



City of Richmond

Report to Committee

To: Public Works and Transportation Committee **Date:** November 5, 2010
From: Dave Semple **File:** 10-6150-01/2010-Vol
 General Manager, Parks and Recreation and Robert Gonzalez, P. Eng. 01
 General Manager, Engineering and Public Works
Re: **Steveston Harbour Cannery Channel Long Term Development Plan - Eastern Navigation Channel and Intertidal Habitat**

Staff Recommendation

1. That the concept, use and potential redevelopment of the foreshore in front of the City owned properties at 6240 to 6280 Dyke Road (the Eastern Entrance Plan) for a new navigational channel, causeway, and intertidal habitat area be approved and that the February 2010 Balanced Environmental Plan 5249-D-28.1 provided within the 2010 Hay & Company report be used as the guiding framework until a final plan has been completed;
2. That City staff work together with Steveston Harbour Authority and Small Craft Harbours to establish a Memorandum of Understanding outlining the intent and commitment to work together towards a mutually beneficial long term vision for Steveston Cannery Channel;
3. City staff continue to work closely with the Province, Port Metro Vancouver, Small Craft Harbours and Steveston Harbour Authority to clarify roles and responsibilities, finalize all plans, and approval processes, for Phase 1 – Construction of the eastern navigational channel, causeway and intertidal habitat area.

Dave Semple
 General Manager, Parks and Recreation
 (604-233-3350)

Robert Gonzalez, P. Eng.
 General Manager, Engineering and Public Works
 (604-276-4150)

Att. 3

FOR ORIGINATING DEPARTMENT USE ONLY			
ROUTED TO:	CONCURRENCE		CONCURRENCE OF GENERAL MANAGER
Sustainability	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
REVIEWED BY TAG	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	REVIEWED BY CAO
			YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

Staff Report

Origin

At the General Purpose Committee on Sept 2, 2008, representatives from the Steveston Harbour Authority and Small Craft Harbours, presented a Steveston Harbour Long Term Development Concept.

It was **MOVED** and **SECONDED**

"the matter of the Steveston Harbour Authority Long Term Development Concept be referred to staff for analysis and a report back on the issue of FREMP designations and potential land offsets and the options for City land in the harbour"

On April 20, 2009, staff reported back to the General Purpose Committee outlining potential benefits as well as the need for more detailed studies to support the illustrative Development Concept. The western component of the Plan is the most complex and would require a more rigorous understanding of the impacts of the shoreline reconfiguration. e.g. upland uses, use and design of the causeway, traffic impacts. As a result, it was determined that the City's immediate focus would be on the eastern side of the harbour that proposes a new causeway and intertidal habitat area.

It was **MOVED** and **SECONDED**

1. *staff, working in partnership with the Steveston Harbour Authority, be directed to develop implementation options for the intertidal habitat and causeway fronting the London Farm area as presented in the Steveston Harbour Authority Long Term Development Concept drawing L.02, and*
2. *that the Waterfront Strategy Implementation Plan currently under development for the Steveston Village/Homeport Waterfront Character Area;*
 - a. *be integrated with the intertidal habitat and causeway concept, and*
 - b. *include consideration of the Steveston Harbour Authority Long Term Development Concept.*

This report outlines the work that has been completed to date in response to these referrals and recommends that Council support the concept of the causeway and new intertidal habitat area being created at the east end of the Steveston Harbour Channel and continue to work with the key stakeholders to determine the best implementation strategy.

Background

The need to dredge and control debris in the Steveston Harbour has been an ongoing and a costly issue for many years. Ensuring that the Steveston waterfront is accessible and a viable working harbour, is paramount to the social, environmental and economic well being of our community.

