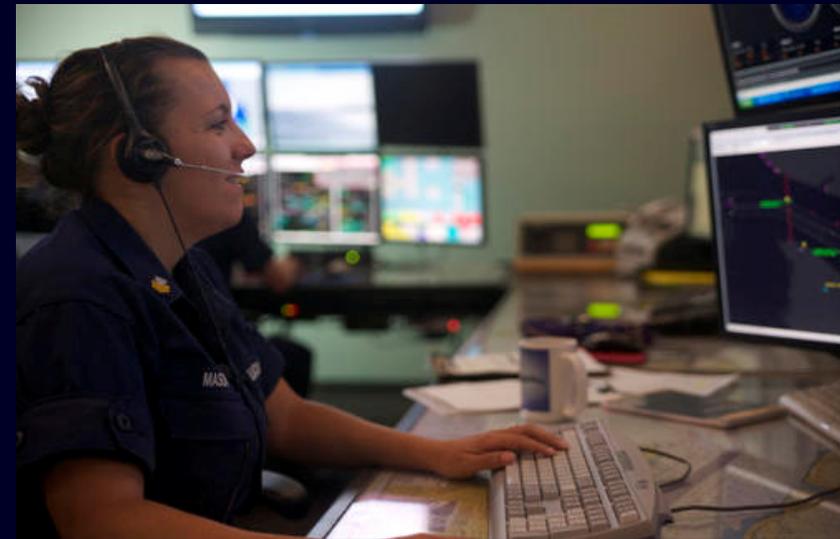
Continuous Improvement a Key

Leverage Deep Wide Waterways for Safety



*Container Vessel
Departing Tacoma*

Added Vessel Traffic Service to Traffic Lanes Providing Order, Predictability and Safety



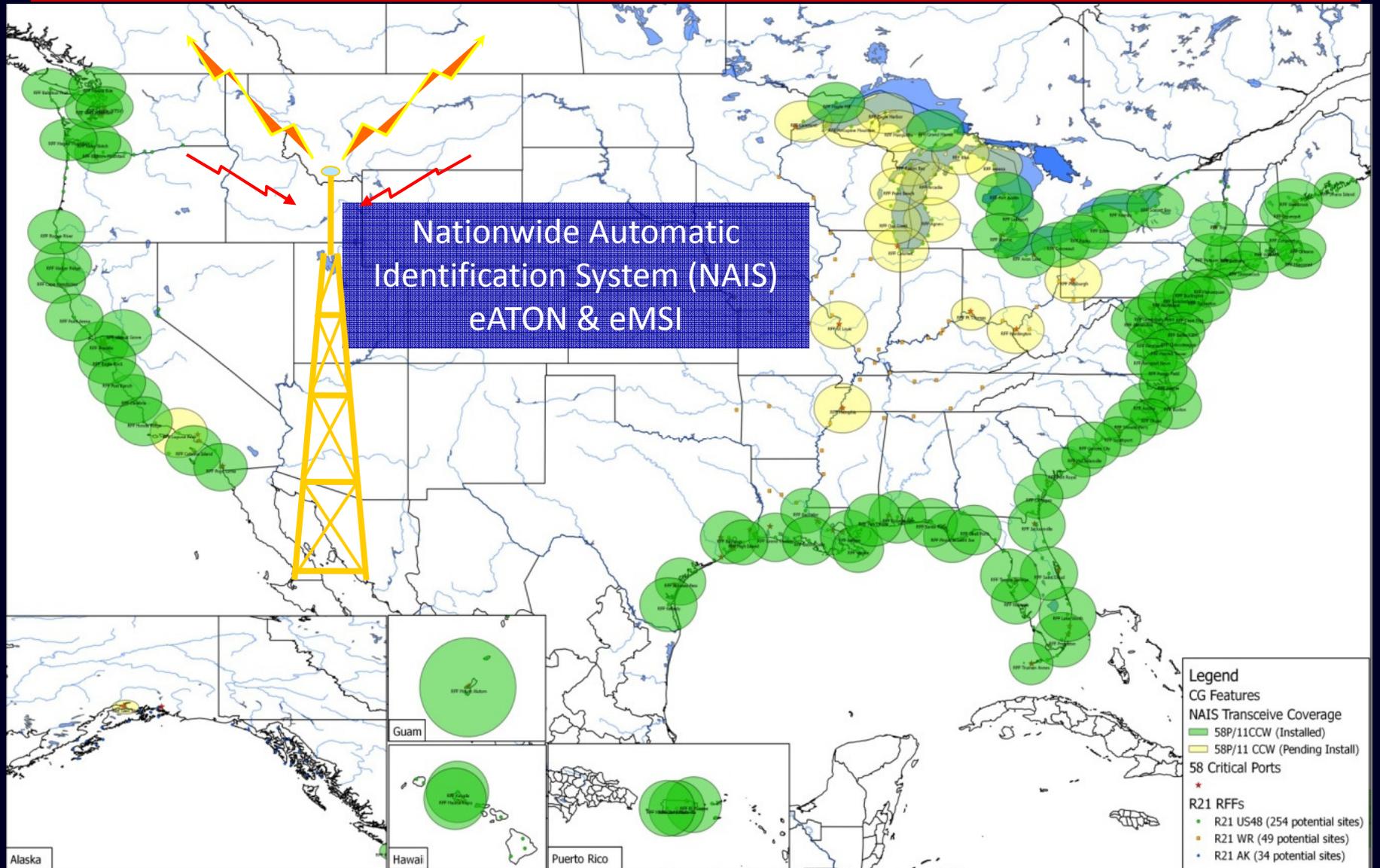
Improve VTS with Technology, Training

History: Movement Reporting → Radar → AIS





21ST CENTURY WATERWAYS





Smart  Chart
AIS

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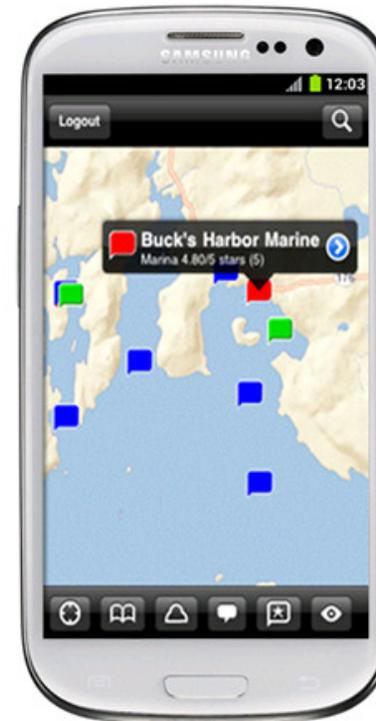
Android App now available!!

