

Port Sustainability- Balancing Competing Priorities

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Goals of the Presentation:

- Sustainable port development –Survey of best practices
- Lessons from 4 types of applied projects:
 - Redevelopment
 - Asset Management
 - Climate Change Adaptation
 - Community License to Operate



How have we defined Sustainability?

Business strategies and activities that meet the current and future needs of the port and its stakeholders, while protecting and sustaining human & natural resources



AAPA Sustainability Task Force, March 2007

Sustainable development defined

Economic growth that will benefit the present and future generations without detrimentally affecting the resources or biological systems of the planet.

- President's Council on Sustainable Development, 1996



Environmental Initiatives at Seaports: Findings

- No silver bullets elsewhere
- Port context is key determinant of projects
- Collaboration is increasing
- Investment drives the major changes

Source: Environmental Initiatives at Seaports Worldwide, International Institute of Sustainable Seaports; May 1, 2010



Why Focus on Projects?

“Opportunity trumps responsibility” * in developing a business case and implementing sustainability



* John Pauling, Worley Parsons, at HNE Seminar 2010

Key drivers for sustainability at Port of Portland

- Support organization's mission.
- Manage key stakeholder relationships.
- Manage limited resources.
- Realize return on investment.



Engineering Code of Ethics

Engineers shall hold paramount the safety, health, and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties.

American Society of Civil Engineers



Green Engineering Principles

- Use systems thinking
- Protect ecosystems and health and wellbeing
- Use life-cycle thinking
- Use safe and benign materials and energy
- Conserve natural resources
- Reduce waste
- Be aware of local geography, aspirations and culture
- Seek fundamental and incremental change beyond current technologies
- Engage communities and stakeholders

Characteristics of sustainable development

- Long-term perspective
- Focus both on what you're doing and how you're doing it
- Strategic thinking in investments and decision-making
- Gains are derived from both small steps and big steps
- Business case is based on three classes of benefits:
 - Return on investment (capital cost, pay back, maintenance reductions, etc.)
 - Environmental, employee, community benefits
 - Implementation issues, schedule impact, risk reduction
- Balancing priorities with your business & service partners

Methods and tools

- Leadership in Energy and Environmental Design (LEED)
- Cost-benefit analysis
- Economic impact assessment
- Environmental impact analysis
- Life cycle cost analysis
- Project impact assessment
- Risk assessment



LEED explained

LEED certification is organized into five environmental categories

- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor environmental quality



Toyota- Portland: A Gold LEED example



Toyota facility planning & evaluation

- Toyota design and facility goals
- Environmental and community impacts
- Life cycle cost development
- Leadership in Energy and Environmental Design (LEED)



Toyota facility criteria

- Efficient Development Timeline
- Reduced operating cost
- Simplified permitting process
- Continuous improvement
- Meets Port's environmental goals
- Accommodates future growth



LEED sustainable sites

- Erosion control
- Appropriate site selection
- Urban redevelopment
- Brownfield redevelopment
- Light pollution reduction
- Storm water management
- Conservation/restoration of damaged areas
- Incentives for alternative transportation
- Reduced use of potable water for irrigation



Photo of bank prior to re-grading and landscaping

Toyota facility sustainability benefits

- Indoor air quality
- Employee amenities
 - Bicycle facilities
- Future compliance issues
- Reduced community impacts
- Improved river ecology
- Expedited construction
- Tax and fee benefits
- Mass transit commuting incentives



Re-grading and erosion control



Riverbank restoration



Toyota facility results

- Riverbank restoration of 7 acres
- LEED Gold Certified buildings
- Industry leading recycling rate of 95%
- Water reduction of 75%
- Electricity reduction of 33%
- Positive return on investment



Toyota facility lessons learned

- A willing business partner is essential.
- Return on investment is long-term.
- Integrate permit and design strategy early.
- Incentives help.
- Brownfield redevelopment is achievable.
- Need to plan for growth.
- Community outreach needs to be constant.
- Results are replicable.

Return on Asset Evaluation: Taking the long view in sustainable development

- Potash terminal with recent significant site investments:
 - Capacity improvements
 - Environmental enhancements
- Inspection identified degradation of the dock due to construction flaws and chloride ion corrosion
- \$8 million fix, with a shared responsibility, no new revenue opportunity, and a long-term lease in place



Evaluation Technique: Return on total Assets

- Definition: $\text{Net Income (NI)} / \text{Average Total assets (TA)}$
- Measures how efficient management is at using its assets to generate earnings/net income
- Higher the ROA % the better business line is in making a profit on its investment.
- “. . . management's most important job is to make wise choices in allocating its resources. Anybody can make a profit by throwing a ton of money at a problem, but very few managers excel at making large profits with little investment.”
(<http://www.investopedia.com/terms/r/returnonassets.asp>)

