COMMISSION
AGENDA MEMORANDUM **Item No.** 8a

ACTION ITEM **Date of Meeting** September 11, 2018

DATE: August 24, 2018

TO: Stephen P. Metruck, Executive Director

FROM: Sandra Kilroy, Director, Maritime Environment & Sustainability
Jon Sloan, Sr. Environmental Program Manager

SUBJECT: Smith Cove Blue Carbon Pilot Project Performance Monitoring

Amount of this request: $200,000 (Energy & Sustainability Funds)
Total estimated project cost: $200,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to commit previously approved Environment and Sustainability Center of Expertise funds to analyze and evaluate the ecological performance of the Smith Cove Blue Carbon Pilot Project, in an amount not to exceed $200,000.

EXECUTIVE SUMMARY

This expenditure furthers the Century Agenda Strategy 4: *Be the greenest, most energy efficient Port in North America*. In the 2018 budget the Commission directed the Executive Director to "Allocate no less than $1,000,000 to the Environment and Sustainability Center of Expertise to implement the Energy and Sustainability Committee Policy Directives as adopted in the first quarter of 2017 by the Port of Seattle Commission."

The Committee, in its oversight role, has reviewed the project and recommends the use of the Energy & Sustainability Funds for the Smith Cove Blue Carbon project. While this authorization is below the $300,000 threshold required for Commission consideration, the Committee has requested that these funds be explicitly authorized to provide visibility to the Commission and public.

The objective of the Smith Cove Blue Carbon Pilot Project is to increase kelp, eelgrass, and shellfish abundance within an approximately 25-acre area at Smith Cove in northeast Elliott Bay, west of Pier 91. With successful restoration, the project aims to achieve an increase in aquatic habitat, improved water quality, and carbon sequestration – storing carbon in the kelp and eelgrass. The project underway and is planned to be completed in 2019.

The Smith Cove Blue Carbon Pilot Project does not include biological and water quality monitoring as part of the project budget. This request is for commission authorization to commit existing Energy and Sustainability Committee funds to analyze and evaluate the ecological performance of the Smith Cove Blue Carbon Pilot Project. The evaluation would include measuring improvements in carbon sequestration, water quality, and habitat.

The proposed monitoring, data collection, and analysis project is designed to determine site-specific results due to kelp, eelgrass, and shellfish improvements in Smith Cove. Data and analysis may confirm that restoration efforts counteract marine water acidification, increase carbon sequestration capacity, add beneficial bio-mass in an urban waterway, and enhance resident and migratory fish and wildlife habitat.

Although the $200,000 request is within the expenditure limits normally delegated to the Executive Director by virtue of the port's General Delegation of Authority, direct commission authorization was recommended by the Energy and Sustainability Committee.

JUSTIFICATION

The Energy and Sustainability Committee, in coordination with staff, agreed upon two attributes to guide distribution of these funds: 1) that the project leverage matching funds and in-kind support and 2) to increase partnership opportunities with government, non-governmental and/or educational institutions. The expenditure of these funds will create a unique partnership with regional entities that are experienced in managing and measuring these types of projects. The outcomes of the monitoring, data collection, and analysis of the Smith Cove project will enable the Port of Seattle to leverage future grant opportunities. The Committee, in its oversight role, has reviewed the project and recommends the use of the Energy & Sustainability Funds for the study.

Kelp canopies and eelgrass beds are identified in Puget Sound as keystone habitats providing critical resources for reproduction, rearing, and migration of numerous fish and wildlife species. Emerging research has established kelp and eelgrass communities as important "carbon sinks," storing as much as a third of a ton of carbon per acre per year. The Smith Cove Blue Carbon Pilot Project was planned and designed to test the ability to boost carbon sequestration and related water chemistry benefits, as an initiative to make progress on Long Range Plan Objective 15, Priority Action 4, "Optimize PORTfolio park and habitat restoration sites to sequester greenhouse gases (GHGs)"; and, Objective 17, "Restore, create, and enhance 40 additional acres of habitat in the Green/Duwamish Watershed and Elliott Bay."

The degree to which the project can contribute towards either of these two objectives, however, is based on research from other regions, with little information particular to Puget Sound, and no data applicable to urban marine environments. The present proposal for a five-year data collection and analysis effort is to measure the site-specific project effects. The effort will contribute to knowledge and expertise applicable to kelp, eelgrass, and shellfish restoration in disturbed urban environments, and confirm the ability to make important water quality and

habitat improvements in Elliott Bay. The Smith Cove project will demonstrate the port's regional leadership in achieving balanced economic and environmental benefits, while providing a template for other agencies and interests to implement similar blue carbon projects.

DETAILS

Data collection under this new funding at the Smith Cove site would occur over a five-year period to evaluate the success of the Blue Carbon Pilot Project components implemented in 2019. Data collection would occur in years 1, 3, and 5 following project implementation, and would include analysis of changes in carbon sequestration, water chemistry, kelp, eelgrass, and shellfish abundance, and fish and wildlife habitat.