Steveston Harbour Authority currently receives \$400,000 from Small Craft Harbours for annual dredging.¹ However, this rate of dredging effort has not kept up with the overall rate of infill and

¹ Fisheries and Ocean Canada, Small Craft Harbours- Project Description, Steveston Harbour, Feb 17/10, pg 6.

future funding is not guaranteed. In order to maintain a viable waterfront, a long-term strategy is required to address current and future infill.

In addition, starting in 2011, Port Metro Vancouver will no longer provide funding towards the annual dredging of the Steveston Channel (nor other secondary channels). To allow for a transition period for impacted communities, the Port has established a "local channel dredging contribution program". The overall funding is capped at \$7 million for all communities, resulting in a limit of \$500,000 per channel, over a 10-year period.

The Department of Fisheries and Oceans, through Small Craft Harbours, determined that there was a need to look for a proactive and more sustainable approach to managing infill of the Harbour.

This was the impetus for creating the Steveston Harbour Long Term Concept Plan which focuses on *reducing the amount of Fraser River sediment material that enters into the harbour* by deflecting it through shoreline reconfiguration (Attachment 1,2). The other key benefits of the proposed configuration is that it also deflects the increasing amount of damaging debris in the river; improves navigation and operational functions; enhances opportunities for new businesses including tourism related activities along the waterfront; and creates new high functioning habitat.

Findings

The East Entrance - New Causeway and Intertidal Habitat Area

In October 2008, Small Craft Harbours commissioned a study by Hay & Company Consultants to explore the cost savings opportunities and feasibility of reconfiguring the entrances to the Steveston Channel. The study stated that when the eastern causeway and intertidal marsh is constructed the amount of sediment entering the harbour during freshet will be reduced by 61%.

Constructing this causeway will have the biggest potential impact on reducing the need for dredging in the channel and is therefore considered a priority for implementation by Small Craft Harbours.

In 2009, responding to the Council referral, the City commissioned Hay & Company to review illustrative concept drawings for the new eastern entrance and provide a more detailed plan that maximizes environmental benefits, provides preliminary cost estimates, and outlines different options for implementation (Attachment 3).

The key findings from this study were that:

- A series of artificial islands with a mix of off-channel fish habitat, brackish marsh habitat, riparian habitat, and freshwater wetland habitat would increase biodiversity and provide environmental benefit to the area;
- the new productive habitat would be approximately 66,815 m² (6.7 hectares);
- the estimated value of this new habitat created would be in the range of \$3 to \$4 million which may be recoverable as credit for mitigation required in other projects;
- construction costs for the marsh would be approximately \$2 million;
- construction costs (including modifications to the existing weir) of East entrance to create a causeway would be approximately \$5 million;
- boardwalks and lookouts could be developed in conjunction with the construction of a new marsh (FREMP does not allow boardwalks into already established marshes) which would create another destination along Steveston Greenway and add to the recreational experience of the waterfront; and

- o the majority of the new marsh will be created in the existing mudflat and waterway under Provincial jurisdiction, with minimum impact on the City's waterfront properties.

Intertidal Habitat Implementation Options:

Hay & Company provided various implementation options for the eastern causeway and habitat area, that focused primarily on the width of the access channel (30 to 40 meters) and construction methodology for the marsh (for brevity this new intertidal habitat area is also referred to as a 'marsh' in this report even though it contains a range of distinct habitats as noted above).

Option 1

The causeway and intertidal islands and marsh concept, including the public amenities of the walkway and lookouts and supports are implemented as one project over a short period of time.

The advantage of this approach is that the new environmental areas would be established quicker, there would be an opportunity to maximize habitat compensation credits and have a return on the money invested in building the new habitat. The new shoreline configuration would immediately begin deflecting the river debris and sediment, and the City would have a new destination and recreational experience along the Steveston Greenway.

The challenge is finding an upfront funding source of \$2 million for full implementation. This also does not take advantage of the cost savings that would be realized from utilizing dredgate material as it became available from other projects along the river.

