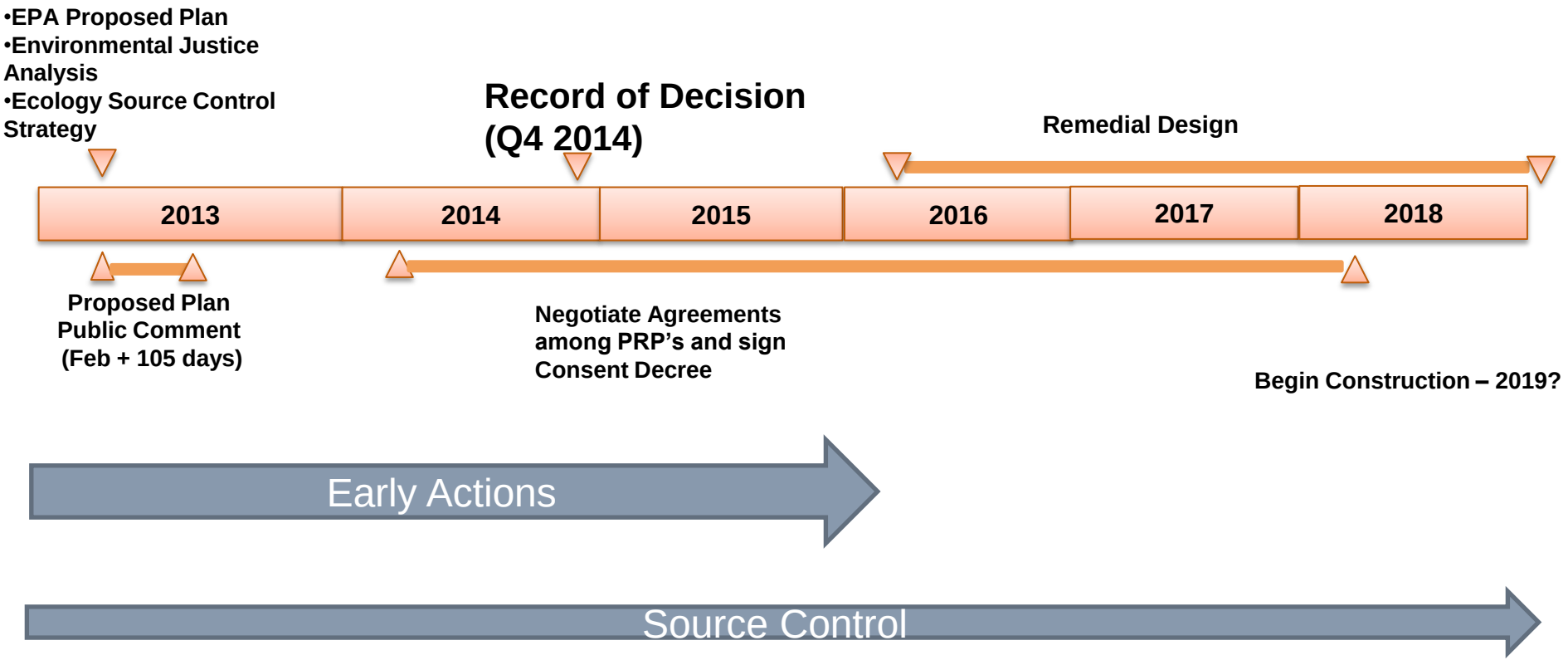
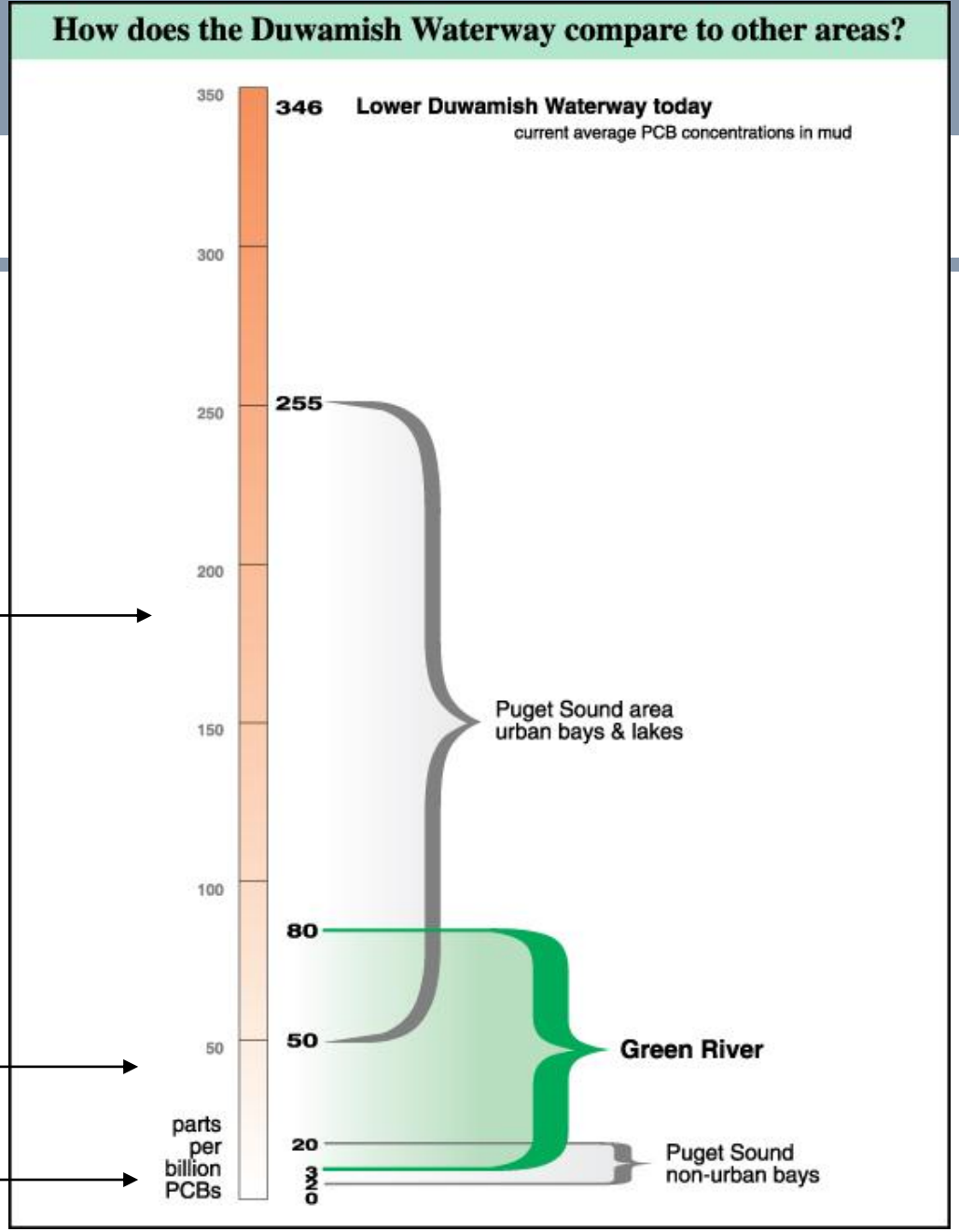
Lower Duwamish Waterway - *Background*