Terminal 5 Dock repair & Corrosion Protection

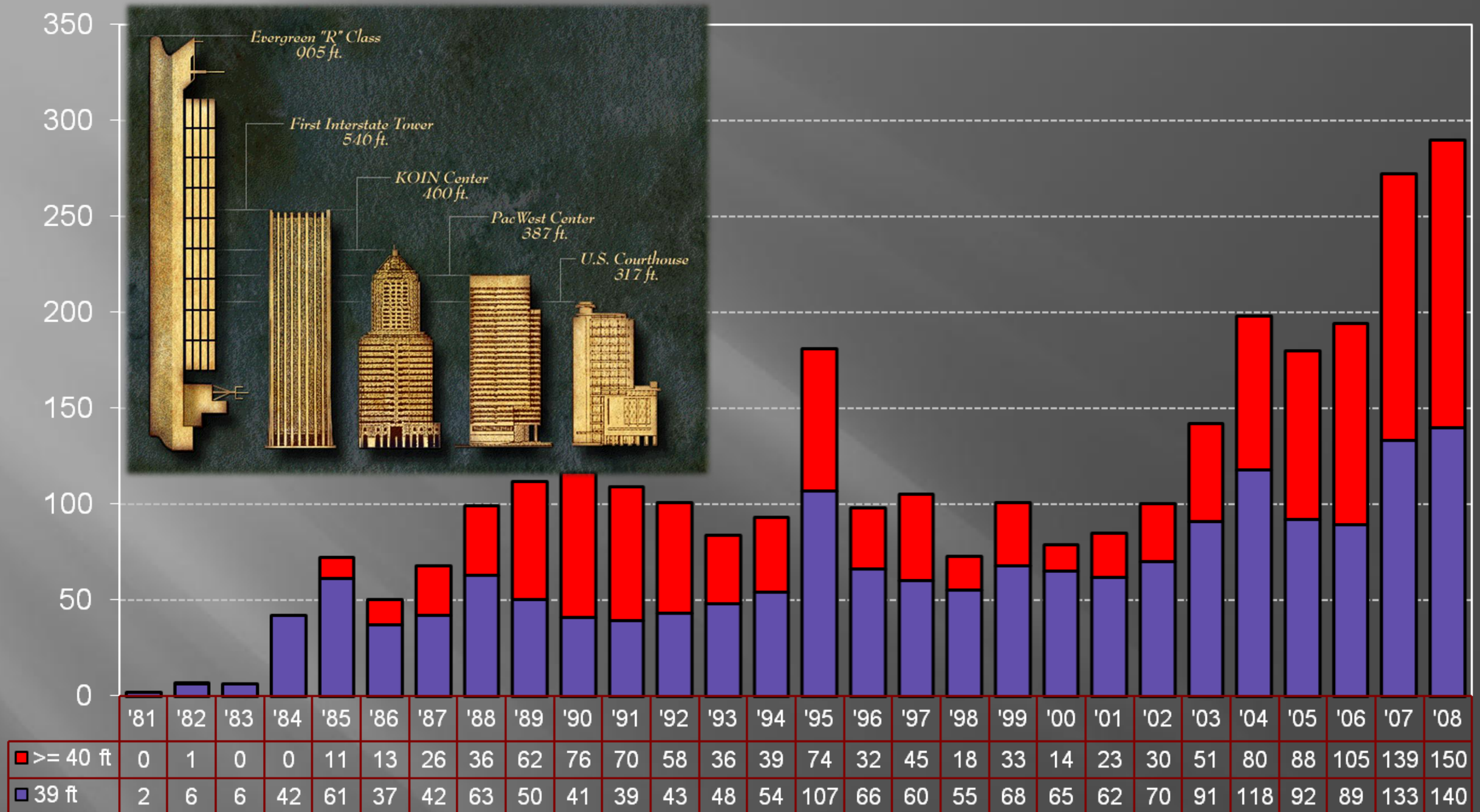
- Sustainability considerations:
 - Long-term solution required
 - Integrated permitting considerations into project approach
 - Balance investment with
- Business Case relied on:
 - Maintenance reductions
 - Risk mitigations
 - Asset preservation
 - Return on Asset evaluation to justify investment



Sustaining navigation in a constrained channel



Columbia River Vessel Transits With Drafts of 39 feet or More 1981 - 2008



Source: Port of Portland from data provided by the Columbia River Pilots

Columbia River Forecast



Forecast Last Updated On: 3/30/2010

RIVER MILE:		15	25	35	45	55	65	75	85	95	105
Date	Hour	Astoria	Skamokawa		Wauna	Beaver	Longview	St. Helens	Vancouver		
04/23/2001	13		6.05		4.42	4.07	2.38	0.99	1.33		
04/23/2001	14		6.94		5.79	5.54	3.71	1.09	1.06		
04/23/2001	15		6.91		6.51	6.45	5.06	1.95	1.01		
04/23/2001	16		5.86		6.28	6.62	5.85	3.02	1.41		
04/23/2001	17		4.19		5.14	5.60	6.03	3.56	2.32		
04/23/2001	18		2.54		3.84	4.35	5.16	3.79	3.18		
04/23/2001	19		1.19		2.62	3.15	4.38	3.33	3.62		
04/23/2001	20		0.42		1.53	2.14	3.95	3.06	3.36		
04/23/2001	21		0.83		0.77	1.35	3.58	2.79	2.93		
04/23/2001	22		2.31		0.68	1.02	3.13	2.36	2.53		
04/23/2001	23		4.17		2.04	1.70	2.67	1.92	2.21		
04/24/2001	0		5.99		3.99	3.57	2.56	1.56	1.89		
04/24/2001	1		7.42		5.77	5.40	3.36	1.39	1.61		
04/24/2001	2		8.16		7.03	6.76					
04/24/2001	3		7.78		7.59	7.55					
04/24/2001	4		6.34		7.01	7.41					
04/24/2001	5		4.33		5.65	6.15	6.72	4.38	3.27		
04/24/2001	6		2.32		4.16	4.68	5.70	4.48	4.04		
04/24/2001	7		0.49		2.75	3.36	4.87	3.95	4.27		
04/24/2001	8		-0.83		1.49	2.23	4.39	3.59	3.83		
04/24/2001	9		-1.39		0.51	1.29	3.91	3.18	3.35		

