

# Progress in Habitat Restoration and Protection in the Columbia River Estuary

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Lower Columbia River Estuary Partnership

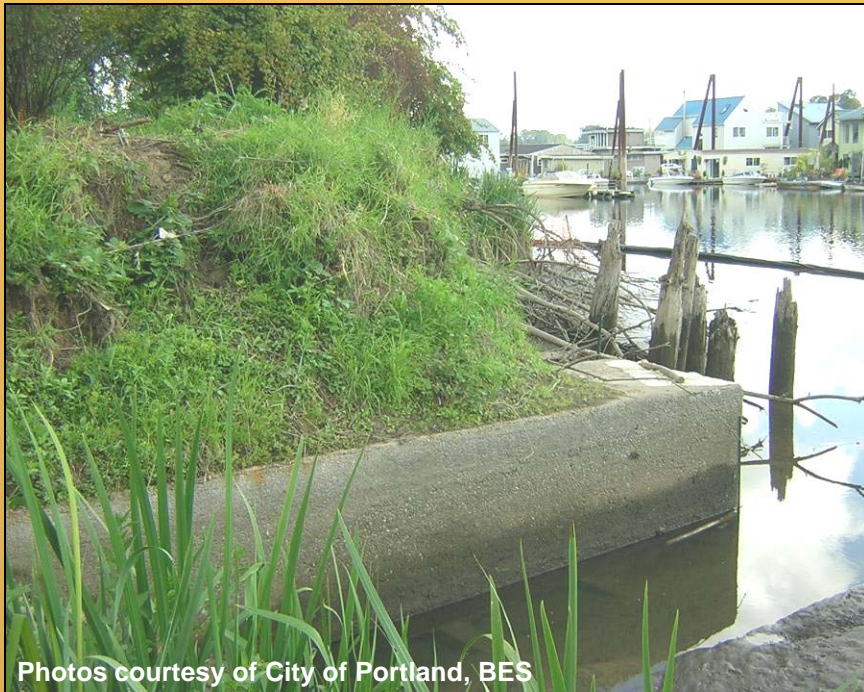


Photos courtesy of SBWC



# Outline of Today's Presentation

- Background on Estuary Partnership Restoration Program
- Summary of restoration in the estuary over the past decade
- Cost analysis
- Thoughts and considerations as we move forward
- Questions



Photos courtesy of City of Portland, BES



# Funding Partners

## **NPCC/BPA**

- ca. \$4,000,000 (2003-2007)
- ca. \$9,000,000 (2008-2010)

## **NOAA – Community Based Restoration**

- ca. \$666,250 (2004-2007)
- ca. \$350,000 (2008-2010)

## **NOAA – Marine Debris Removal**

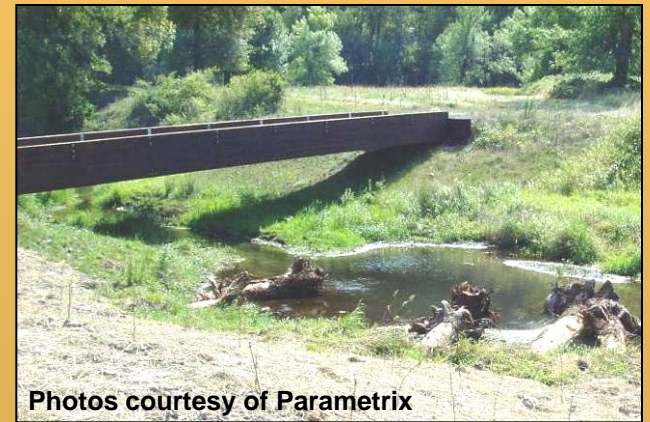
- ca. \$100,000 (2008)

## **EPA – Targeted Watershed**

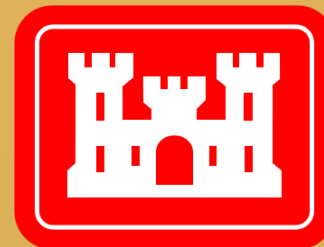
- ca. \$700,000 (2003-2005)
- NEP funds (2003 to date)

## **Corps of Engineers - Section 536**

- ca. \$2,000,000 since 2002



Photos courtesy of Parametrix



# Implementation Partners

- Local Governments
- SWCDs
- Conservation Organizations
- Watershed Councils
- Councils of Government
- Federal and State Agencies
- Consulting Firms