- 5-mile river segment listed due to historically contaminated sediments
- Legacy contamination - industrial discharges, stormwater, CSOs.
- The Lower Duwamish Waterway Group LDWG (King County, City of Seattle, Port of Seattle, and Boeing) – formed in 2000
- **$40M** in studies complete; **$100M** in Early Action cleanups
- More than 100 “potentially responsible parties” identified by EPA to date

Duwamish Schedule - Key Dates

2000 - 2012: EPA analyzed 12 cleanup options in the Feasibility Study





Early Actions predicted to get waterway to this level

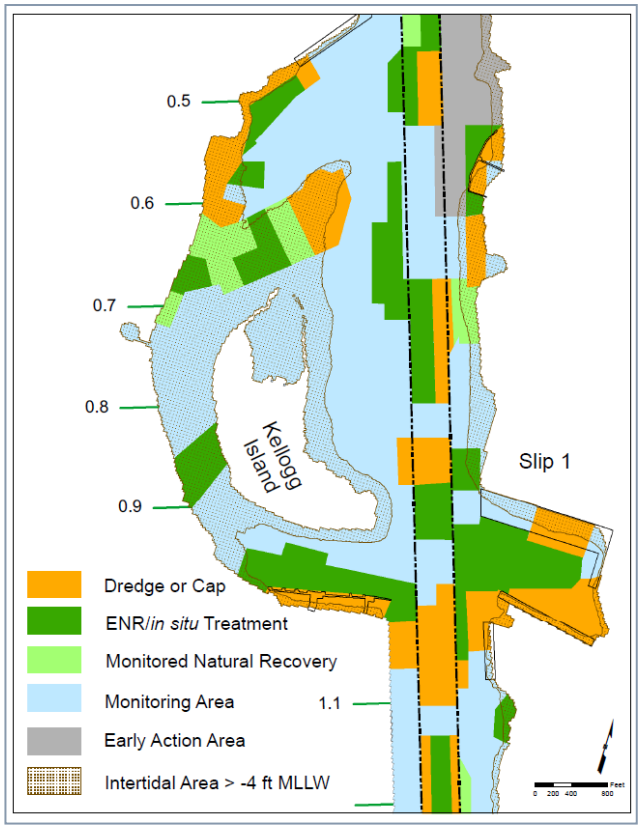
All alternatives in Feasibility Study predicted to get waterway to this level

EPA's Proposed Cleanup Level

EPA Proposed Cleanup

EPA is proposing Alternative "5C-Plus":

- 7 years of construction
- $305M - $350M
- Combination of technologies
- Institutional Controls to discourage fish consumption
- Extensive Monitoring
- Source Control program led by Ecology
- After 20-30 years:
  - Study whether additional cleanup is needed
  - Waive cleanup standards based on natural background



Comparing Cleanup Areas, Costs, Construction Times, and Risk Reduction

Item	Remedial Alternatives			
	LDWG Combined Key Elements	Alternative 5C (Final FS)	EPA's Proposed Plan Remedy	Alternative 5R (Final FS)
Dredging and Capping Area (in acres)	72	104	101	157
ENR Area (in acres)	65	53	48	0
Total Dredge Volume (cy)	630,000	750,000	790,000	1,600,000
Total Cost ($millions NPV)	$260	$290	$305*	$470
Total Cost ($millions non-discounted)	$300	$330	$348	$510
Construction Time Frame (years)	5	7	7	17
Excess Cancer Risk for PCBs - Adult Tribal RME	2×10^{-4}	2×10^{-4}	2×10^{-4}	2×10^{-4}
Non-cancer Risk for PCBs - Adult Tribal RME (Hazard Quotient)	5	5	5	5

Notes:
1. residual risks estimated 15 years from start of construction.
2. Using the recent 2012 OMV circulat1.1% discount rate, the estimated $305M remedy cost is closer to $325M.*

EPA's Remedy Decision Summary

- **We support EPA's proposed plan and are committed to the health of the river and community.**
- **It will take some time to evaluate EPA's final decision once it's announced**
- **It is important to get started to eliminate uncertainty for our community and businesses and to quickly reduce health and environmental risk**
- **Additional dredging of isolated contamination increases human health risk, delays the final cleanup, and does not produce lower risk to people or to the environment.**
- **LDWG wants to invest wisely**
  - Maximize most effective cleanup opportunities
  - Limit construction-related public health impacts
  - Implement quickly with least disturbance to the community

Responding to Other Community Priorities

Cleanup

- **Community involvement in developing EPA's institutional controls**
- **Green remediation; minimization of construction impacts**
- **Local training and hiring incentives for cleanup construction**
- **Early start of Carbon and Fishers studies**

Source Control

- **City's source control program**
- **Ecology's basin-wide source control efforts (City, KC, upstream municipalities)**

Quality of Life

- **City's Duwamish River Opportunity Fund**
- **KC/City Green/Duwamish Watershed Strategy**
- **Capital projects and programs serving South Park and Georgetown**

Backup Slides

EPA's Proposed Plan – a good start

Potential challenges to success

Unattainable Cleanup Levels for:

- Sediment - Natural background
- Fish tissue – Natural background
- Water – Clean Water Act human health standards

Suggested Improvements to EPA's Plan

Protects human health sooner by:

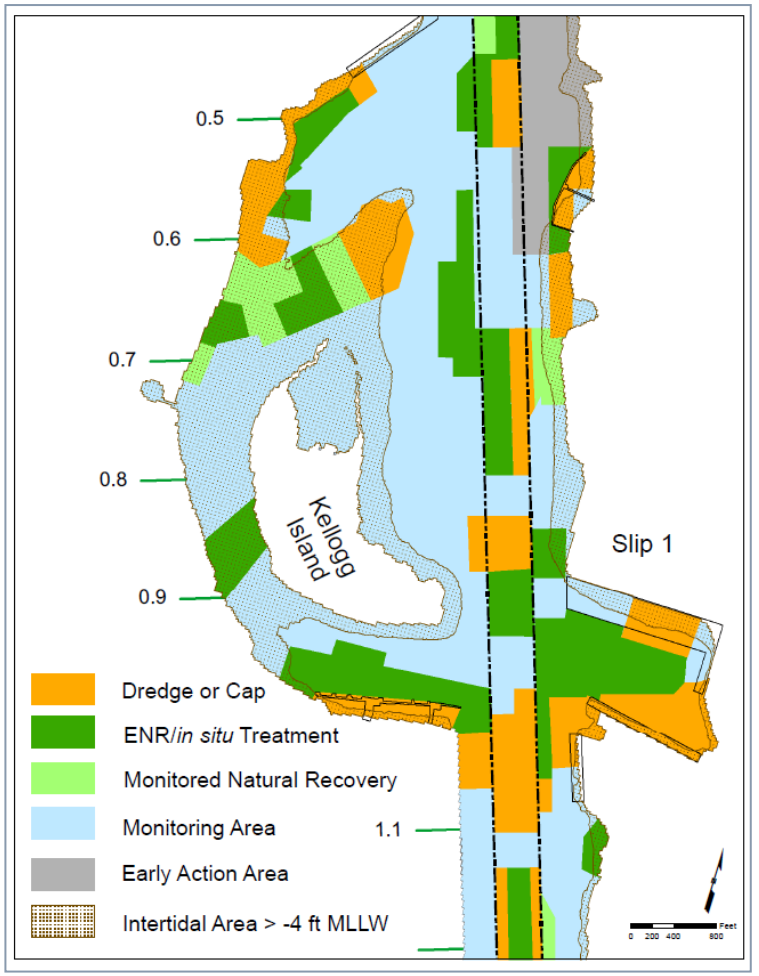
- Careful, strategic use of dredging
- Optimized technologies

Provides certainty in meeting cleanup objectives:

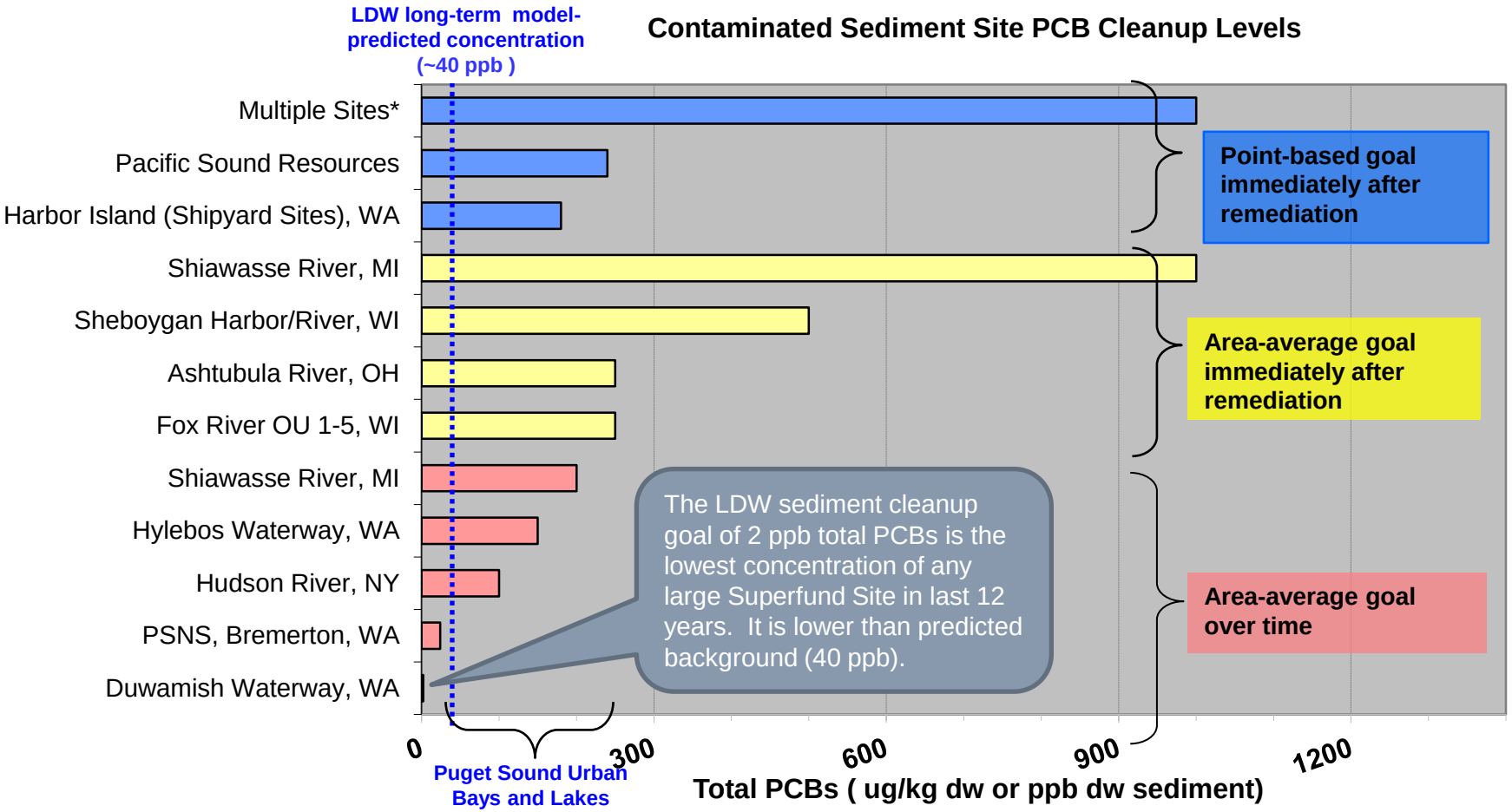
- Strong monitoring and oversight to enable additional actions if needed

Responds to social justice concerns

- Reduces human health risk from seafood and community impacts like increased asthma, noise, traffic, and business disruption sooner