Option 2

The intertidal islands and marsh would be developed over a phased period of time as discrete projects. This could be accomplished by a combination of purchased materials and planting when funding is available; use of free or less expensive dredgate material from other projects along the river to build up the base of the islands; or by deposition that will naturally result from building of the new causeway.

The advantages are that less immediate upfront funding would be required and there would be an opportunity for monitoring over a longer period of time and modifying the shoreline configuration and habitat planting as necessary to maximize the benefits. Significant opportunities exist for cost-savings by leveraging other projects along the Cannery Channel waterfront, such as ongoing dredging or foreshore developments, to make best use of resources in constructing the causeway, islands, and marsh features.

The disadvantage is that the environmental as well as recreational benefits would not be realized as quickly. A habitat banking program/plan would need to be developed and approved by FREMP to identify the appropriate sequencing of construction to ensure maximum habitat and compensation credits would be gained. There would be a longer period of accountability and monitoring required for compliance with the approved plan.

Option 3

The new causeway is constructed to deflect debris and sediment with a very small marsh area that would satisfy the immediate regulatory habitat compensation requirements triggered by the causeway construction. This would result in the least amount of infill in front of the City properties. However, river sediment would naturally collect and settle upriver from the new

causeway. As a result, over time, the shoreline would be altered and new habitat would develop with minimum or no human intervention.

The major advantage of this option is that this would be the least costly in terms of upfront capital costs and investment.

There are a few disadvantages to this approach. For example opportunities would be lost to maximize the environmental benefits and effects of deflecting the sediment. Beneficial and sustainable use of dredgate materials and partnerships and leveraging opportunities would also be minimized.

However, a key factor is that engineering studies have not been done to identify the hydrology effects of just constructing the causeway. How would this potentially impact the existing shoreline? For example, much more debris may collect along the shoreline in front of the City properties or eddies may be created or there may be more wave action against the dike. If the intertidal habitat plan is not adopted, the City would require more information on the impacts of just building the causeway.

Analysis

Implications and Benefits to the City

The Steveston Community Fishing Harbour Long Term Plan L.02, as developed by Small Craft Harbours, and the more detailed February 2010 Balanced Environmental plan 5249-D-28.1 support the Corporate goals of sustainability, economic development, climate change resiliency, eco-Plus+, place-making and improved recreational access along the waterfront.

These plans fit well within the overall Waterfront Strategy adopted by Council and the Steveston Waterfront Implementation Plan.

Table 1: 2009 Waterfront Strategic Directions

Strategic Direction	Key Achieved Objectives
<i>Working Together</i>	Strategic partnerships (SCH, SHA, PMO, CoR)
<i>Amenities and Legacy</i>	Great Destinations and connectivity
<i>Thriving eco-systems and community</i>	Towards an Eco-plus+ Waterfront
<i>Economic Vitality</i>	Appropriate and Strategic Land Uses
<i>Responding to climate change and natural hazards</i>	Multi-disciplinary solutions

Approval from the City of Richmond is required for construction of this Eastern portion of the Steveston Harbour Long Term Plan. As riparian owners, the City has the legal right to have access to open water. Where there is potential for economic development of a waterfront property for e.g. wharves and docks for marinas or transportation of goods, then lose of this water access could be considered a detriment to an owner. However, the FREMP designation in front of the City owned waterfront lots is Red, therefore, any other use beyond the existing conditions would not be permitted.

The main economic benefits will be realized within the Steveston Harbour by all owners, including the City, from the construction of the new causeway and navigational entrance into the

harbour and from reducing the cost of dredging in the future. A more functional harbour will enhance and continue to support commercial fishing requirements, and create new opportunities for recreational boating and public wharfs. This in turn can support recreational Blueway programs such as dragon boating regattas, kayaking, and enhanced Maritime festivals at the No.2 Road Pier and Britannia Heritage Shipyards.