Transit of optimal under keel clearance

2010 Lower Columbia Low Flows



January - July Forecast

69.4 MAF 65% of (1971-2000) average

Historical January-July Volumes in MAF
 Mean: 107 Min: 53 Max: 159

Year	Jan-Jul Vol (MAF)	Rank	Exceedance Prob
1987	78.64	43	84.314 %
1994	76.40	44	86.275 %
1988	75.54	45	88.235 %
1992	73.55	46	90.196 %
1973	70.99	47	92.157 %
2010	69.40	48	94.118 %
2001	58.19	49	96.078 %
1977	53.29	50	98.039 %

Rankings and probabilities based on
 historical water years 1961 to 2010

**The Dalles
 Jan-Jul
 Volume Fcst**

- Drought results in fewer sailing windows & draft restrictions

VANW1
PRT03

2001_(JUL/14) **1973_(SEP)**

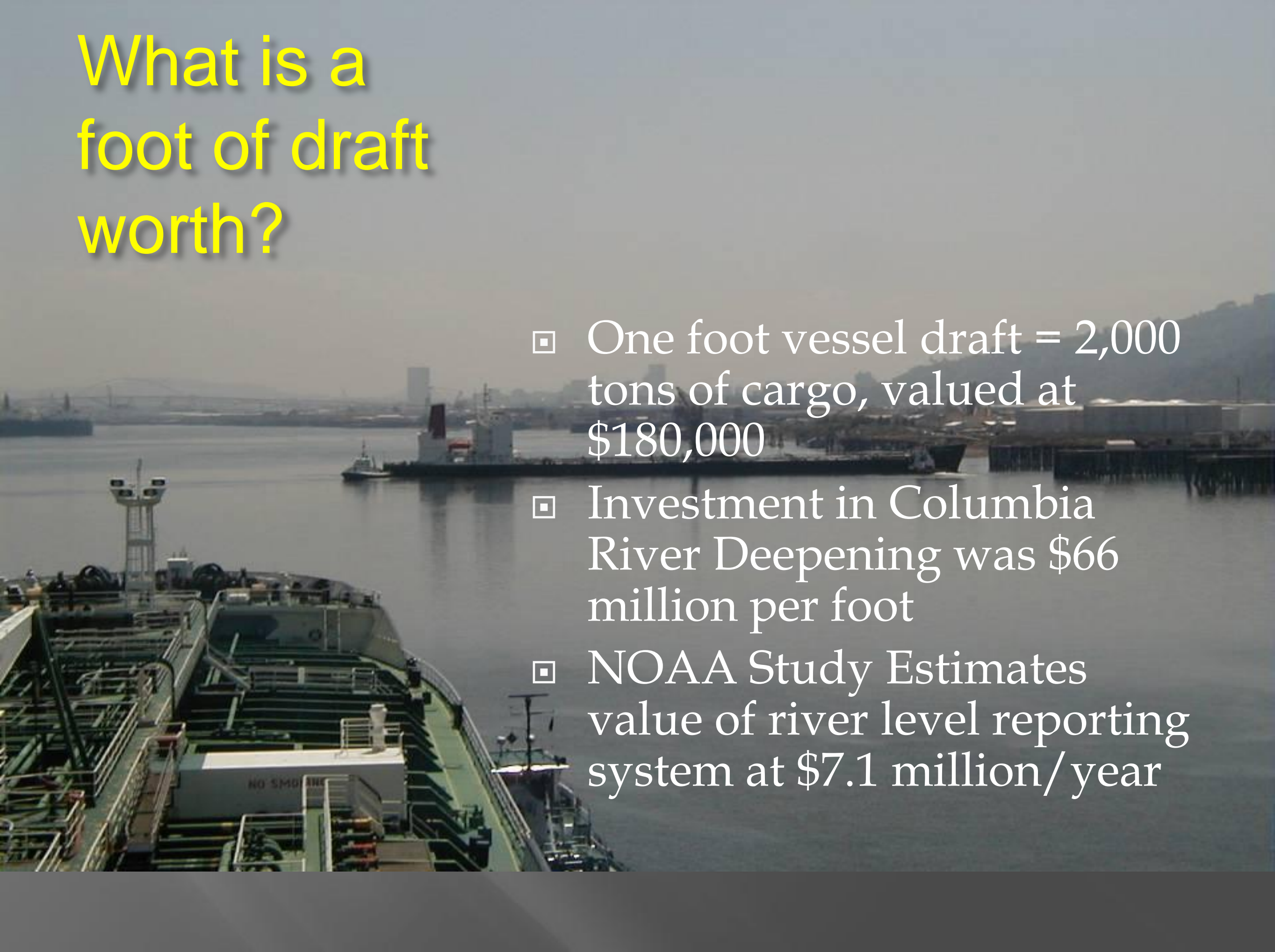
-.74 ft

-.7

-.58 ft

What is a foot of draft worth?