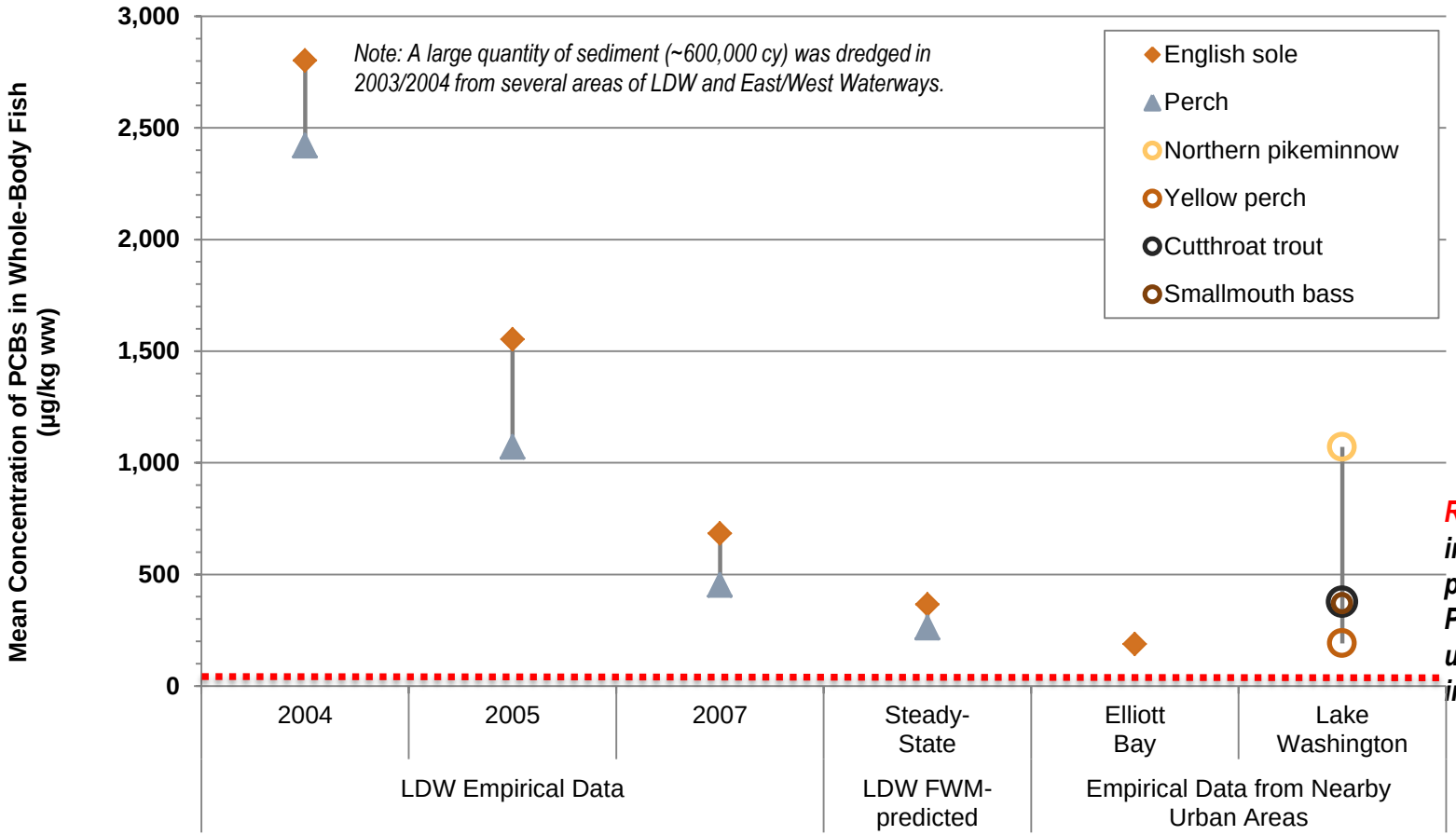
Sediment Cleanup Goals – PCB cleanup level for the Duwamish is lower than background and other cleanup sites



1. Data compiled from large superfund sites in last 12 Years with numeric goals.
*GM Central Foundry, NY; Reynolds