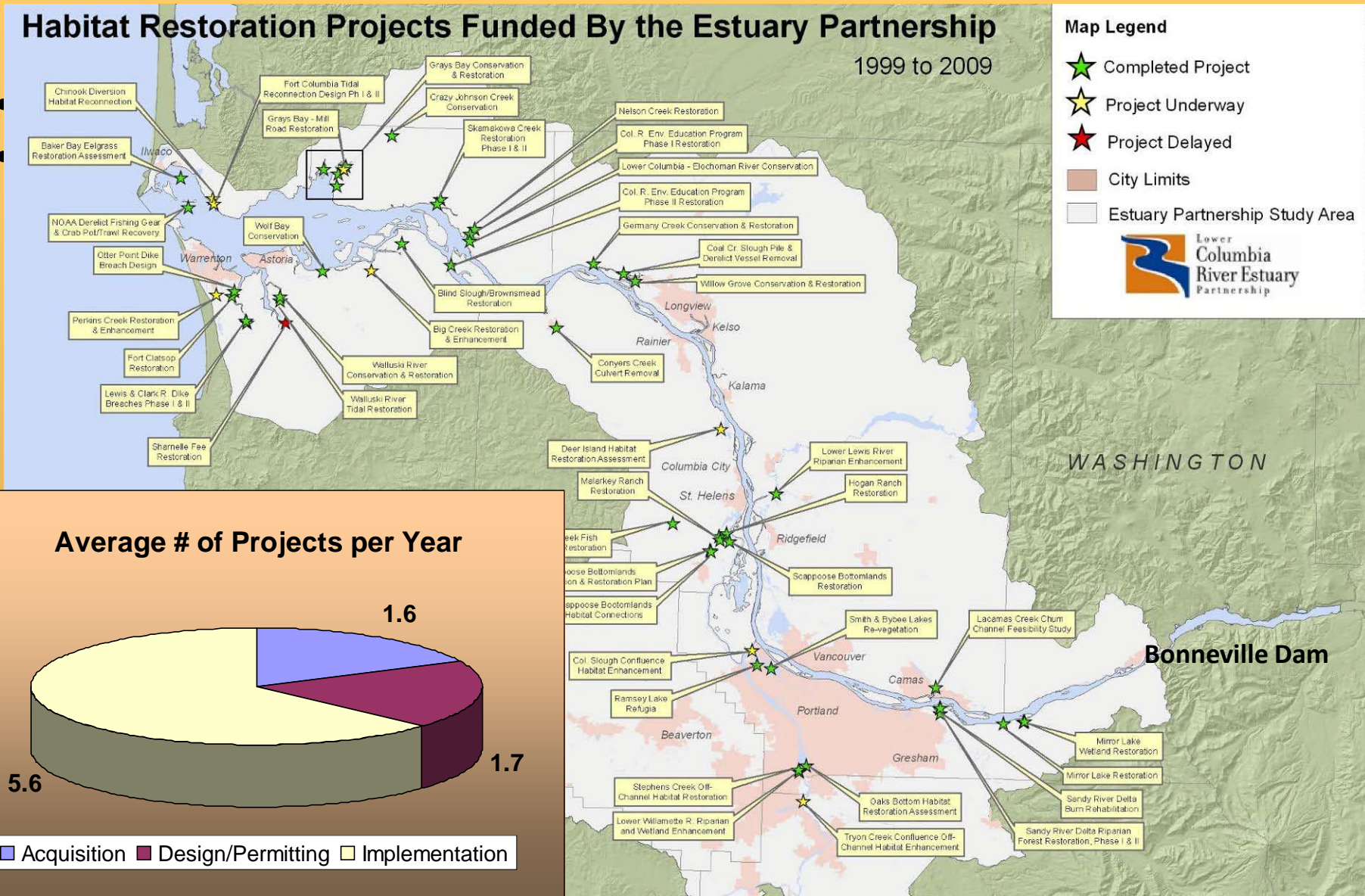
# ... How We Got There Now ...

## Habitat Restoration Projects Funded By the Estuary Partnership

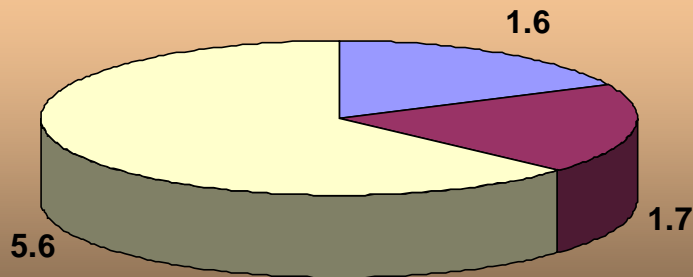
1999 to 2009

### Map Legend

-  Completed Project
  -  Project Underway
  -  Project Delayed
  -  City Limits
  -  Estuary Partnership Study Area
- 