Specifically, data collection will include:

- Diver, remotely-operated vehicle (ROV), and aerial drone surveys to assess changes in physical extent of kelp, eelgrass, and shellfish enhancement areas;
- Sonographic surveys to assess changes in height and density of kelp and eelgrass;
- Sediment cores to measure increases in total organic carbon sequestered in expanded eelgrass areas; and,
- Continuous water quality data-loggers to measure on-site changes in pH, temperature, salinity, conductivity, and dissolved oxygen.

The results of each year's data collection event will be summarized in a technical memo with interim analysis, conclusions, and recommendations. A final report will be produced that summarizes the results of the five-year study and makes recommendations for future blue carbon projects.

Schedule

The majority of pre-project baseline data collection occurred in 2017-2018. The development of a five-year study plan is currently underway and will be complete by October 1, 2018. The proposed study will include limited additional baseline data collection, followed by three monitoring events in years 1, 3, and 5 after restoration is complete in 2019.

Activity	
Commission approval	Sept 11, 2018
Additional baseline data collection	Oct 1 – Dec 31, 2018
Year 1 monitoring	July 1 – Aug 31, 2020
Year 3 monitoring	July 1 – Aug 31, 2022
Year 5 monitoring	July 1 – Aug 31, 2024
Final report	Before Dec 31, 2024

Cost Breakdown	This Request	Total Project
Study Plan/Design	$0	$0
Study implementation	$200,000	$200,000
Total	$200,000	$200,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Do not undertake long term monitoring study as part of the Smith Cove Blue Carbon Pilot Project.

Cost Implications: $0

Pros:

(1) Cost savings. Conserves staff resources for other work.

Cons:

(1) Site-specific comprehensive monitoring and analysis will not be available to confirm project benefits and demonstrate application of 'blue carbon' capability in Elliott Bay.
(2) Would be a lost opportunity to create a template for future larger scale projects.

This is not the recommended alternative.

Alternative 2 – Reduce scope and/or duration of the study.

Cost Implications: $100,000

Pros:

(1) Limiting the scope and/or duration would lower costs.

Cons:

(1) Many of the restoration elements will take up to five years to mature, so a reduced schedule may result in inaccurate findings.
(2) Reducing scope would not address the three principal research questions of interest; (a) whether the project has improved carbon sequestration; (b) water quality improvements; and, (c) increase fish and wildlife habitat resources. We would need to limit the scope of the study.

This is not the recommended alternative.

Alternative 3 – Undertake long term study with data collection and analysis necessary to answer three principle research questions, including whether the project has improved carbon sequestration, water quality and aquatic habitat functions, over a period of time sufficient to detect changes.

Cost Implications: $200,000

Pros:

(1) This alternative allows for analysis and evaluation of sufficient scope and duration to answer the three principle research questions.

(2) Provides information that allows us to understand applicability of this to other sites.
(3) May allow us to include graduate student and/or non-profit involvement.

Cons:
(1) Higher cost and effort for project.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

The Smith Cove Blue Carbon Pilot Project to plant kelp, shellfish, and eelgrass was funded in the 2018 Maritime Division expense budget. Work to date has included experimental design, permitting, and test plots. Full project implementation will be undertaken in 2019, including substantial restoration of kelp, eelgrass, and shellfish bed areas. This request for $200,000 is specific to the monitoring and is to fully realize project benefits for a five-year data collection, monitoring, and analysis effort to measure beneficial changes at the project site over time.

Cost Estimate/Authorization Summary	Capital	Expense	Total
COST ESTIMATE			
Original estimate	$0	$0	$0
AUTHORIZATION			
Previous authorizations for project construction	0	$275,000[1]	$275,000
Current request for authorization for monitoring	0	0	$200,000[2]
Total authorizations, including this request	0	0	$475,000
Remaining amount to be authorized	$0	$0	$0

[1] *Authorized in 2018 Maritime Division expense budget (with expectation of inclusion of balance in 2019)*
[2] *Included in Energy and Sustainability Committee funding authorization ($1 million)*

Annual Budget Status and Source of Funds

Commission directed that money be made available in the 2018 Environment and Sustainability Center of Excellence expense funds to support and promote innovative projects that foster efforts to reduce greenhouse gases, advance sustainability efforts and promote regional collaboration. This request will use those already budgeted funds.

Financial Analysis and Summary

Construction and monitoring of the Smith Cove Project will demonstrate the port's regional leadership in achieving balanced economic and environmental benefits, while providing a template for other agencies and interests to implement similar blue carbon projects. The port is providing this effort to meet Century Agenda goals and invest in a sustainable future, using our aquatic resources that are not required for active industrial maritime use.

Future Revenues and Expenses (Total cost of ownership)

Following monitoring, the project is expected to be self-sustaining and will not require maintenance and repair funds in the future.

ATTACHMENTS TO THIS REQUEST

(1) Smith Cove Blue Carbon Pilot Project 1-page information sheet
(2) Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS

February 28, 2017 – The Commission were briefed on adding Energy & Sustainability Committee funding in the amount of $1,000,000.

November 28, 2018 – The Commission authorized the Smith Cove Blue Carbon Pilot Project as a component of the 2018 Maritime Division expense budget.