Metals, NY; New Bedford Harbor (residents), MA; Housatonic, Upper 1/2 Mile, MA; Loring Air Force Base, ME Convair Lagoon, CA.

Fish tissue cleanup goal

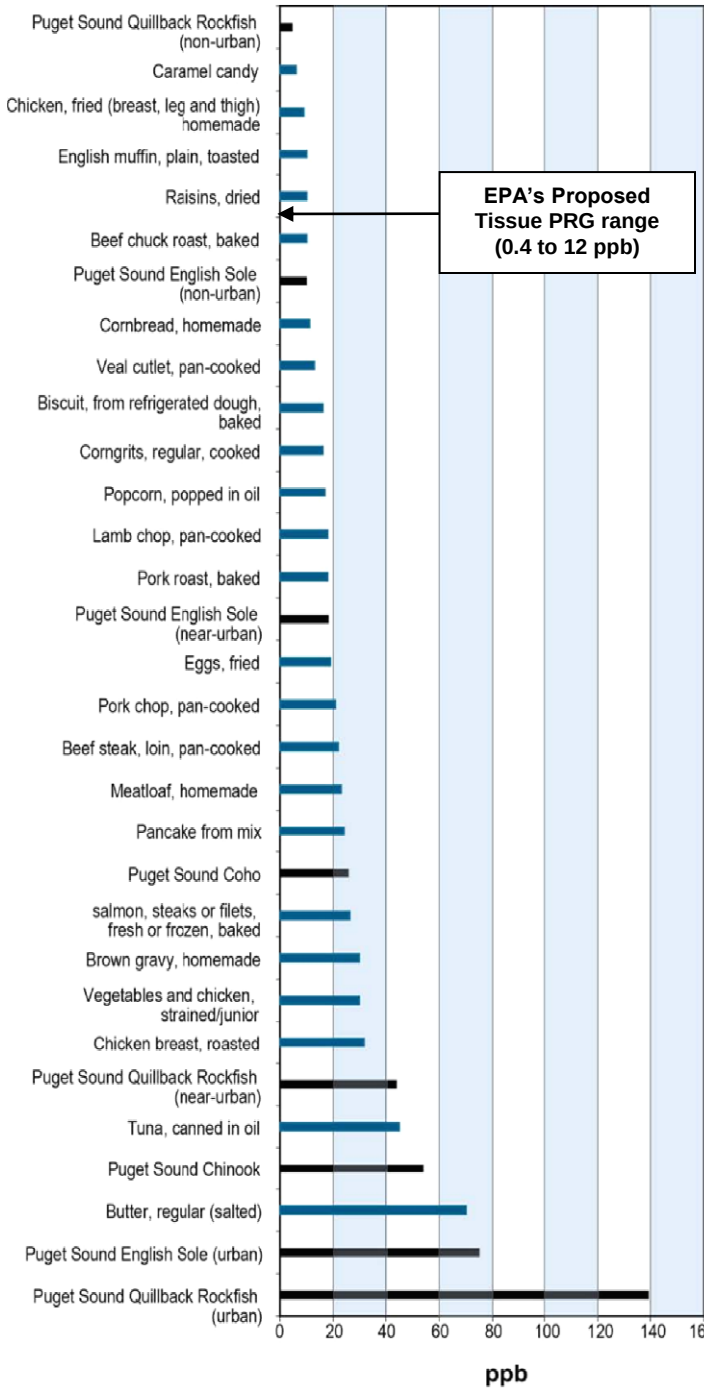
Fish Tissue Total PCB Concentrations in the Lower Duwamish and Surrounding Urban Areas