### Average # of Projects per Year



■ Acquisition 
 ■ Design/Permitting 
 ■ Implementation

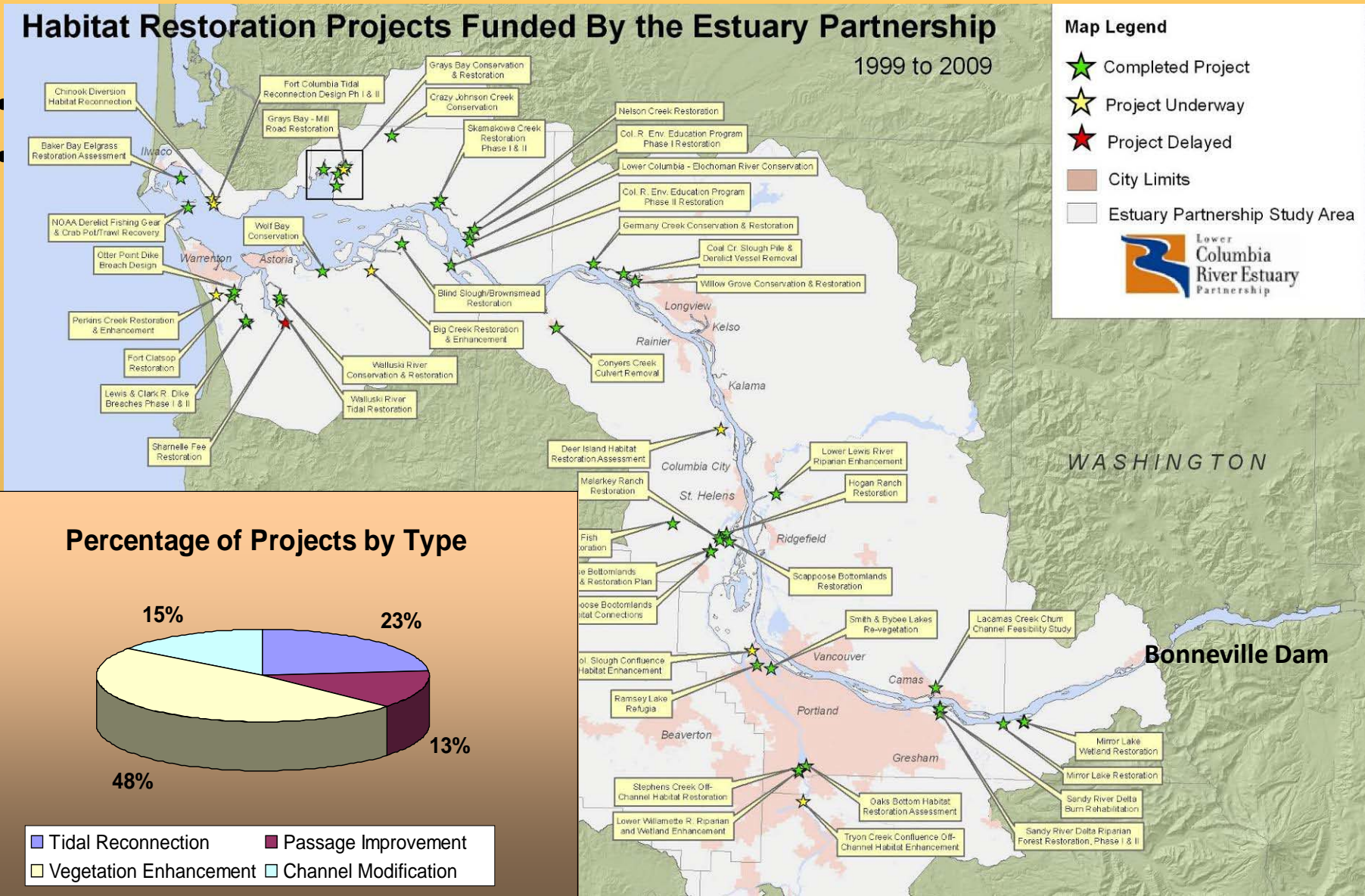
# ...How We Got There

## Habitat Restoration