FEATURES

It's easy to know exactly where you are and what other vessels are around you. You can also chat with friends on other boats, find the best fuel and dockage prices, see your way in low visibility, and much more.

Smart Chart AIS gives you:

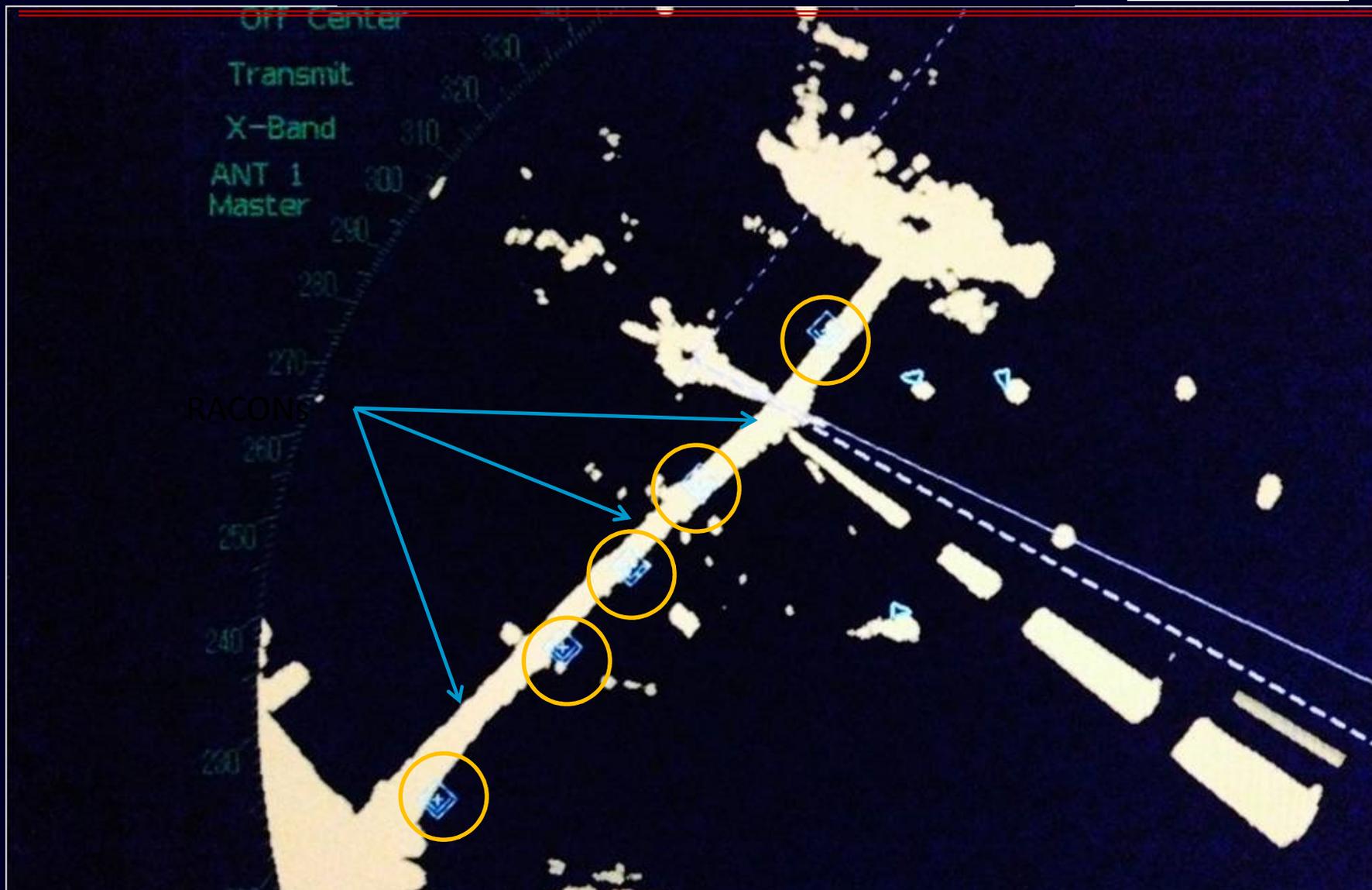
- Electronic Charts
- AIS (Automatic Identification System) via cellular networks
- Augmented Reality (see your way into the harbor or anchorage even in the fog or dark)
- Social Networking
- **All on your Smartphone or Tablet. And it's completely free!**



U.S. Department of
Homeland Security
**United States
Coast Guard**



21ST CENTURY WATERWAYS "NAV DISPLAY IN YEARS PAST"