Red-dotted line indicates EPA's proposed tissue PRG of 1.8 to 12 ug/kg ww for fish in the LDW.

FWM = food web model

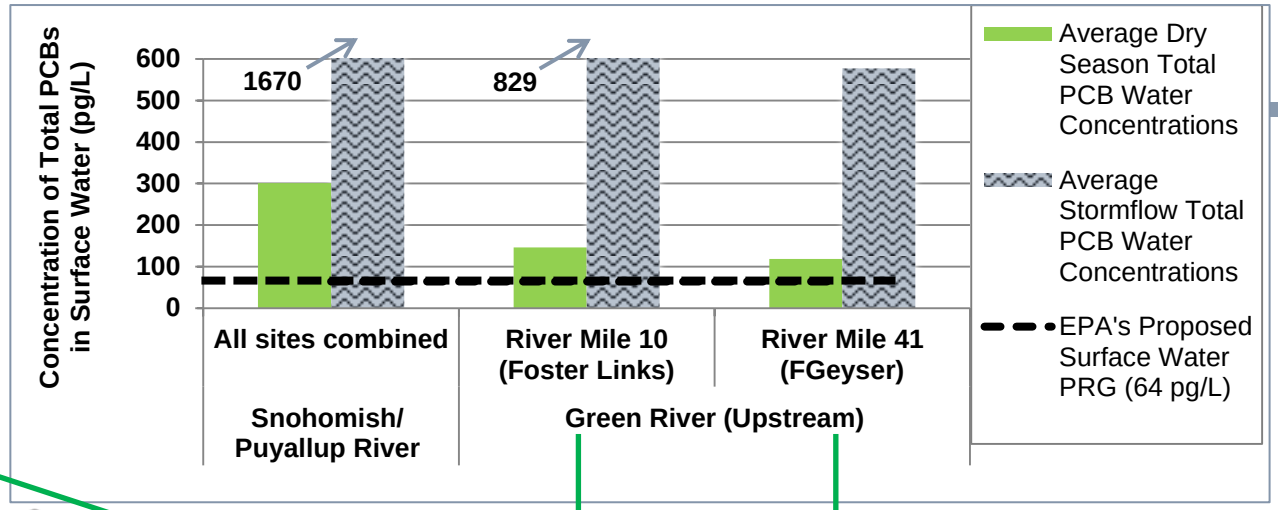
Total PCB concentrations (µg/kg ww, or ppb) in fish from Puget Sound and other common food sources