The City has identified the South Dyke area to the east of the harbour and its properties as a major regionally significant recreational corridor/greenway. A bridge, walkway over the marsh and a viewing platform into the river would add another destination, aesthetic, and educational/interpretive experience for visitors.

This area is already designated an environmentally sensitive area. While impacting an existing environment to create another environment may initially appear counterproductive, the Department of Fisheries and Oceans (DFO), through initial discussions, has indicated that this will produce an even higher ecologically functioning fish habitat. Substantial net benefit would be realized with the proposed concept plan.

Another benefit is enhancing the City's climate change resiliency by the building of marsh, wetlands and islands in front of the dike which will help mitigate and absorb some of the impacts of rising sea levels, storm surges and wave action.

Key Stakeholders and Implementation

The Steveston Harbour Cannery Channel Long Term Concept Plan is a very forward thinking proactive plan focussing on a long term vision towards a more sustainable river and harbour.

It provides an exciting prospect to potentially become a model for innovative partnerships, collaboration, efficacy and sustainable and creative approaches to problems experienced by the many stakeholders along the Fraser River. Much work still needs to be done, however, the will and desire to work together has been expressed by all the key stakeholders.

Jurisdiction and Roles:

The location and the majority of the area taken up by the causeway and proposed marsh habitat falls under the jurisdiction of the Province and Port Metro Vancouver (through an agreement being negotiated presently).

Port Metro Vancouver – PMV is currently developing a comprehensive regional habitat banking program together with FREMP and DFO as part of a new sustainability initiative called the *Fraser Framework Agreement*. This will be a unique program in the Lower Mainland that identifies locations in a number of municipalities where new and enhanced habitat can be created as required for regulatory compensation. This will also allow for cost savings by using dredgate material for land reclamation that would otherwise have been disposed off.

The Fraser Framework Agreement is also meant to:

- build beneficial relationships with river stakeholders.
- create efficiencies between agencies with overlapping areas of responsibility.
- develop a multi-agency agreement that recognizes the importance of the Fraser River to Canada and outlines how we will work together to respond to emerging and long-term river management issues.

Port Metro Vancouver has expressed interest in *including the Steveston Harbour Eastern Entrance proposed intertidal habitat area as one of their compensation areas* under this new

Framework. It is likely that the Port would follow the Option 2 incremental implementation identified above as the most cost effective and sustainable approach to meet their requirements.

Small Craft Harbours - To date, Small Craft Harbours has been the lead proponent on the Steveston Harbour Long Term Development Plan and have commissioned the initial studies and plans. To make this long term plan manageable, SCH has identified a series of priority features for a potential Phase 1 construction project. These include:

- Construction of the new *West* entrance that entails breaching the west end of Steveston Island, dredging for the new navigation channel, and constructing a new training wall and beach/marsh area (this does not include the connection to 7th Avenue or Garry Point Park)
- Construction of the new *East* causeway, dismantling of the existing weir, dredging for a new navigation channel and construction of a small marsh for habitat compensation.

Further studies, approvals, and agreements between the different stakeholders and owners with jurisdiction in the area are still required.

SCH has requested a three-party Memorandum of Understanding be developed between the City, Steveston Harbour Authority, and SCH that reflects the intent to continue to work together to develop a mutually beneficial long-term plan for the Steveston Harbour.

Steveston Harbour Authority – SHA is currently working on a long-range plan for the lands and operations that they manage as a harbour authority. SHA supports the proposed overall Harbour reconfiguration plan and recognizes the economic and functional benefits from improved navigation, a reconfigured moorage basin and that there will be new opportunities to attract more businesses both on the water and on the adjacent uplands.

Environmental Requirements – Various environmental approvals will likely be required. Given the federal interest in the project, an approval under the Canadian Environmental Assessment Act (CEAA) will likely be necessary. This can be extensive review processes, involving a suite of social, economic and environmental technical studies and well as community and First Nations consultation. At this time, it is not anticipated that the project will trigger a Provincial environmental assessment under the BC Environmental Assessment Act (BCEA).