Projects Funded By the Estuary Partnership

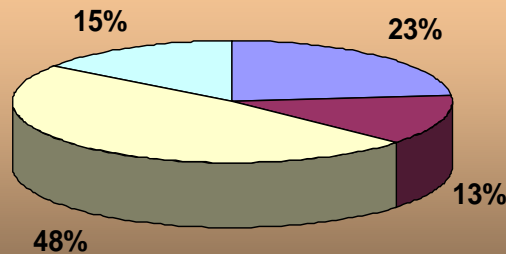
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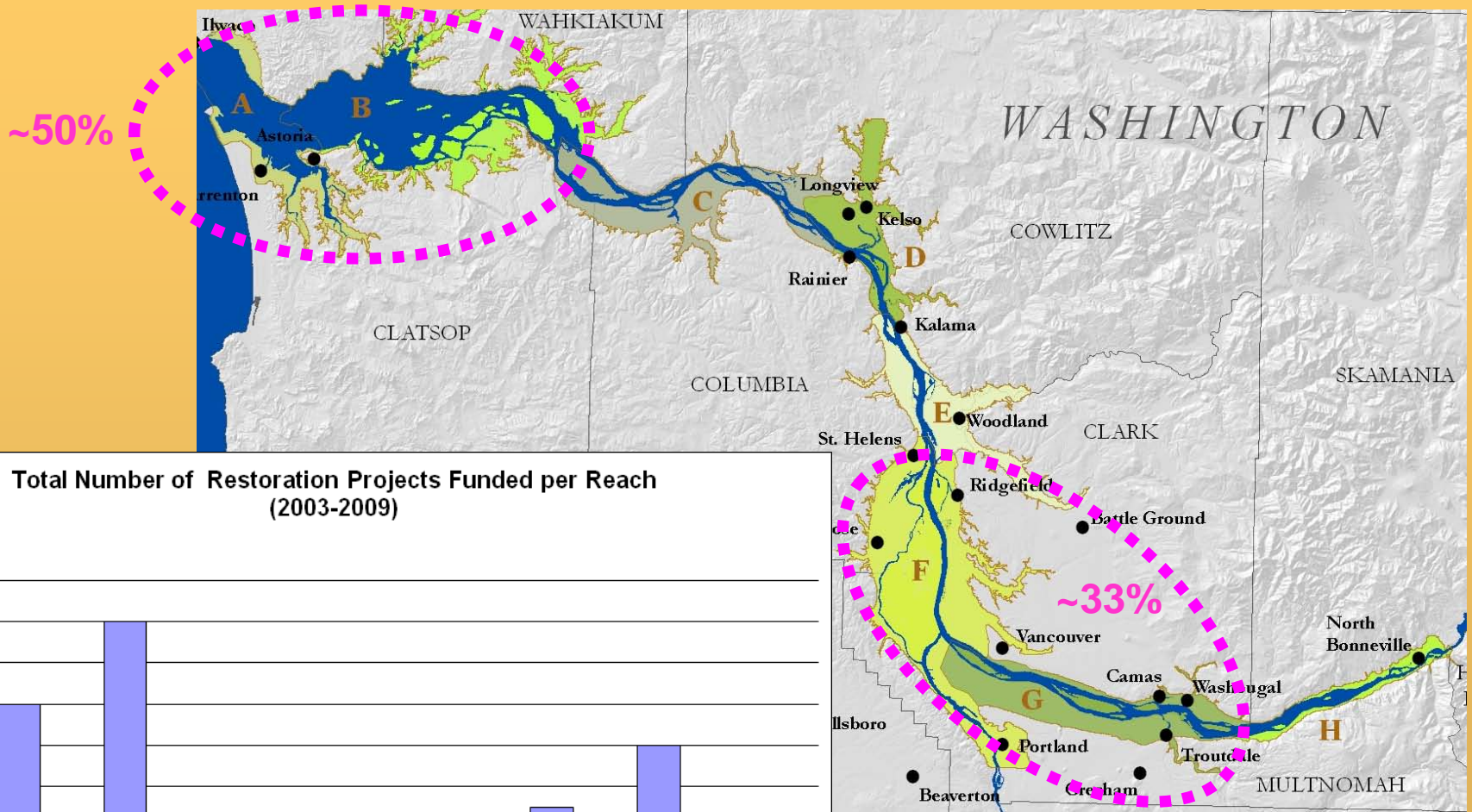