U.S. Department of
Homeland Security
United States
Coast Guard

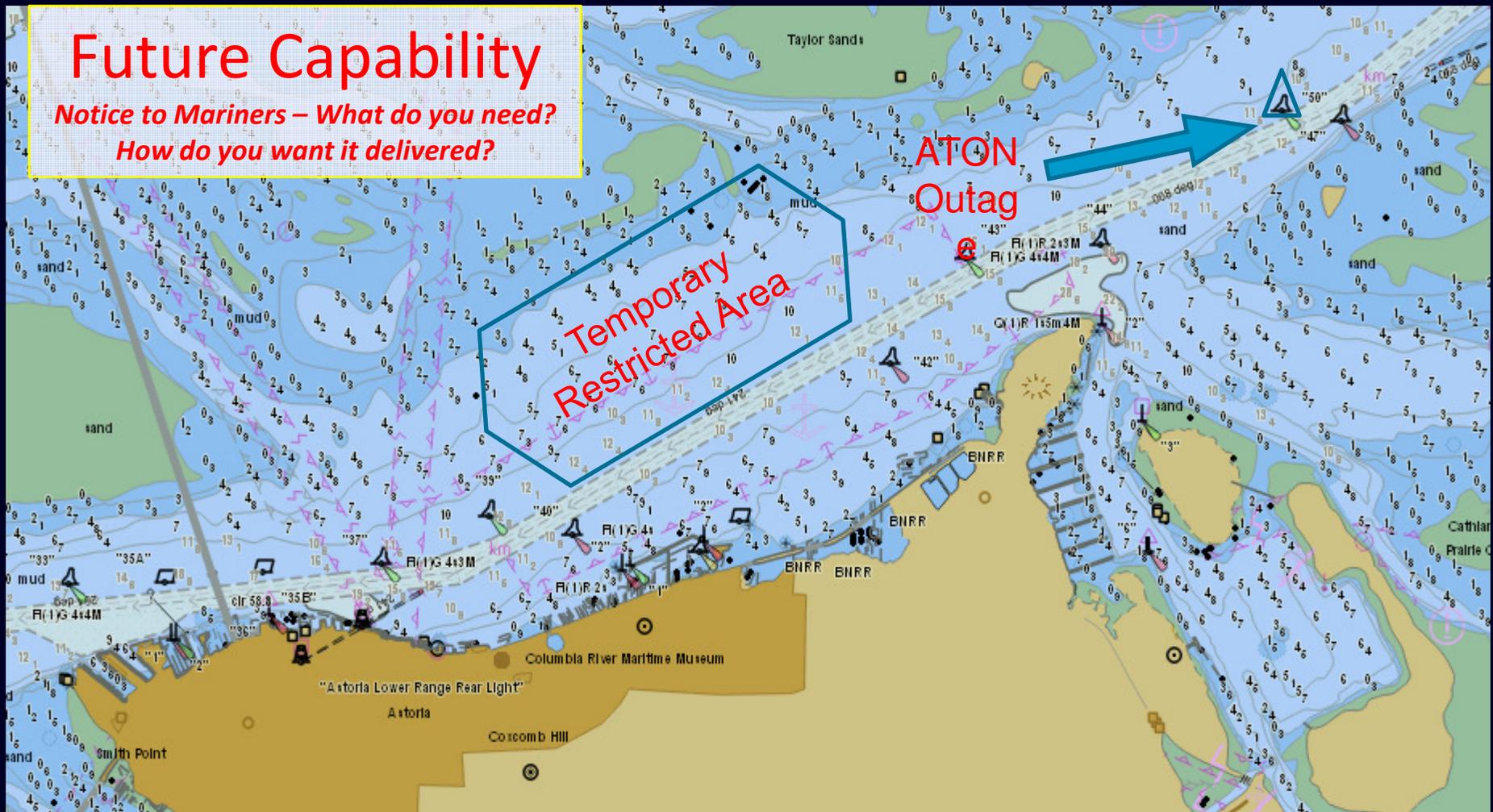


21ST CENTURY WATERWAYS "IMPROVED NAVIGATION DISPLAY"