Timeline

The following is a potential timeline based on discussions with other agencies and stakeholders:

2010-2012 Upon approval by Council of the Eastern Entrance concept plan, further detailed engineering plans, hydrology studies, all environmental and legal approvals and agreements (including partnerships) and implementation plans would be undertaken and completed. Responsibility for the different studies will be determined between the stakeholders.

Strategic and coordinated funding models will be developed jointly by the stakeholders.

A pilot marsh habitat is currently being created on Steveston Island by SCH to identify and establish a best practice for intertidal habitat construction.

2011 The City together with the other stakeholders will review in more detail the proposed illustrative drawings labelled Steveston Community Fishing Harbour-Long Term Development Plan L.01 for the Western causeway connecting Steveston Island to 7th Avenue and Garry Point Park. A work program will be

formulated identifying all further engineering and design studies/plans and approval processes required as well as stakeholder responsibilities.

2012 This is projected as being the earliest date, given all the approvals still required, that work would commence on the new navigation channels and causeways (east and west entrances).

2015-2017 Construction of the intertidal habitat area including islands, wetlands, and marsh may be implemented over a number of years as per Option 2 and completed within this timeframe.

Construction of a recreational trail, boardwalks, interpretation signage, and a viewing deck would also be completed concurrently.

Depending upon a completed approval process (environmental, legal and community); availability of funding, an implementation strategy e.g. incremental development through use of available dredging material, it is conceivable that the western end causeway and land reclamation would be underway.

Recommended Next Steps

There is much work to be undertaken, however, the long-term vision and legacy potential is very exciting and with leadership and creative partnerships and solutions; the benefits will be enormous. In order to move forward, staff is recommending the following steps:

1. That Council approve, in principal, the use and potential redevelopment of the foreshore in front of the City owned properties at 6240 to 6280 Dyke Road for a new navigational channel, causeway, and intertidal habitat area and that the February 2010 Balanced Environmental Plan 5249-D-28.1 provided within the 2010 Hay & Company report be used as the guiding framework until a final plan has been completed (Attachment 3).
2. Staff in partnership with Steveston Harbour Authority and Small Craft Harbours establish a Memorandum of Understanding outlining the intent and commitment to work together towards a mutually beneficial long-term vision for Steveston Cannery Channel (Harbour).
3. City staff continue to work closely with the Province, Port Metro Vancouver, Small Craft Harbours and Steveston Harbour Authority to establish guiding principles, finalize all plans and identify roles and responsibilities for Phase 1 and establish the work program for the Western causeway and basin reconfiguration.

Final approval by Council will only be considered when all necessary detailed engineering (including understanding the relationship to future raising of the dyke) and habitat planting drawings; habitat balance sheet; implementation strategy; legal surveys and agreements are completed and in place to the satisfaction of the City and other key stakeholders.

Financial Impact

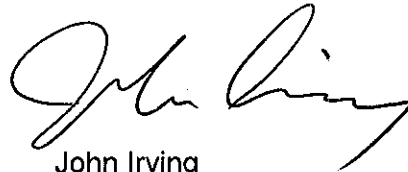
There is no financial impact at this time.

Conclusion

The Steveston Harbour Cannery Channel Long Term Concept Plan is a very forward thinking proactive plan focussing on a long-term vision towards a more sustainable river and harbour. It provides an exciting prospect to potentially become a model for innovative partnerships, collaboration, efficacy and sustainable and creative approaches to problems experienced by the many stakeholders along the Fraser River. It is recommended that Council approve the use of the foreshore in front of the City owned waterfront properties as identified in this report for the new proposed Eastern navigation channel, causeway and enhanced intertidal habitat area.