### Percentage of Projects by Type

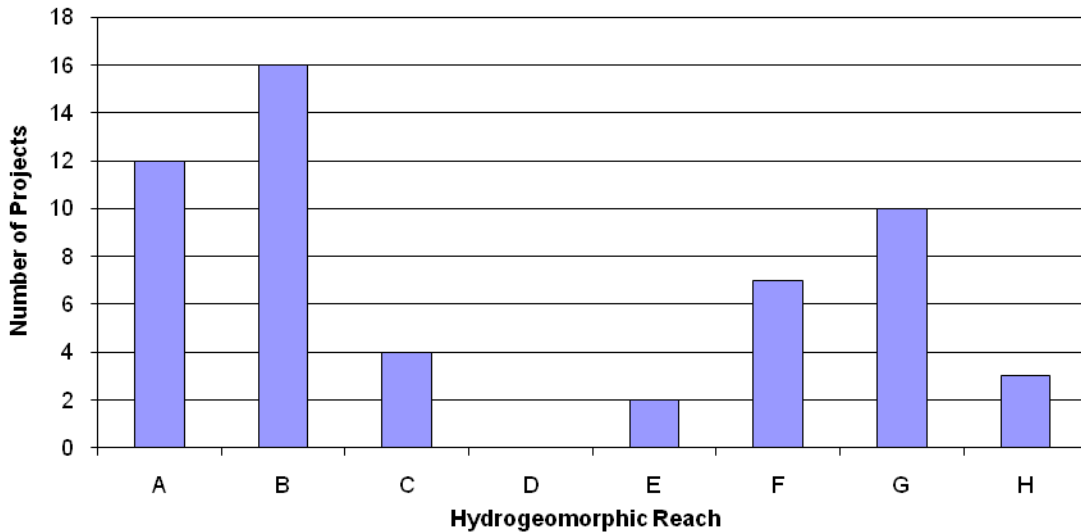


-  Tidal Reconnection
-  Passage Improvement
-  Vegetation Enhancement
-  Channel Modification

# ...How We Got There

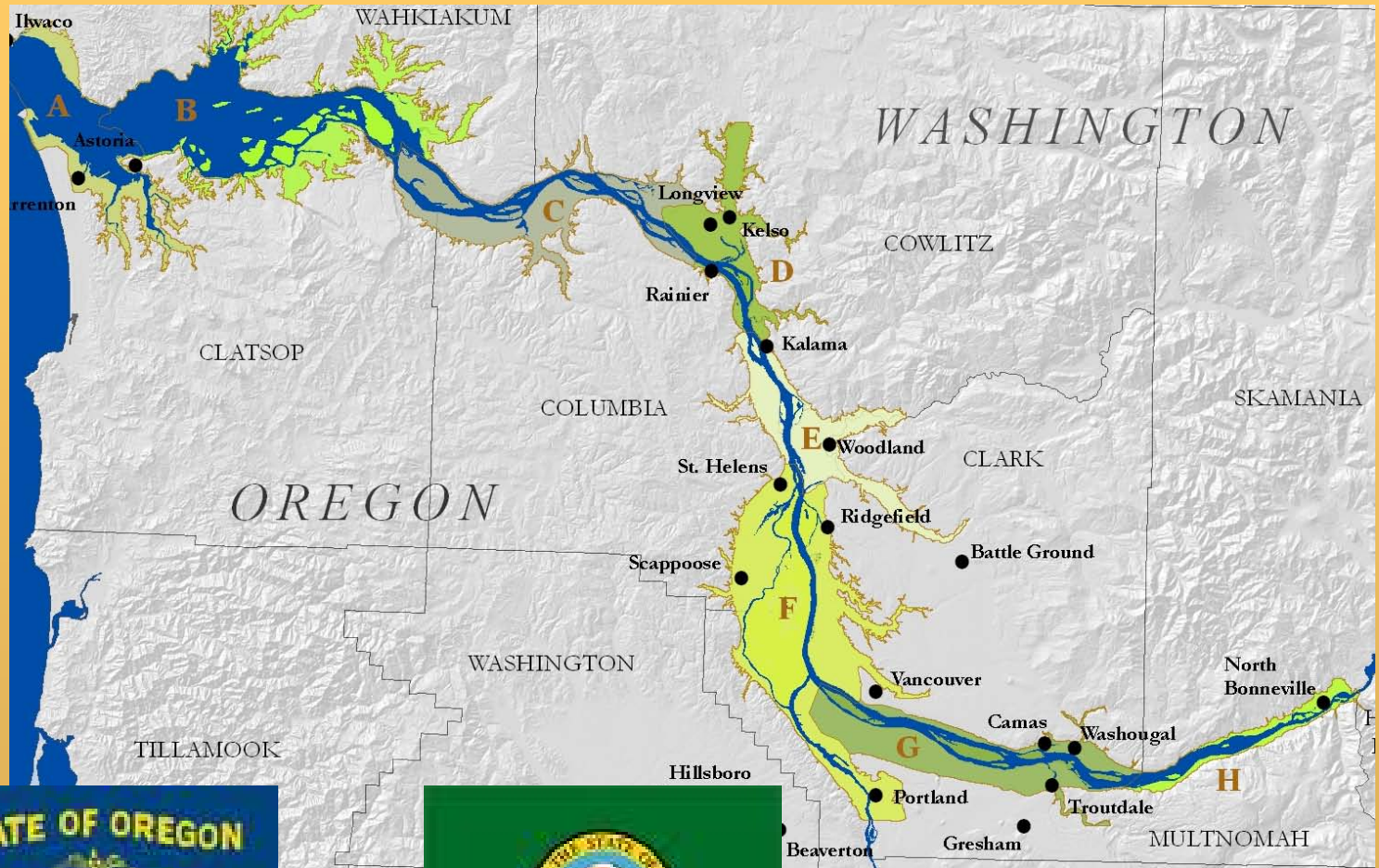


**Total Number of Restoration Projects Funded per Reach (2003-2009)**



**~80% of our projects have occurred in the vicinity of Astoria and Portland**

# ...How We Got There



VS.