- ▣ One foot vessel draft = 2,000 tons of cargo, valued at \$180,000
- ▣ Investment in Columbia River Deepening was \$66 million per foot
- ▣ NOAA Study Estimates value of river level reporting system at \$7.1 million/year



Actions we take to deal with Low Water:



- ▣ Disseminate the information for use within the maritime industry and other stakeholders as early and often as possible
- ▣ Advance bathymetric surveys
- ▣ Increase the frequency of surveys
- ▣ Advance the timing of dredging, obstruction removal & other berth & channel maintenance
- ▣ Advance the timing of dredging, obstruction removal & other berth maintenance
- ▣ Coordinate with ACOE to assure the availability of dredge capability

License to Operate





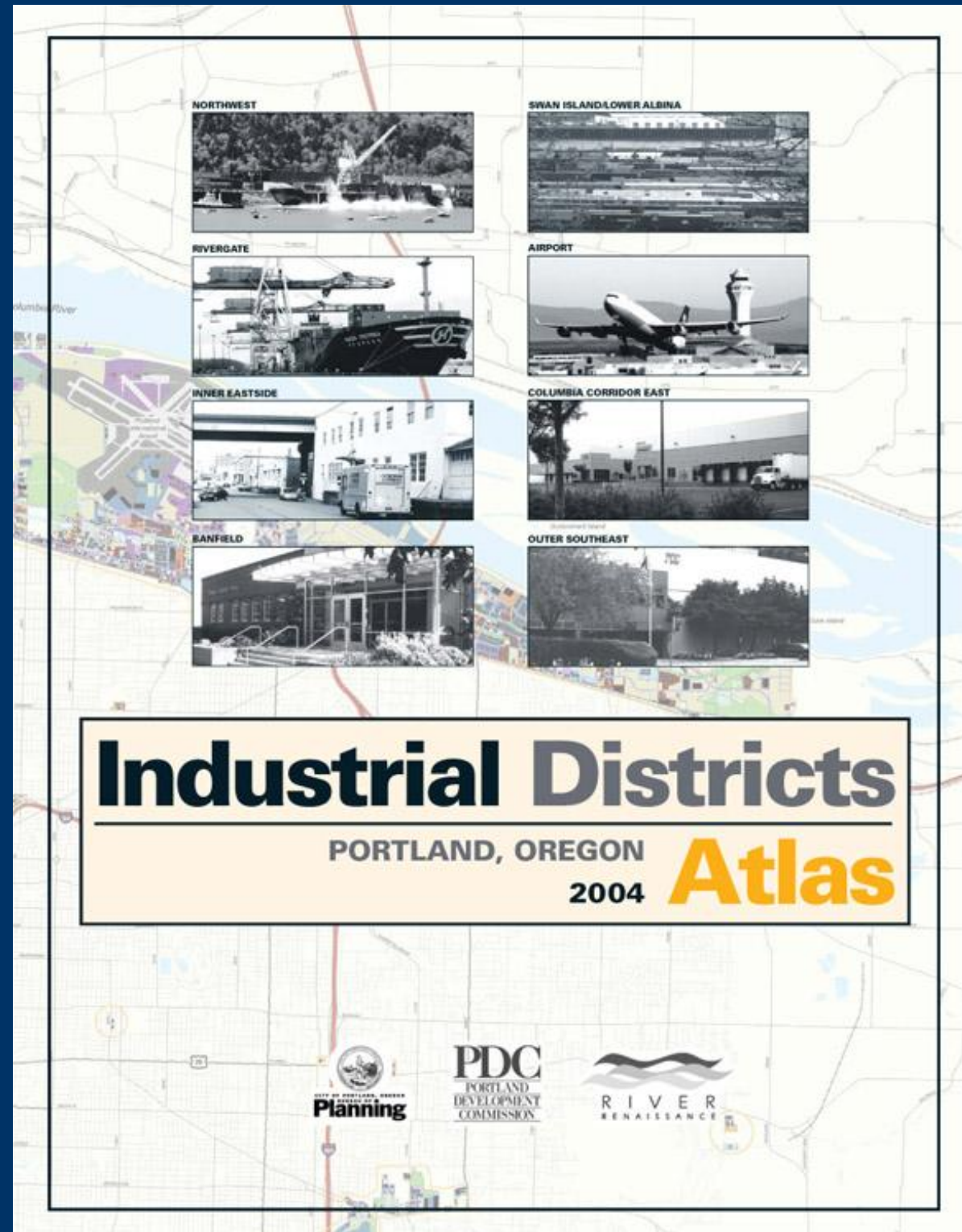
“Portland is one of a handful of cities where the riverside location is nearly as important to prosperity and growth today as it was a century ago.”