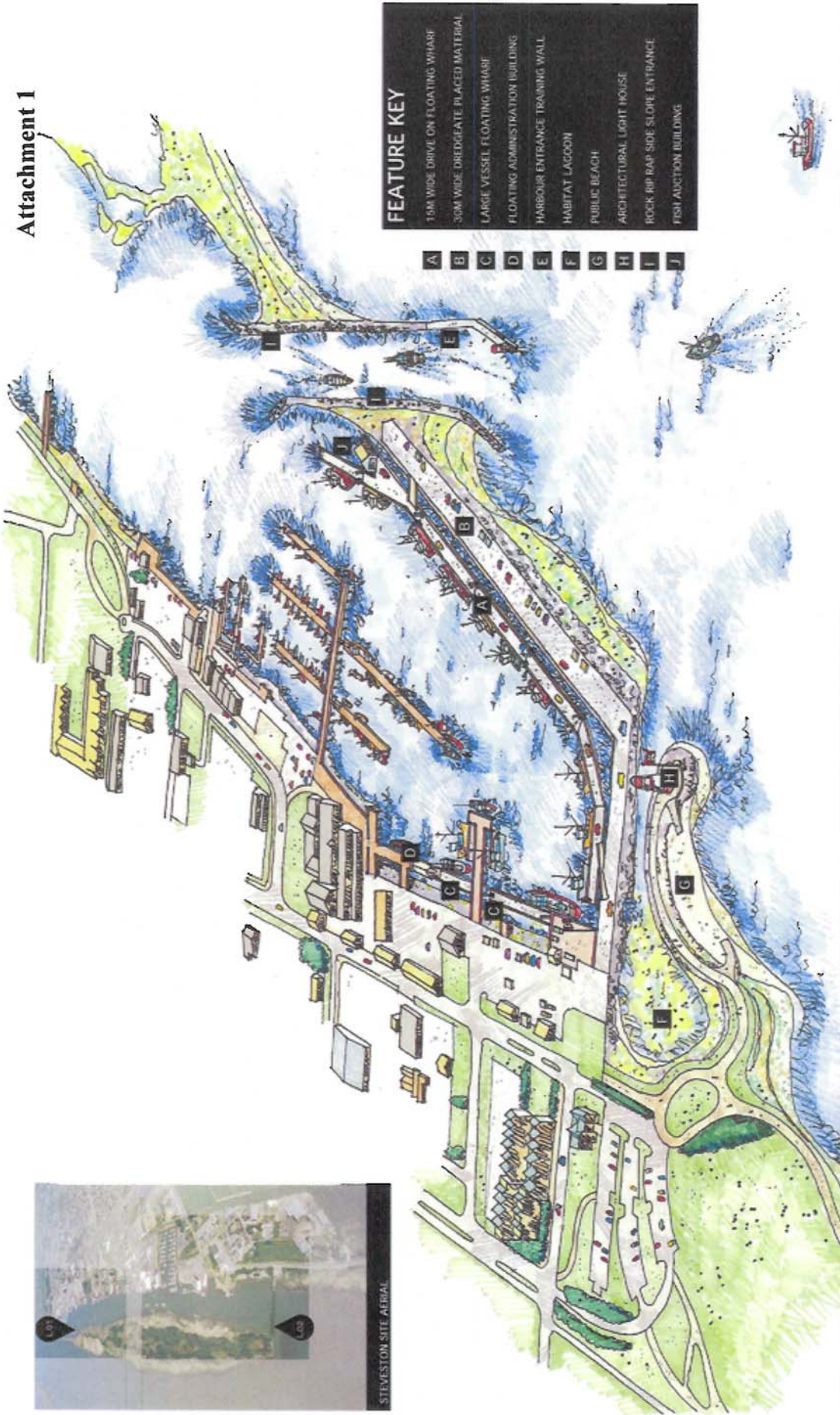


Yvonne Stich
Parks Research Planner 2
(3310)



John Irving
Director of Engineering
(4140)

Attachment 1



NO.	REVISION	DATE	BY	CHKD.

