



Date: November 4, 2010

**TO: Board Members – Vancouver Park Board**  
**FROM: General Manager – Parks and Recreation**  
**SUBJECT: Jericho Marginal Wharf**

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## RECOMMENDATION

- A. THAT the Jericho Marginal Wharf be demolished for reasons of public safety and ecological restoration;*
- B. THAT staff work with stakeholders to prepare a revised concept plan for this area to be brought back to the Board for approval.*

## POLICY

The Board approves major changes in Vancouver parks including the design and development of parks.

## BACKGROUND

The Jericho Beach Marginal Wharf (the ‘Wharf’) was built more than 60 years ago to serve the needs of the Royal Canadian Air Force amphibious aircraft operations which required a concrete apron between their hangers and launch ramps. This area has a rich and varied history prior to the wharf. Important heritage considerations include a First Nations settlement, a logging operation in the late 1800’s at “Jerry’s Cove” from which the name Jericho originated, and Vancouver’s first airport on the natural beach that operated from 1920 through 1939.

Since the 1980’s the Wharf has been owned and operated by the Vancouver Board of Parks and Recreation. Wharf condition survey reports from 2002 and 2005 conclude that the Wharf is at the end of its serviceable life and that it requires demolition or significant repairs to ensure public safety. Presently, the Wharf is fenced and inaccessible to the public.

In July 2008 the Park Board adopted a concept plan for the Wharf that includes the demolition and removal of most of the Wharf, restoration of the natural beach and foreshore, and retention of a small portion of the deck and railings for historic purposes. Subsequently stakeholders expressed concerns about the plan and planning process.

In response to the concerns, in March 2009, the Planning and Environment Committee approved an additional facilitated consultation process to determine the future of the Wharf. This request was a response to the various stakeholders who expressed different interests and ideas with respect to the Wharf's future.

The purpose of this report is to update the Park Board on the additional consultations held since March 2009, to share information received from the Department of Fisheries and Oceans (DFO), and to recommend the next steps for the development of this area.

## **DISCUSSION**

### **Stakeholder Input**

#### ***Stakeholder Workshop***

In 2009 the Vancouver Board of Parks and Recreation retained The Neutral Zone Coaching and Consulting Inc. to facilitate the requested additional consultation process. In November 2009, two facilitators worked with a group of 8 selected community stakeholders to determine whether consensus could be attained regarding the future of the Wharf. While the stakeholders agreed in principle that a certain compromise is acceptable in the interests of meeting different community needs, ultimately, they were unable to reach an agreement that would bridge the important needs that appeared to be in direct conflict. To date, the facilitated consultation process with selected stakeholders has not provided a consensus on a future plan for the Wharf.

The consultant's stakeholder consultation report is attached as Appendix A to this report for information.

#### ***Stakeholder Meeting October 13, 2010***

A meeting hosted by the General Manager and Park Board staff on Wednesday October 13, 2010 at the Vancouver Board of Parks and Recreation Boardroom was attended by 6 stakeholders including representatives from the Committee to Save the Jericho Wharf, the Jericho Sailing Centre Association, and the Jericho Stewardship Group.

At the meeting, the stakeholders expressed their varied viewpoints about the plans for the Wharf. A key concern from the stakeholders who support retention of the Wharf is the protection of flexible public space and waterside experiences. These include the City and mountain views from the Wharf's vantage point adjacent to deep water, the opportunity for large public spectator gatherings during summer fireworks displays, and the multi-use recreation opportunities available on the accessible concrete deck. It is possible that these uses can be accommodated at existing adjacent facilities (such as the Jericho Pier) and in a new design for the area.

Staff recommends that the original concept plan be revised based on further consultations and input from the stakeholders, with the intent that the existing users' functions and programming be accommodated within the new design.

All stakeholders were in agreement that the renewal of this area is an opportunity to do positive things for the City on many levels: environmental, sustainable, and functional.

As a follow up to this meeting, staff has requested additional scientific references from DFO to verify its position about removal of the Wharf and prepared this report.

## **Environmental Considerations**

### ***DFO***

Recently, DFO presented a strong and valid case for the removal of the Wharf, and for the restoration of Jericho beach to support fish habitat. Staff received a letter from the Habitat Biologist at DFO on August 24, 2010. This letter was a response to the alternate concept plans proposed for the Wharf. In this letter DFO states its preference for the option to completely remove the Wharf from Jericho Beach, accompanied by natural shoreline restoration in place of the Wharf to maximize habitat values. The removal and restoration effort could also provide habitat compensation credits for future waterfront works by the City.

The letter is attached as appendix B to this report for information.

### ***Habitat Context***

The wharf's demolition could be the beginning of a unique ecological restoration effort, as this area has juxtaposed wildlife habitats: shoreline and upland. Removal of the wharf will provide approximately 150 linear meters of new shoreline habitat in proximity to the upland natural areas in Jericho Park. These upland natural areas are being enhanced in partnership with the Jericho Stewardship Group. This edge condition is immensely valuable for wildlife, and Jericho Park is one of the very few parks in the City that can offer such a condition. The restoration project can showcase nature restoration in the City for the benefit of wildlife and people alike.