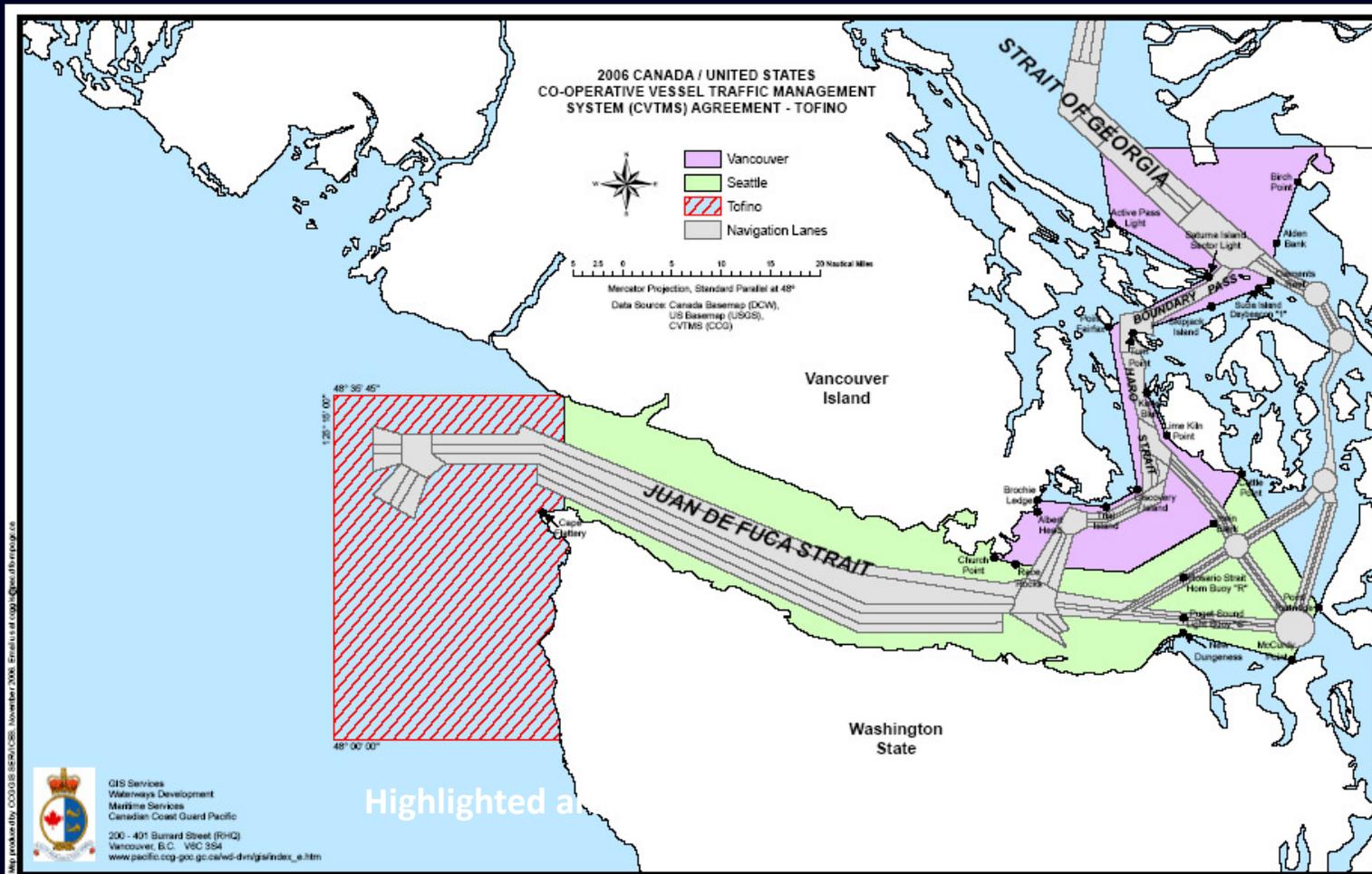
Future Capability

Notice to Mariners – What do you need?
How do you want it delivered?





Implemented a Cooperative Vessel Traffic Service (CVTS) Using VTS Operations from Both Countries



Port State Control Safety and Environmental Protection Compliance Targeting Matrix



I	II	III	IV	V
<p>SHIP MANAGEMENT</p>	<p>FLAG STATE</p>	<p>RECOGNIZED ORGANIZATIONS</p>	<p>VESSEL HISTORY</p>	<p>SHIP PARTICULARS (SEE NOTE)</p>
<p>5 POINTS Listed Owner, Operator, or Charterer</p>	<p>7 POINTS Flag State has a detention ratio 2 or more times the overall average for all flag States.</p>	<p>PRIORITY I Detention ratio equal to or greater than 2%</p>	<p>PRIORITY II First time to U.S. or no port State control exam in the previous 12 months.</p>	<p>4 POINTS General Cargo Ship Ro-Ro Cargo Ship Vehicle Carrier Passenger Ship involved in "day trips" or ferry service</p>
<p>2 POINTS Flag State has a detention ratio between the overall average and up to 2 times the overall average for all flag States.</p>	<p>2 POINTS Flag State has a detention ratio between the overall average and up to 2 times the overall average for all flag States.</p>	<p>5 POINTS Detention ratio less than 2% but greater than or equal to 1%</p>	<p>5 POINTS EACH Detention, denial of entry, or expulsion in the previous 12 months.</p>	<p>2 POINTS Bulk Carrier Refrigerated Cargo</p>
<p>NO POINTS Detention ratio less than .5%</p>	<p>3 POINTS Detention ratio less than 1% but greater than .5%</p>	<p>3 POINTS Detention ratio less than 1% but greater than .5%</p>	<p>1 POINT EACH COTP restricted the operations of the vessel for safety related issues in the previous 12 months (including LODs)</p>	<p>1 POINT Oil or Chemical Tanker</p>
<p>NO POINTS Detention ratio less than .5%</p>	<p>2 POINTS Flag State has a detention ratio between the overall average and up to 2 times the overall average for all flag States.</p>	<p>NO POINTS Detention ratio less than .5%</p>	<p>1 POINT EACH Reportable marine casualty in the previous 12 months</p>	<p>SHIP AGE (USE DELIVERY DATE)</p> <p>0-4 years - subtract 3 5-9 years - subtract 2 10-14 years - add 0 15-19 years - add 3 20-24 years - add 5 25+ years - add 7</p>
<p>NO POINTS Detention ratio less than .5%</p>	<p>2 POINTS Flag State has a detention ratio between the overall average and up to 2 times the overall average for all flag States.</p>	<p>NO POINTS Detention ratio less than .5%</p>	<p>1 POINT EACH Marine violation in the previous 12 months</p>	<p><i>Note: For Qualship 21 vessels only; points should not be added in this column, but points can be subtracted for age.</i></p>

Total Targeting Score
(Sum of Columns I-V) determines vessels priority (PI, PII, or NPV)