— Carl Abbot

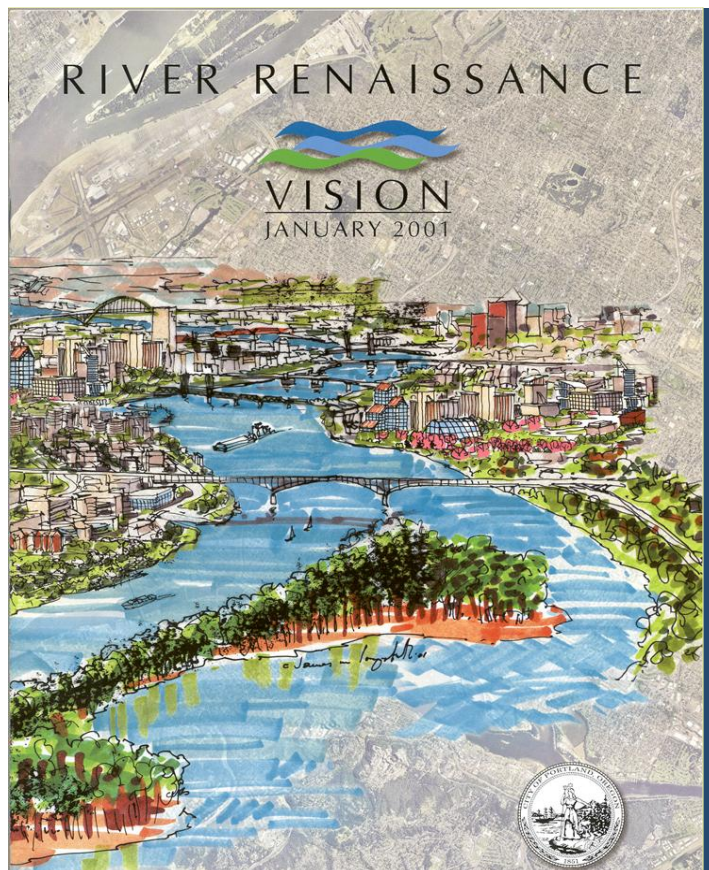
Professor of Urban Studies, Portland State University

“Portland’s
industrial districts
are an
unknown territory to
most residents.”

– Steve Kountz
Industrial Districts Atlas

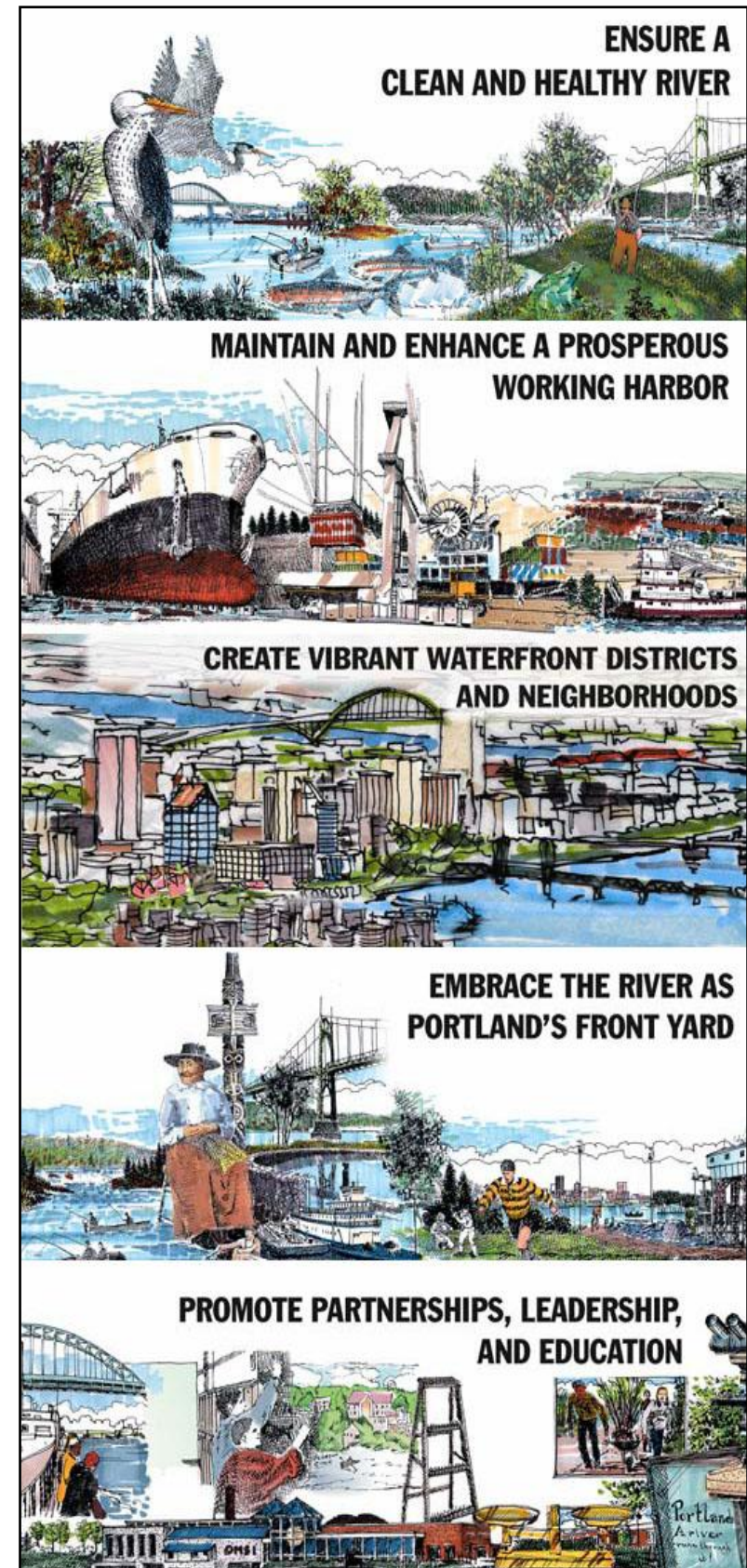


The River Renaissance Vision (2001)



“In Portland, we intend to create an alignment between city and nature unmatched anywhere in the world”

From City of Portland's River Renaissance Strategy



But can a thriving harbor still fit into Portland's Future?