### ***Vancouver 2020 a Bright Green Future***

The Vancouver 2020 A Bright Green Future Action Plan calls out goals and targets for a greener city. A primary goal (Goal #6) is access to nature. Long term directions of this plan include providing access to nature, the day-lighting of buried streams, supporting ecological restoration, developing wildlife corridors, and providing wildlife habitat. Removal of the Wharf matches the City's action plan for becoming the world's greenest City by 2020.

### **Funding**

Approximately \$2,000,000 in funding is available for this project from the 2006-08 and the 2009-11 capital plans. An order of magnitude cost estimate prepared by marine engineers in March 2010 indicates that this budget accommodates demolition and disposal of the Wharf, beach reinstatement, pathways, interpretive elements, and landscaping. Materials would be recycled for adaptive reuse where possible and where not contaminated.

## SUMMARY

The Wharf is at the end of its serviceable life and it is presently unsafe and inaccessible to the public. For these reasons, staff recommends that the Wharf be removed and that the wharf materials are recycled where practical.

Staff also recommends that the original concept plan be revised with stakeholder input to create an environmentally sensitive, sustainable, and functional solution. Removal of the wharf offers a rare opportunity to combine ecological restoration with an exceptional urban waterfront experience and program. The revised concept plan will be brought back to the Board for approval.

Prepared by:

Planning & Operations  
Vancouver Board of Parks and Recreation  
Vancouver, BC

Appendix A – Jericho Beach Marginal Wharf Stakeholder Consultation Report  
November 30, 2009

Appendix B – Letter from DFO August 24, 2010

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## EXECUTIVE SUMMARY

Throughout November 2009, two facilitators worked with a group of eight community stakeholders to determine whether consensus could be attained regarding the future of Vancouver's Jericho Beach Marginal Wharf (the "Wharf"). Early discussions revealed willingness for collaboration and compromise among the stakeholders, and hope that consensus could be reached. While the stakeholders agreed in principle that a compromise to retain part of the Wharf was acceptable in the interests of meeting different community needs, ultimately they were unable reach an agreement that would bridge important needs that appeared to be in direct conflict.

Stakeholder interests can be described as falling into three distinct, although with some overlapping, perspectives: a desire to retain all or a large portion of the Wharf as a destination and public gathering space; a desire to remove a large portion of the Wharf and expand launch area for naturally powered watercraft; and a desire to remove a large portion of the Wharf and restore the natural beach for an improved environmental and ecological habitat. There was strong overlap between the watercraft and beach restoration stakeholders, as both groups have an interest in removing significant portions, or all, of the Wharf to support their vision for Jericho Beach.

All stakeholders acknowledged that the environmental impact of the Wharf was important, although there was some debate as to the actual and ongoing impact. For example, some asserted that creosote, a toxic coating on the supporting pilings, continues to leech into the water, while others claimed that the creosote leeching after all these years is minimal. Some stakeholders suggested that the City's action plan, *Vancouver 2020: A Bright Green Future*, serve as a guide for the future of the Wharf.

At the close of the facilitated discussions, the stakeholders were unable to reach agreement on the size and configuration of a preserved Wharf. Those wishing to retain the Wharf wanted to keep at least 50% of it, which was too much for stakeholders wishing to restore the natural beach or expand the launch area for naturally powered watercraft. While there appeared to be common ground in some form of ecological restoration, the enduring impediment to consensus seemed to rest between the conflicting desires for a safe, accessible area for launching watercraft in the area where the Wharf now stands, and the desire for a relatively long section on the northern edge of the structure to be preserved as a destination point and public gathering space.

## INTRODUCTION

On October 26, 2009, the Vancouver Park Board staff retained Lori Charvat and Monique Steensma of The Neutral Zone Coaching and Consulting Inc. to facilitate a collaborative stakeholder consultation process with regard to the future of the Jericho Beach Marginal Wharf. The process was designed to determine whether a consensus solution could be found that has the support of all or most stakeholders. The purpose of this Report is to outline the degree to which the stakeholders could reach consensus and provide an outline of the stakeholders' areas of shared interests and areas of disagreement.

## BACKGROUND

The Wharf, originally built for the Royal Canadian Air Force seaplane base, has been in public use since the early 1980s. Its visible deterioration led the Park Board to commission engineering studies in 1989, 2002, and 2005, all of which raised concern about the Wharf's viability and structural integrity. In 2007, the Park Board commissioned engineers and landscape architects to develop conceptual design options with cost estimates for keeping the entire Wharf, keeping part of it, and demolishing all of it.

The future of the Wharf was discussed at three full Park Board Meetings in 2007, 2008 and 2009, as well as two Committee Meetings in 2008 and 2009. The Park Board solicited public input through a March 2008 Open House and a two-month long survey posted on the Park Board website to gauge public support on four design concepts. The survey received 546 responses. In June 2008, Park Board staff submitted an amalgamation of the four concepts (referred to as Concept 1C) to the Park Board Commissioners, which would retain a small section of the eastern portion of the Wharf and add interpretive signage in the restoration design to commemorate the historical significance of the Wharf. Concept 1C was approved at the July 7, 2008 Park Board meeting.