Ships Screened, Monitored...Inspections/Enforcement

STEP 1

Provide 96 Hour
Advance Notice of
Arrival

STEP 2

Risk Based
Screening of
Vessels prior to
Entry

STEP 3

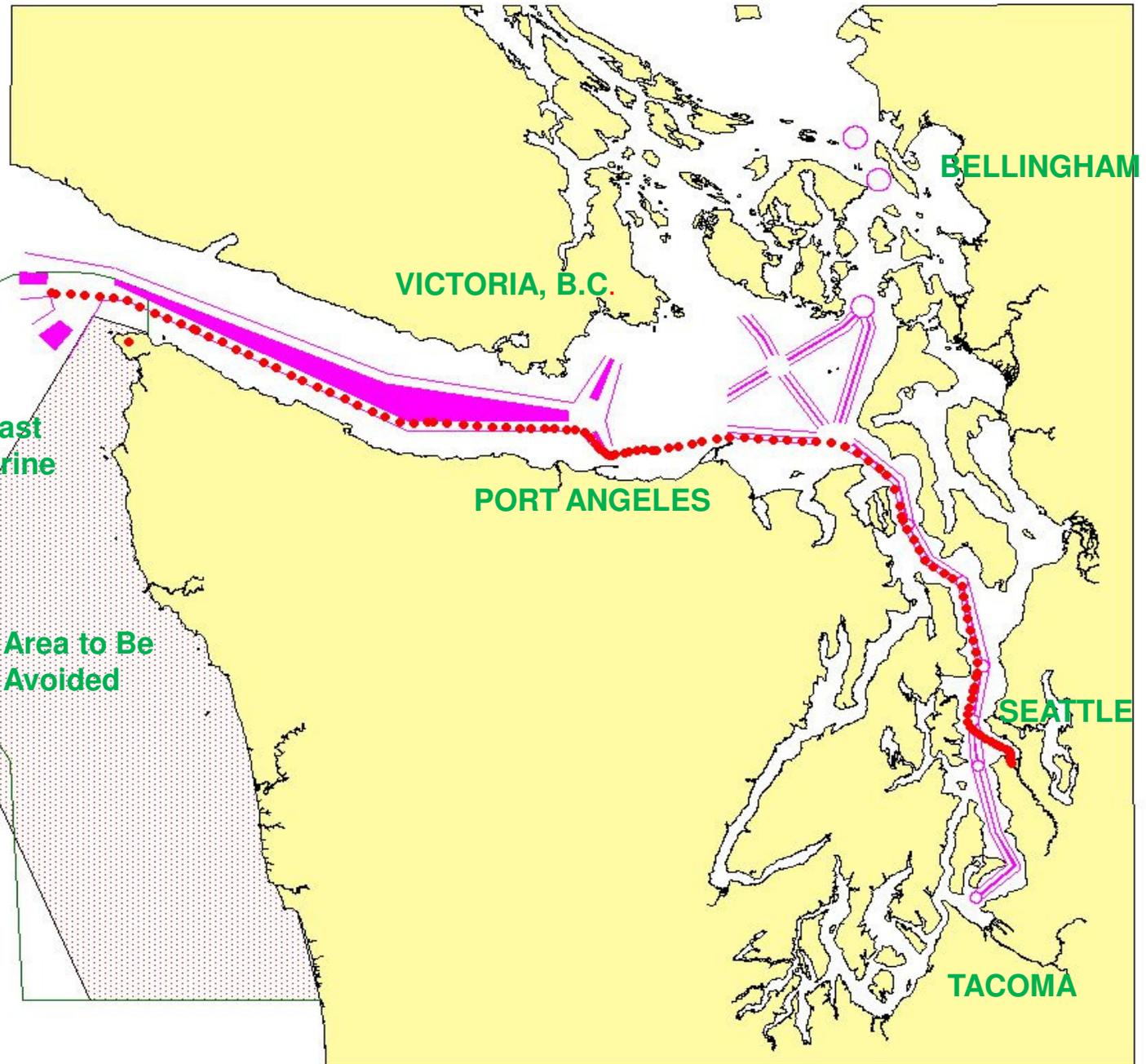
Pre-Arrival
Safety Tests

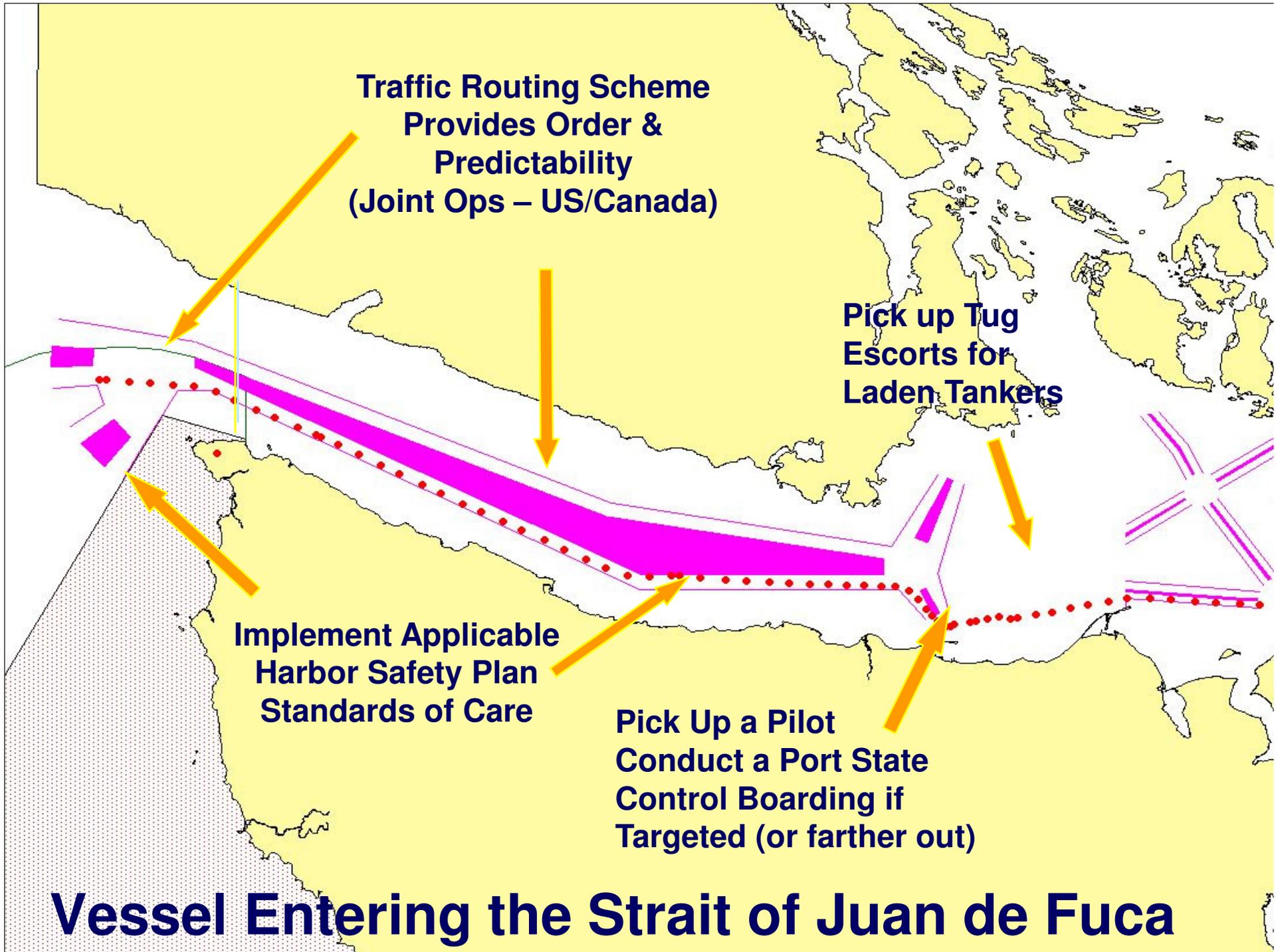
STEP 4

Check Into