30 projects

24 projects



# ...How Many Are There

## Criteria:

- Only looking at EP-funded projects (full or partial funding)
- Included *and what does all this restoration cost??* only projects for which we had ALL costs
- Project had to be complete
- Used dollar value from the year the project was funded (no effort to standardize for inflation)
- Did not consider costs for initial development (finding sites, meeting with landowners, etc.) or effectiveness monitoring
- Considered all acreage (e.g., not just portion of site inundated by a dike breach)



# How Do You Categorize Costs?

**Level 1 – Site**



**Level 2 – Project**



**Level 3 – Type**

- Four Types of Restoration:
- 1) Passage Improvement
  - 2) Channel Modification
  - 3) Veg. Enhancement
  - 4) Tidal Reconnection

**Level 4 – Phase**

- Four Phases:
- 1) Planning/Outreach
  - 2) Design/Permitting
  - 3) Implementation
  - 4) Monitoring

# Level 3 – Types of Restoration



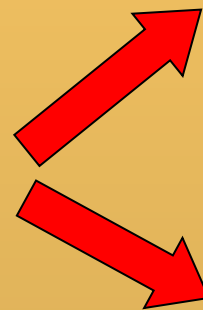
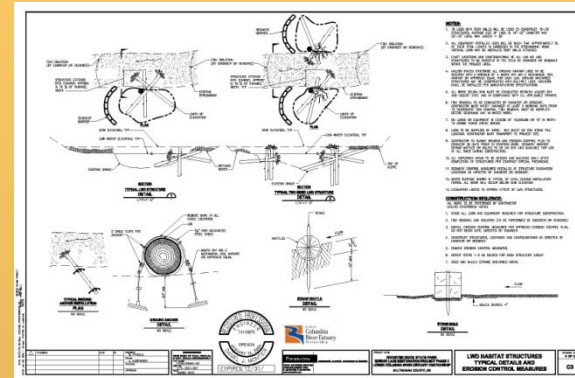
# Levels 3 and 4 - Types & Phases