L.01

PROJECT: STEVESTON COMMUNITY FISHING HARBOUR

DATE: 1/18

SCALE: AS SHOWN

PROJECT: STEVESTON COMMUNITY FISHING HARBOUR

DATE: 1/18

SCALE: AS SHOWN

STEVESTON COMMUNITY FISHING HARBOUR - LONG TERM DEVELOPMENT PLAN

Attachment 2

FEATURE KEY

- TIDAL FLAT MARSH
- ROCK TRAINING WALL
- TIDAL FISH PASSAGE
- SHEAR BOOM REPLACEMENT PROMEMADE
- BENEFICIAL USE OF COARSE SAND
- DREDGATE LOCATION
- TIDAL ACCESS
- EXISTING DEBRIS SHEAR BOOM

- A
- B
- C
- D
- E
- F
- G



STEVESTON SITE AERIAL



NO.	DATE	BY	REVISION

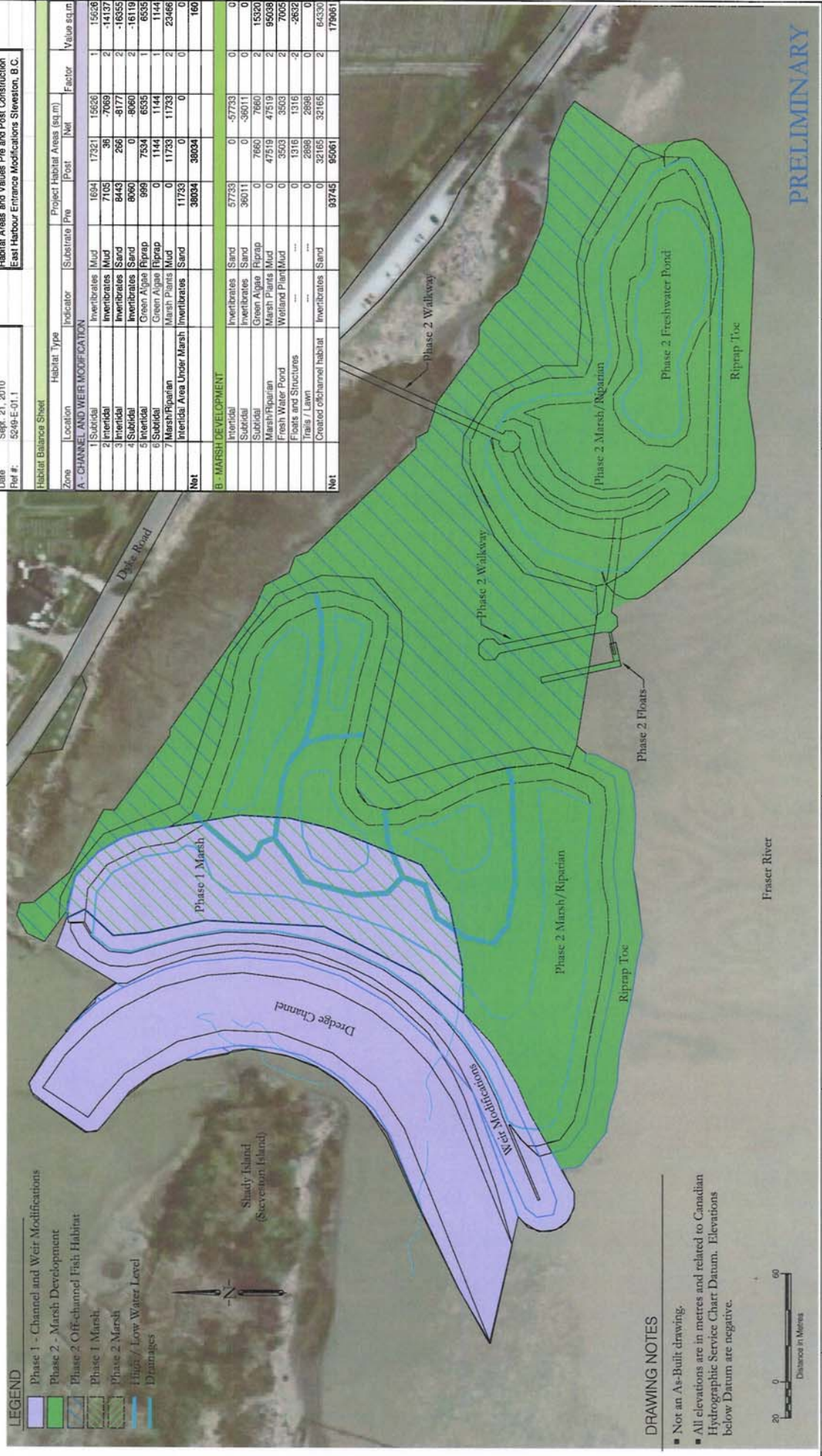
NO.	DATE	BY	REVISION

STEVESTON COMMUNITY FISHING HARBOUR -
LONG TERM DEVELOPMENT PLAN

L.02

Attachment 3

Date		Sept. 21, 2010		Habitat Areas and Values Pre and Post Construction					
Ref #:		5249-E-01.1		East Harbour Entrance Modifications Steveston, B.C.					
Habitat Balance Sheet				Project Habitat Areas (sq.m)					
Zone	Location	Habitat Type	Indicator	Substrate	Pre	Post	Net	Factor	Value sq.m
A - CHANNEL AND WEIR MODIFICATION									
1	Subtidal	Invertebrates	Mud	1694	17321	15626	1	15626	
2	Inertial	Invertebrates	Mud	7105	36	-7069	2	-14137	
3	Inertial	Invertebrates	Sand	8443	266	-8177	2	-16355	
4	Subtidal	Invertebrates	Sand	8060	0	-8060	2	-16119	
5	Inertial	Green Algae	Riprap	999	7534	6535	1	6535	