Traffic System

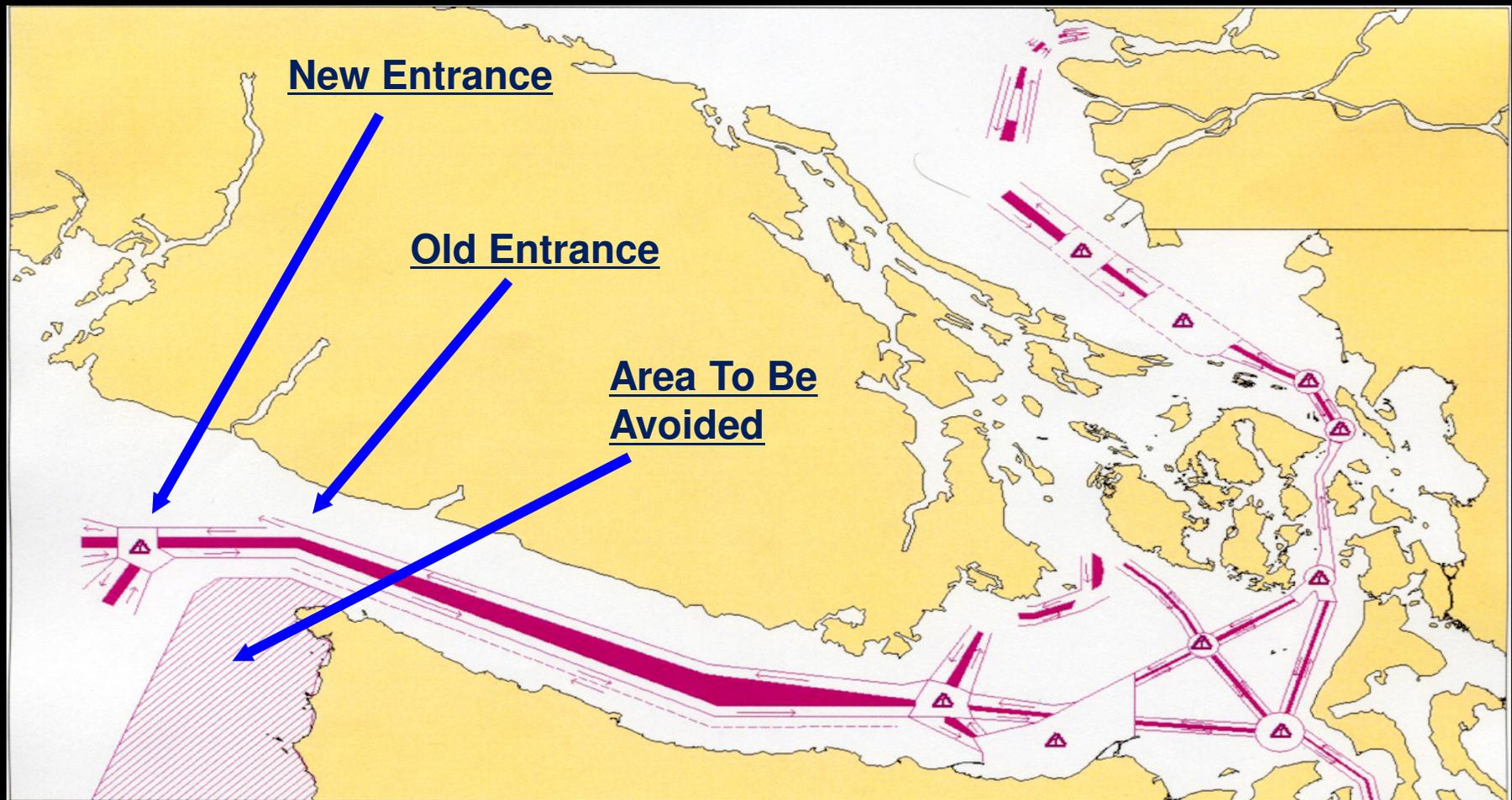
Olympic Coast
National Marine
Sanctuary

Area to Be
Avoided





Example: US/Canada Vessel Traffic Management Continuous Improvement



Pilotage in Both US and Canada is Comparable



Both using Portable Pilot Units Now

Laden Tanker Tug Escort:

US, Canadian Laden Tanker Tug Escort Schemes are Comparable

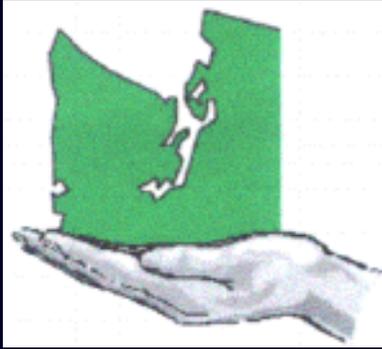


Vessel Design Improvements

Example: Larger Container Ships



**New Technology and Ship Design Improvements
like Protectively Located Fuel Tanks**

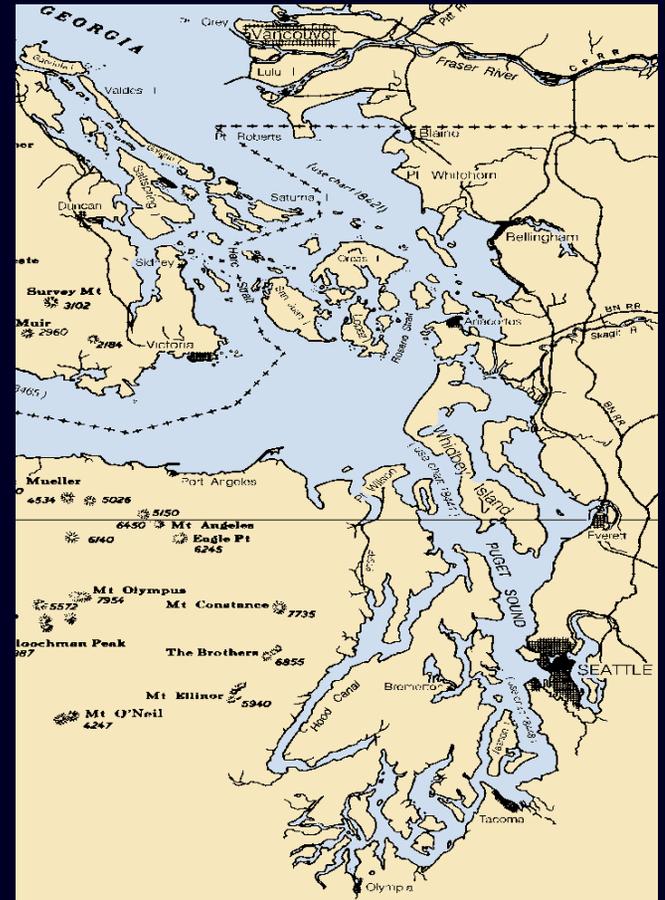


Puget Sound Harbor Safety Committee

“PARTNERSHIP FOR SUCCESS”

The informal organizational structure and mutual cooperation of its members have allowed HSC to become the ideal model for balancing the needs of various interests in the marine environment whether they are economic, environmental recreational, regulatory or national defense.

www.pshsc.org



Harbor Safety Plan

Continuous Improvement through Standards of Care (SOC's)

- **Modified Propulsion Loss Prevention Standard of Care (SOC) to address fuel switching**
- **Modified Anchoring SOC regarding severe weather**
- **Tug/Barge Situational Awareness SOC for Rosario Strait**
- **Deadship Tow Standard Developed**
- **Crane Ops SOC During Vessel Movement**