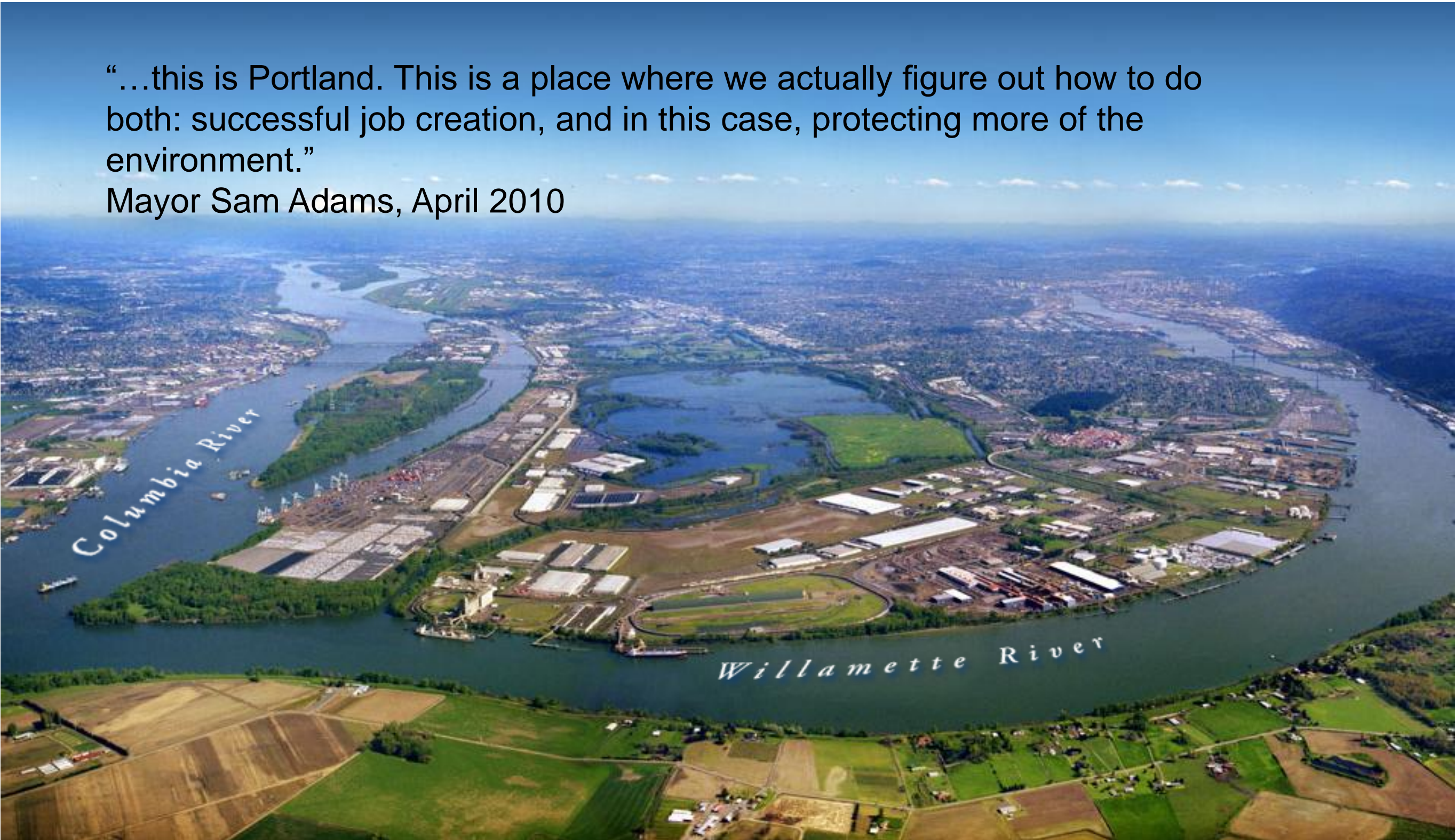
We can work to minimize our footprint, but it is not realistic to have no footprint whatsoever.



River Plan Landscape

“...this is Portland. This is a place where we actually figure out how to do both: successful job creation, and in this case, protecting more of the environment.”