6	Subtidal	Green Algae	Riprap	0	1144	1144	2	2288	
7	Marsh/Riparian	Marsh Plants	Mud	0	11733	11733	2	23466	
Net	Inertial Area Under Marsh	Invertebrates	Sand	11733	0	0	0	0	160
B - MARSH DEVELOPMENT									
1	Inertial	Invertebrates	Sand	57353	0	-57353	0	0	
	Subtidal	Invertebrates	Sand	36011	0	-36011	0	0	
	Subtidal	Green Algae	Riprap	7660	7660	0	2	15320	
	Marsh/Riparian	Marsh Plants	Mud	0	47519	47519	2	95038	
	Fresh Water Pond	Wetland Plant	Mud	0	3503	3503	2	7005	
	Floats and Structures	---	---	0	1316	1316	-2	-2632	
	Trails / Lawn	---	---	0	2898	2898	0	0	
	Created off-channel habitat	Invertebrates	Sand	0	32165	32165	2	64330	
Net				93745	95061	17061		17061	



PRELIMINARY

- LEGEND**
- Phase 1 - Channel and Weir Modifications
 - Phase 2 - Marsh Development
 - Phase 2 Off-channel Fish Habitat
 - Phase 1 Marsh
 - Phase 2 Marsh
 - Fresh / Low Water Level
 - Drainages

DRAWING NOTES

- Not an As-Built drawing.
- All elevations are in metres and related to Canadian Hydrographic Service Chart Datum. Elevations below Datum are negative.



Client	<p>Fisheries and Oceans Pêches et Océans</p> <p>Small Craft Harbours Branch</p>	Author		Checked by	XIE
		Drawn by		WA	
		Date		Sept. 21, 2010	
		Scale		1:2000	
		Inspectors	DC		
		Paper	11 x 17		
Ref. No.	REFERENCE	DWG. No.	5249-D-28.1		