Safety Net + Deep Wide Waterways = Safe System



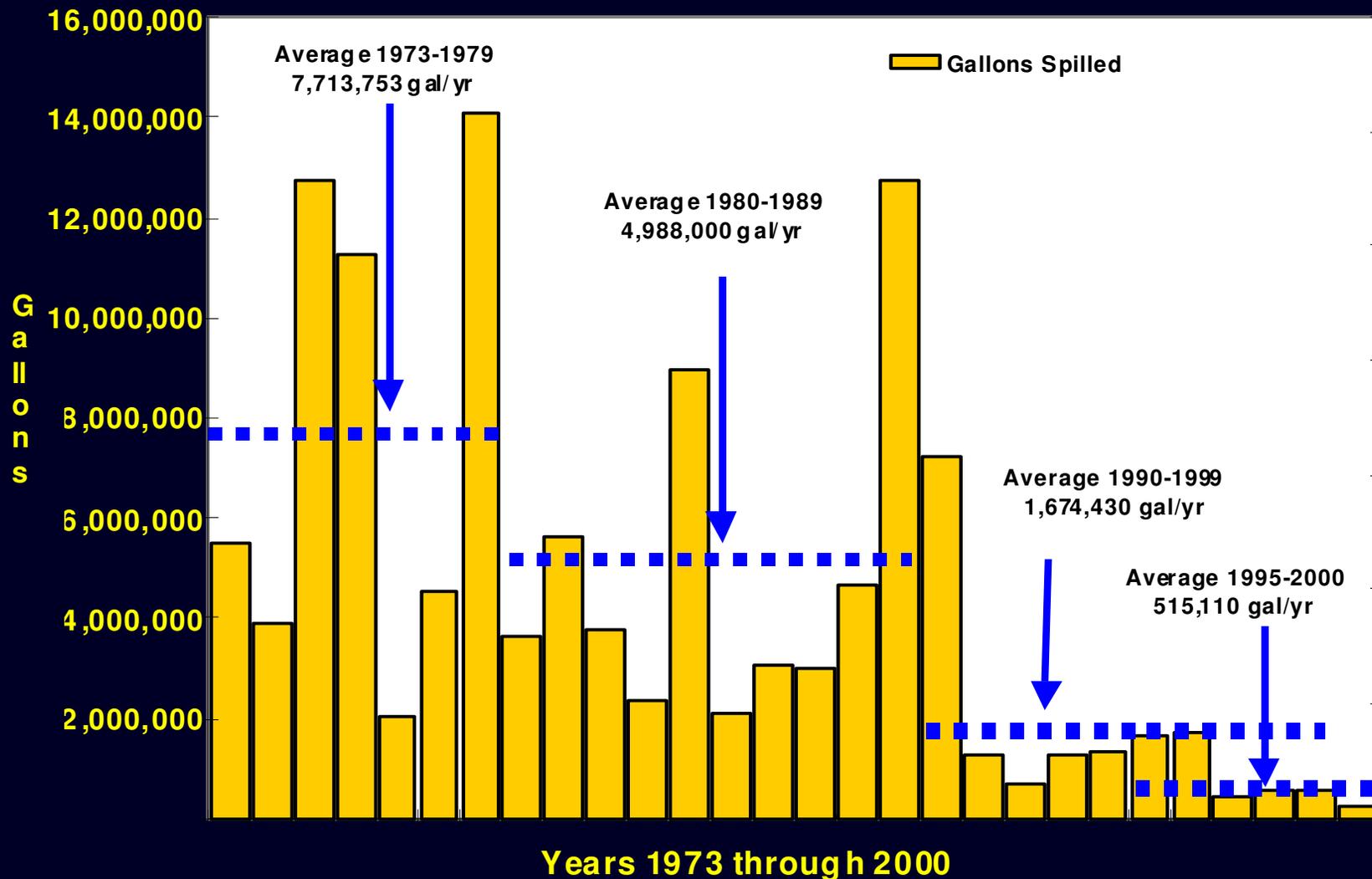
*Container Vessel
Departing Tacoma*

An aerial photograph of a rugged coastline. The top half of the image is dominated by a dense, dark green forest covering a steep hillside. Below the forest, a narrow strip of dark sand beach is visible. The bottom half of the image shows the ocean with several waves breaking against a rocky shore. The water is a deep blue-green color, and the rocks are dark and jagged. The overall scene is dramatic and scenic.

Results

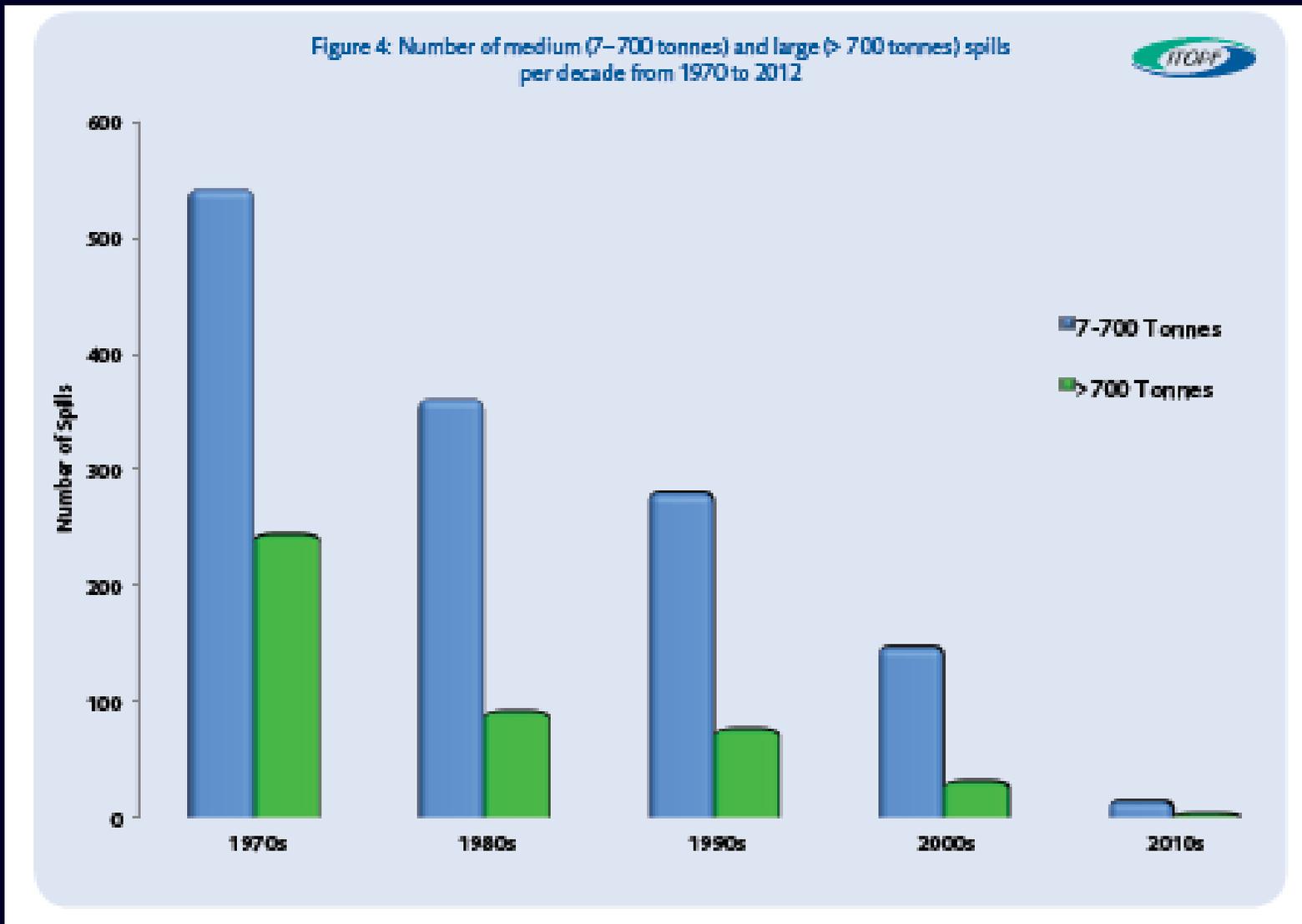
Volume of Oil and Number of Spills

All Vessel Types in U.S. Waters



PNW Performance: Zero Spills by Cargo Vessels Transiting to/from Puget Sound Ports Since Recordkeeping Started in 1972

Worldwide Oil Spill Trends



Summary

We Have a Very Safe System

BUT....

- ✓ **Must Use Lessons Learned**
- ✓ **Adapt to Changes in Vessel Traffic**
 - Ongoing Studies Help to Identify Improvements
- ✓ **Ensure System Checks and Balances**
- ✓ **Culture of Safety & Continuous Improvement**