Mayor Sam Adams, April 2010



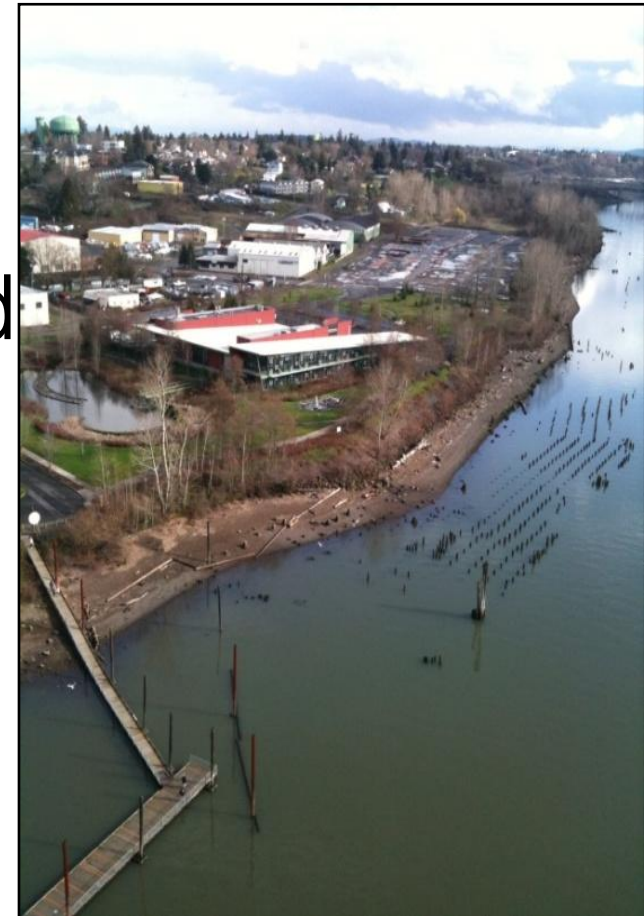
KEY RECOMMENDATIONS

1. Adopt an updated Willamette River Natural Resources Inventory for the North Reach.
2. Adopt a new river environmental overlay zone applied to natural resource areas along the river.
3. Update the environmental conservation and protection overlay zones on upland natural resource areas.
4. Develop a River Restoration Program for the North Reach.

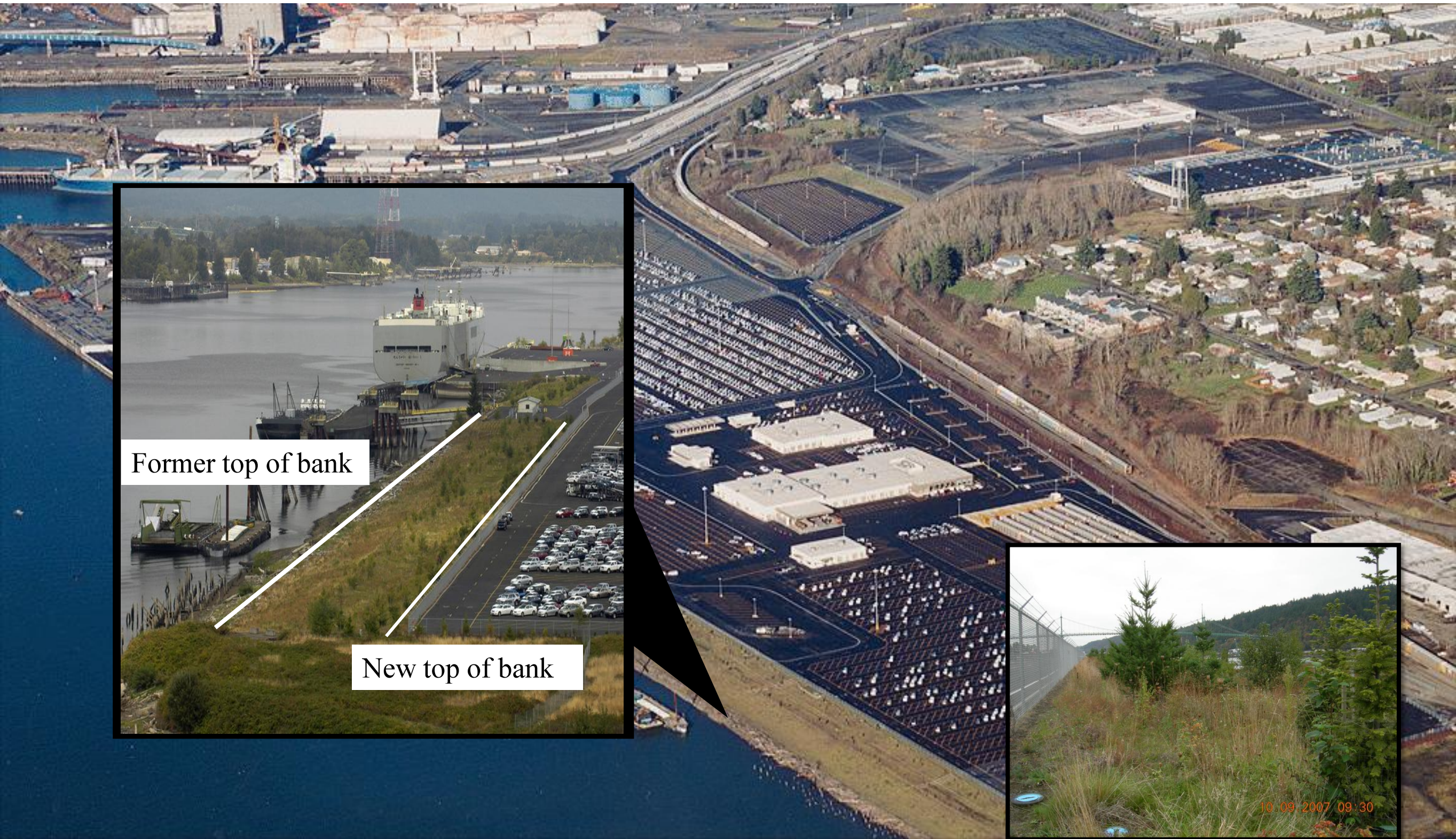


Mayor Adams' Proposed Amendments include:

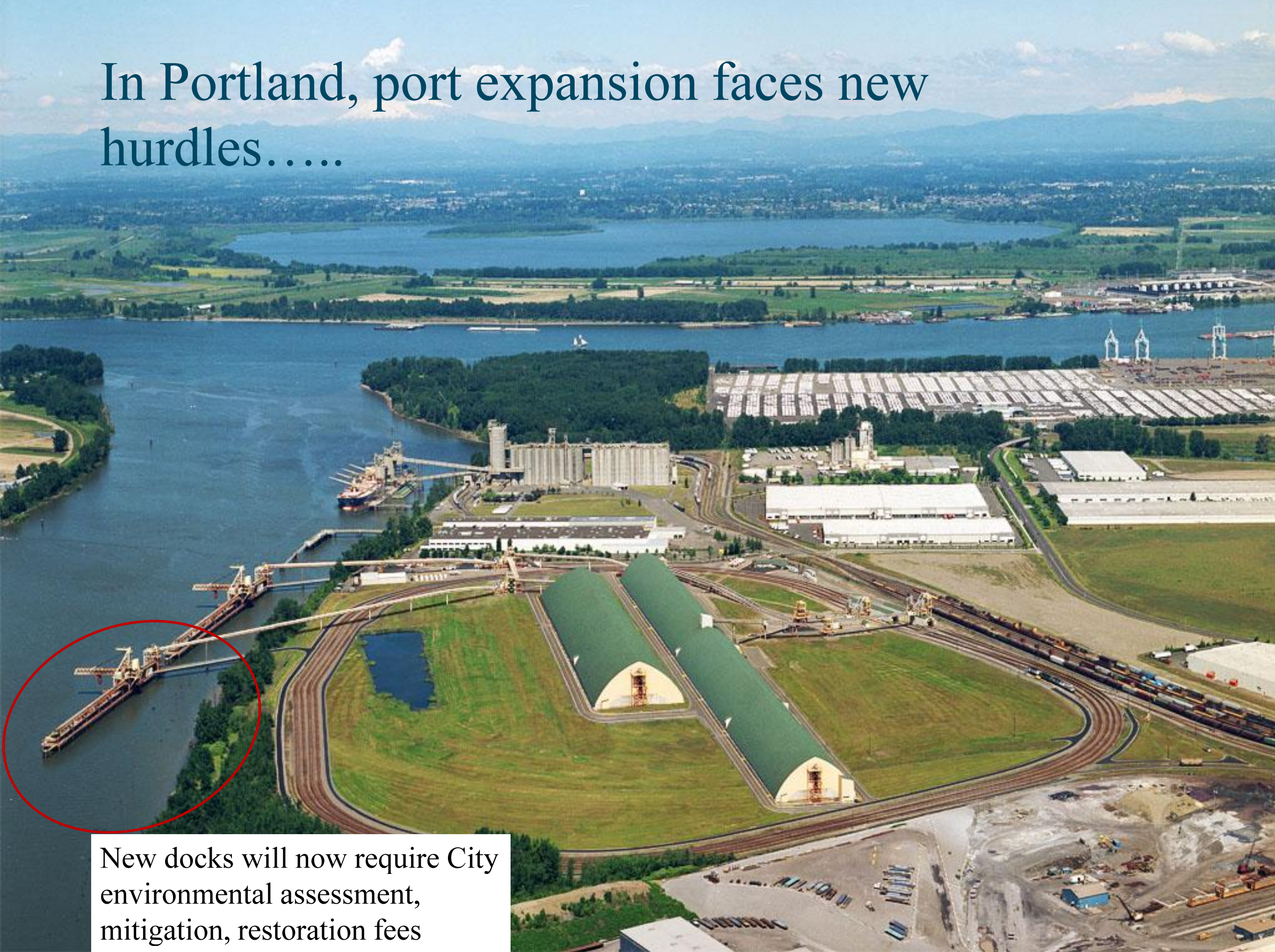
- Revised vegetation standard
- Support for continued review below ordinary high water
- Clarification of when on-site or off site mitigation is preferred
- A temporary fee in lieu of mitigation
- Clarification of the City's role in mitigation banking
- Revised trail alignment in Linnton
- Revised environmental zoning @ University of Portland
- Clarified contamination related code
- New development standards for City parks



Encroachment becomes policy.....



In Portland, port expansion faces new hurdles.....



New docks will now require City environmental assessment, mitigation, restoration fees

Working Waterfront

COALITION





Purpose:

**To advocate policies to enhance and protect
the economic opportunities and job
expansion created by the business activities
in Portland's North Harbor area.**

What is next?

- We have a responsibility to our community and to be stewards of our seaport and harbor land.
- Our license to operate should not be taken for granted and is one of the true sustainability issues for ports.

