

# SUSTAINABILITY

## BLUE CARBON PILOT PROJECT



Blue carbon refers to carbon captured in ocean and nearshore environments, assimilated as biomass and stored in marine sediments. Blue carbon processes are critical to concerns for acidification of marine areas due to increases in atmospheric CO<sub>2</sub>. In Puget Sound, kelp, eelgrass, shellfish, and salt marsh are important elements in blue carbon processes, ensuring productive, resilient and carbon-rich marine conditions.

The Port of Seattle, Maritime Division, is conducting a pilot project to evaluate the ability to enhance blue carbon processes at Smith Cove:

### CARBON SEQUESTRATION

Eelgrass, kelp and salt marsh vegetation sequester (or trap) dissolved carbon at a significant rate – as much as a ton of CO<sub>2</sub> per acre annually. The Smith Cove project is expected to sequester 10 tons of carbon every year, or the equivalent of over 1,000 gallons of gasoline combustion.

### FISH AND WILDLIFE HABITAT

In addition to sequestering carbon, eelgrass, kelp and salt marsh are the most biologically productive habitats in Puget Sound, supporting a wide variety of fish and wildlife species, including life stages of endangered Chinook salmon.

### WATER QUALITY IMPROVEMENT

The project includes re-establishment of native oysters in Smith Cove, with a goal to support over 1 million oysters. A single oyster siphons up to 2 gallons of water per hour, removing particulate matter and contaminants. Introduced shellfish would filter up to 50 million gallons of Elliott Bay water per day.

### OCEAN ACIDIFICATION REFUGIA

Acidification is one of the major threats facing Puget Sound. By removing dissolved carbon from the water, kelp, eelgrass and salt marsh buffer acidification, providing beneficial habitat for oysters and other pH-sensitive species.



The project site, which is between Pier 91, Elliott Bay Marina, and Smith Cove Park, includes all of the characteristics necessary for the project:

- Protected from wave energy
- Appropriate depths
- Suitable substrate
- No conflict with existing uses
- No overwater structures
- Accessible for interpretation and public education

## WAVE/CURRENT ATTENUATION

As sea level rises and storms intensify, our shorelines are becoming increasingly prone to erosion. Kelp, eelgrass, shellfish beds, salt marsh and riparian vegetation play an important role in stabilizing the shoreline, dissipating energy, and storing sediments.

## SUSTAINABILITY

The project does not include structures or other components which require maintenance; if successful, it will be self-sustaining. The project also includes the potential for harvesting shellfish biomass to create marine-based organic compost for use in the Port's shoreline parks and riparian habitats, helping to maintain their "Salmon-Safe" certification.



## PROJECT OVERVIEW

### Step 1: Plant and install blue carbon enhancements:

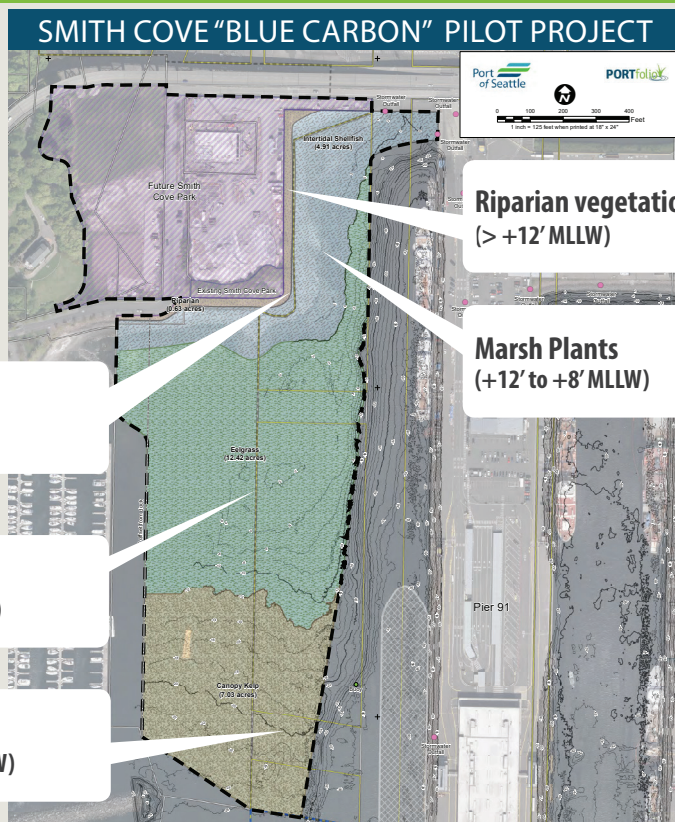
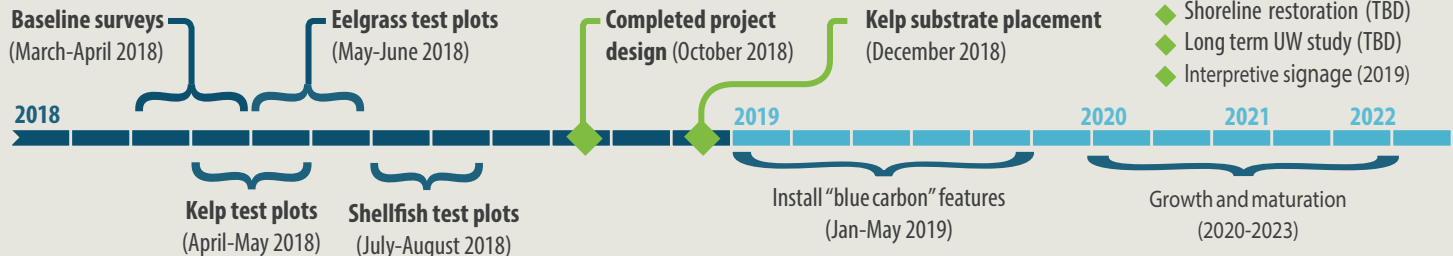
- Kelp
  - Eelgrass
  - Shellfish beds
  - Intertidal salt marsh
  - Shoreline/riparian vegetation\*
- \*Size/scope/schedule TBD

### Step 2: Monitor project over time:

- Water Chemistry (pH)
- Carbon sequestration
- Beneficial habitat changes

### Step 3: Report results

*The blue carbon project team includes staff from the Port, Puget Sound Restoration Fund, NOAA, City of Seattle, UW and Grette Associates.*



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