For each type, we analyzed costs for two phases

## Level 3 – Type of Restoration



## Level 4 – Phase



# Design/Permitting Costs per Type

Restoration Type      n      Average Costs per Project      Average Unit Costs



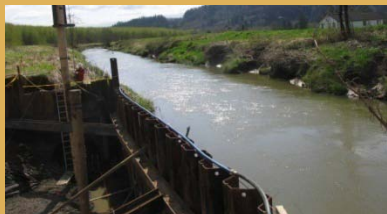
Passage Improvement



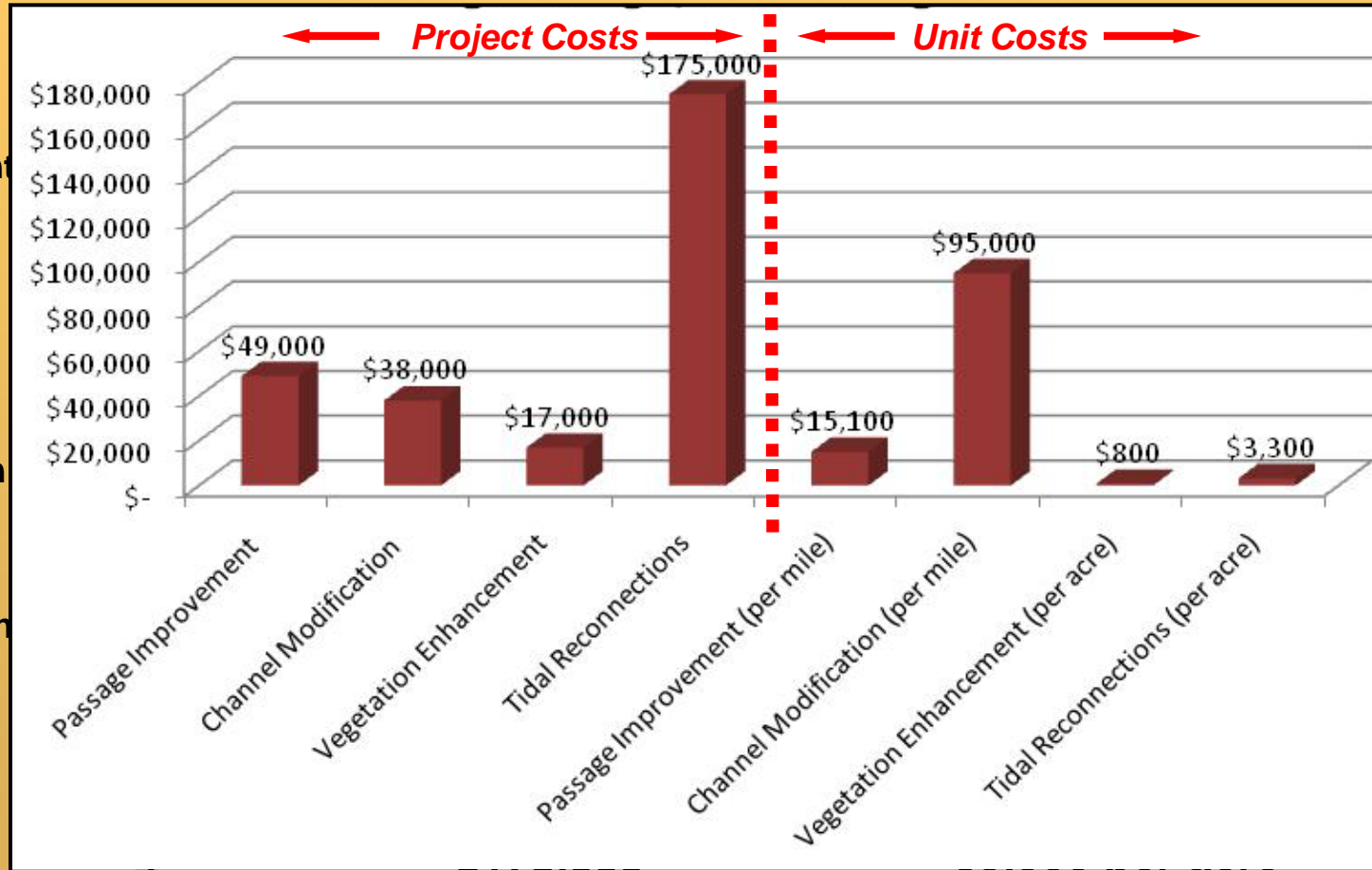
Channel Modification



Vegetation Enhancement



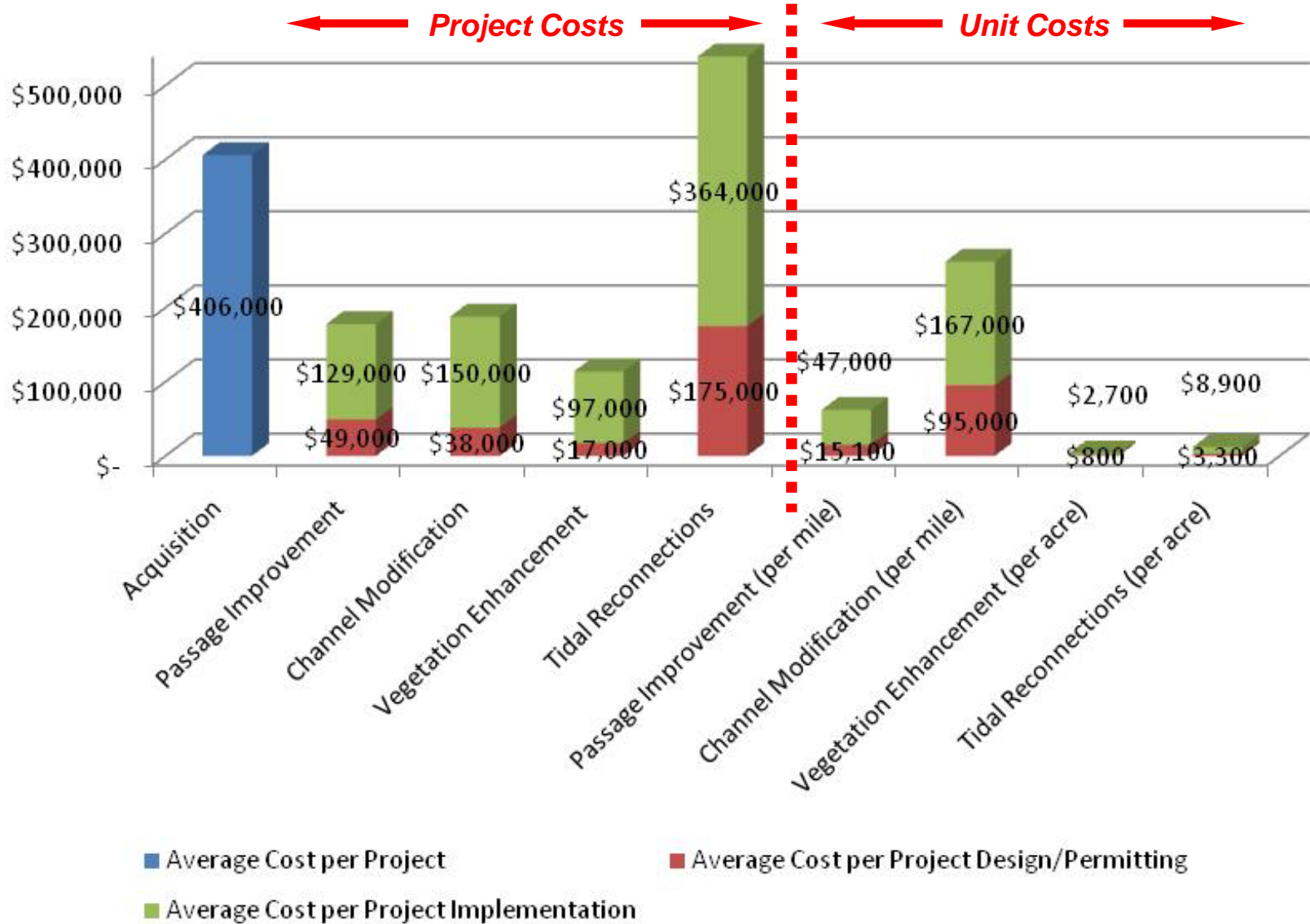
Tidal Reconnections



# Implementation Costs per Type

<u>Restoration Type</u>	<u>n</u>	<u>Average Cost per Project</u>	<u>Average Unit Cost</u>
 Passage Improvement	4	\$129,000	\$47,000 per mile
 Channel Modification	5	\$150,000	\$167,000 per mile
 Vegetation Enhancement	9	\$97,000	\$2,700 per acre
 Tidal Reconnections	2	\$364,000	\$8,900 per acre

# Total Cost per Restoration Type



# Cost per Project Phase

*All four restoration types combined.*

Project Phases

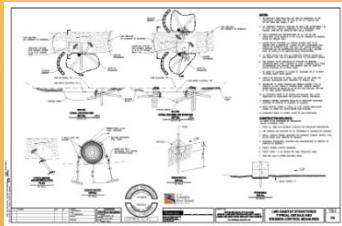
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Average Cost per Project

Average Unit Cost



Acquisition



Design/Permitting



Implementation

## Average Cost per Project



#, Project Phase

■ 7 Acquisition

■ 15 Design/Permitting

■ 20 Implementation



# How Do We Get To 19,000 Acres?

*...and how much will it cost?*

In order to maximize the efficiency of our restoration funds, we could consider....

1. Looking for LARGE projects

Why? – Unit costs typically are inversely related to project size

2. Prioritizing Vegetation Enhancement and Passage Improvement projects

