



# Science Work Group

May 25, 2021

Integrating Climate Mitigation into the  
Ecosystem Restoration Program for the Lower Columbia River



# Initial Climate *Adaptation* Measures on Programmatic Level for the Lower Columbia River

- **Identify where in target species' life-histories they are vulnerable to climate change**
  - Mapped cold water refuge locations and identified spatial gaps (completed) and testing technique to fill gaps (underway)
- **Reconsider goals and objectives in light of climate change (climate-smart; Stein et al. 2014):**
  - Assess vulnerability of lower Columbia River floodplain habitats to sea level rise (complete) & increased fluvial flooding (planned)
  - Constraints to meeting habitat coverage targets (underway)
  - Develop engineering design criteria, best practices for activities that integrate SLR and fluvial flooding (planned)
  - Test drought-tolerant vegetation mixes to ensure *functions* (e.g., pollination) (planned)
  - Can we add *mitigation* (e.g., sequestration, GHG reductions) to our program?

# Initial Climate *Adaptation* Measures on Individual Restoration Project Level

- **Steigerwald Floodplain Reconnection Project**

- Roughly 1,000-acre restoration project on mainstem focusing on recovery of salmon, steelhead and lamprey habitat
- Uses a 500-year flood event as the engineering design standard (instead of 100-year traditionally required)
- Removes 2 miles of levee and builds setback levees with a living shoreline (instead of traditional riprap)
- Restores a historical alluvial fan to provide habitat complexity and thermal cooling

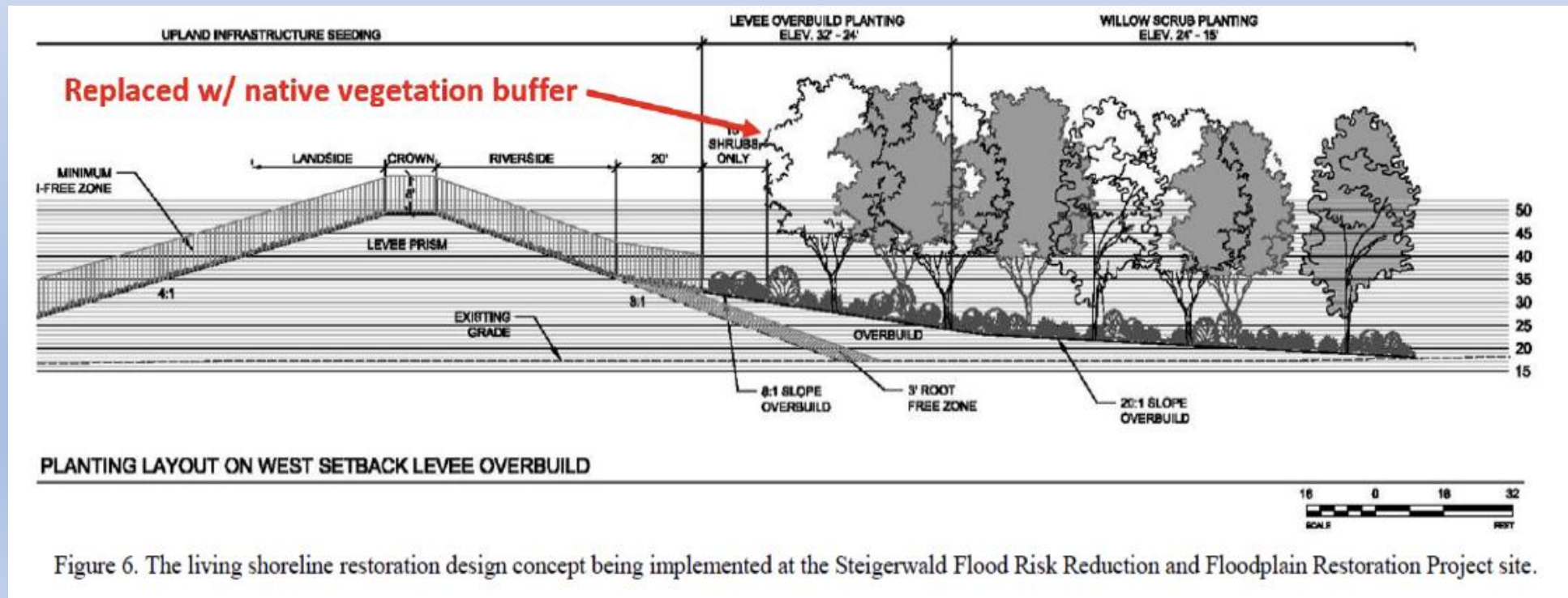


Figure 6. The living shoreline restoration design concept being implemented at the Steigerwald Flood Risk Reduction and Floodplain Restoration Project site.

# Integrating Climate *Mitigation* into our Restoration Program

- To limit global warming to less than 1.5°C above pre-industrial levels, the Intergovernmental Panel on Climate Change (IPCC) recommends rapid and far-reaching reductions in greenhouse gas emissions, including globalizing a carbon market (e.g., IPCC 2014, 2018, 2019).
- **Nature-based solutions will be critical:**
  - Intact forests have been shown to remove about a quarter of global carbon emissions annually (Ripple et al. 2019)
  - Tidal wetland habitats (i.e., blue carbon) may sequester as much if not more carbon (Ripple et al. 2019).
  - Up to a third of emission reductions needed to meet the Paris agreement by 2030 could be obtained by protecting intact forests, tidal wetlands, grasslands, and savannahs, and recovering and reforesting those that have been lost/degraded (Ripple et al. 2019).
  - Conversely, loss (or conversion to impervious surface, draining, etc. ) of native habitats emits greenhouse gases
  - Need for better tracking of sequestration and emissions by native habitats specific to PNW

# PNW Blue Carbon Working Group

- Land managers and carbon finance project developers do not have local information needed to quantify blue carbon sequestration rates and greenhouse gas emissions for PNW tidal wetlands.
- The PNW Blue Carbon Working Group is a collaboration developing coastal blue carbon as a conservation and management tool to help mitigate the effects of climate change.
  - Evaluating the Verified Carbon Standard's blue carbon methodology for tidal wetland and seagrass restoration and how to develop the wetland sector of the carbon market for PNW tidal wetlands.
  - Projects designed to fill key data gaps and demonstrate the feasibility of blue carbon finance projects in the PNW.
- Compiling blue carbon data on sediment carbon stocks and carbon sequestration from eelgrass meadows, tidal marshes, and tidal forested wetlands throughout the PNW.
- Includes results from the NERRS Science Collaborative-funded [PNW Carbon Stocks and Blue Carbon Database Project](#) and other data
- For more information, see the website: <https://www.pnwbluecarbon.org>