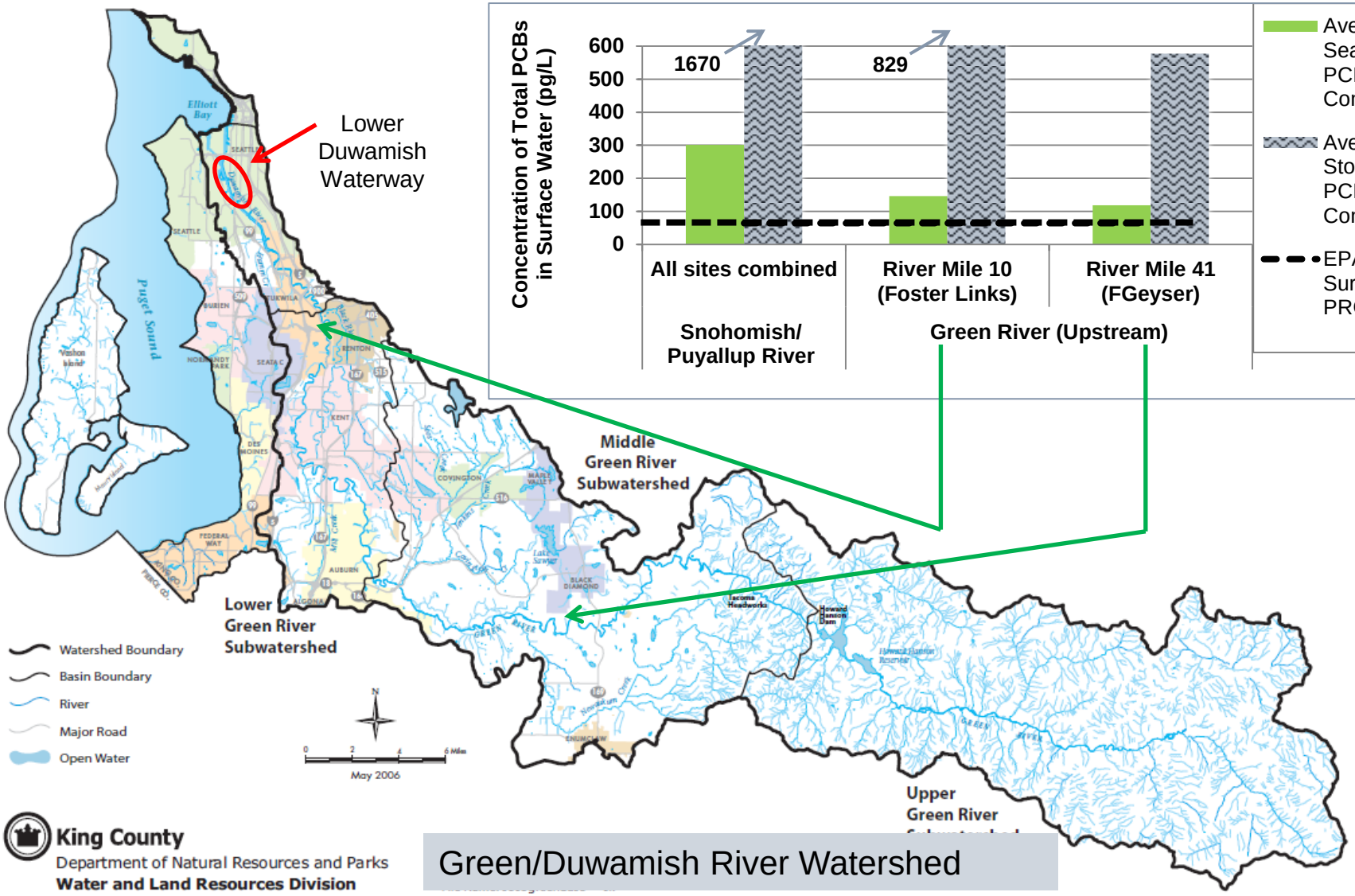


Source: Ecology (2012) citing Puget Sound Action Team 2007

Note: Samples include fish from Puget Sound and results are reported in micrograms per kilogram sampled. Commercial foods were sampled as part of the U.S. Food and Drug Administration's total diet study and market-basket survey. In most cases, data are limited by small sample sizes.

Average Surface Water Total PCB Concentrations – Upstream is higher than proposed cleanup goal





Green/Duwamish River Watershed