Why? – Costs per acre are roughly  $\frac{1}{4}$  of those for TR and CM projects

3. Looking for opportunities on public land

Why? – Acquisition is expensive



Photos courtesy of Columbia Land Trust



# How Do We Get To 19,000 Acres?

***HOWEVER, cost is only one factor to consider when analyzing a project!!***

## Other Factors:

- ❖ benefits (cost/benefit ratios)
- ❖ available opportunities (e.g., limited supply of public land; funding priorities)
- ❖ typical failure rates (by restoration type)
- ❖ project duration
- ❖ deferred benefits
- ❖ and on and on and on.....



# Next Steps

- 1) Hire an intern to **Expand database (i.e., sample set)**
  - Obtain data for additional EP-funded projects
  - Obtain data for non-EP projects (e.g., OWEB)
- 2) Hire an intern to **Consider other metrics. (Is acreage the best metric to assess goals?)**
  - It's the easiest to track and the most straight-forward
  - But.....
    - ❖ Does not capture Channel Mod. and Passage Improvement projects
    - ❖ May not accurately account for benefits to target species or habitats
  - Other options:
    - ❖ Survival benefits
    - ❖ CWS and PSU methodologies
    - ❖ Others?
- 3) Hire an intern to **Consider using cost/benefit analyses to inform project development and selection.**
- 4) Hire an intern to **Consider using unit costs to assess funding requirements for different recovery goals and programs.**



Photo courtesy of CREST



Questions?

Acknowledgements:

CREST

City of Portland

CLT

SBWC

Cowlitz Tribe

NPCC

BPA

EPA

NOAA

USACE

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