After the Fall 2008 civic election, the Planning and Environment Committee of a newly constituted Park Board reviewed the Wharf issue at its February 3, 2009 meeting. On March 23, 2009, Park Board Commissioners approved a resolution for Park Board staff to undertake a "facilitated consultation process" on the future of the Jericho Marginal Wharf. From the start of this stakeholder consultation process, public perspective on the Wharf has remained strongly divided between its retention and destruction. Based on prior consultations with the community, the Park Board staff identified eight stakeholders to represent various community interests in the stakeholder consultation process. These stakeholders were selected because of their previous active engagement with the issue of retaining or removing the Wharf. The selected stakeholders represented the spectrum of options, ranging from "Keep the Wharf" to "Remove the Wharf". Below, we further explain the perspectives offered by the stakeholders in this dialogue.

## CONSULTATION PROCESS

In this process we held individual meetings with each of the eight stakeholders, followed by two facilitated group meetings. We also studied the documentation available on the issue, and met with the structural engineer and landscape consultants that were involved with the project since 2007.

The initial individual discussions were quite broad. We asked the stakeholders to share their interests and ideas about the Wharf. Among other things, each of the stakeholders was invited to answer the questions, "What do you want to create with this space we know as the Jericho Wharf?" and "Suppose ultimately what you want for the Wharf doesn't happen; what are other ways you can meet these interests?"



The objective of the first group meeting was to air the variety of interests from the stakeholder group and to brainstorm for new ideas regarding the Wharf.

The second group stakeholder meeting was held three days later and included the structural engineer and two landscape architects, previously involved with the Wharf project, to help the stakeholders frame and assess the viability of their ideas. The objective of this second meeting was to examine the ideas generated and to narrow in on consensus.

## STAKEHOLDER PERSPECTIVES

The stakeholders were brought together by the Park Board because of their demonstrated interest in the future of the Wharf. Although assembled to collaborate towards consensus, the stakeholders entered the process and ultimately remained strongly attached to their interests in the Wharf's future. The stakeholders were:

*Andrew Appleton, Manager, Stewardship and Restoration, Metro Vancouver, Evergreen.* Andrew clarified that Evergreen is not an advocacy group, and therefore he was not advocating for either retaining or removing the Wharf. His interest as Evergreen's representative is to encourage community engagement in the Jericho Beach area, and prefers a compromise solution that meets the needs of many. If the Wharf is wholly or partially removed, he sees a rare opportunity to restore a natural habitat from beach to forest.

*Joan Bunn, Community Representative.* Joan represents an unofficial group of community members that wish the Wharf to be retained and restored, and has coordinated the "Save the Wharf" petition. She believes that Vancouver parks should offer a variety of elements to engage the public, and that the Wharf as a unique structure should be retained in balance to other opportunities for recreation and access to green space. Joan believes the expanse of the Wharf provides a desirable destination, experience, and viewpoint for walkers and cyclists, as well as easy access to those with limited mobility, including residents of nearby public housing.

*Mike Cotter, General Manger, Jericho Sailing Center Association (the "JSC").* Mike represents the interests of the Association's members who use the area for naturally powered watercraft activities such as sailing, kayaking and canoeing. He believes that removal of the Wharf will provide a way to resolve two issues: (1) current and future safety issues caused by overcrowding in the launch area directly in front of the Centre, and (2) ability to meet current and future demand for the Association to provide for increased access to naturally powered watercraft activities.

*Duane Geddes, Executive Director, Disability Foundation and Disabled Sailing Association (the "DSA") of BC.* The DSA provides access to sailing for people with significant physical disabilities. Currently, the procedure to get sailors in and out of their boats must be done on land and is quite time-consuming. Duane hopes that whole or partial removal of the Wharf will provide space to build a floating dock, which could approximately double the number of sailings



available without increasing the number of boats, staff or volunteers. He wants disabled sailors to continue launching from Jericho Beach so as to maintain inclusivity within the sailing community at the Jericho Sailing Centre.

*Dawn Hanna, Jericho Stewardship Group.* As representative of the Jericho Stewardship Group, Dawn is in favour of removing the Wharf. The Stewardship Group is dedicated to restoring and enhancing natural habitat in Jericho Park. Removing most or the entire Wharf facilitates the ecological restoration of the beach-to-forest corridor at Jericho. Dawn also supports the use of the naturalized beach for launching human-powered watercraft.

*Maureen Jack-Lacroix, Community Member.* Maureen identifies her interest in the Wharf as that of a community member committed to community engagement and public events, but also notes her involvement in founding the *Be The Change Earth Alliance*, a not-for-profit group which has the goal of designing and implementing community engagement programs in collaboration with other organizations. Maureen would like to see the Wharf retained and restored, and used as a site for community activities such as Earth Day, farmers markets, dances and art shows.

*Gail Owen, Community Member.* Gail is a community member with two strong interests related to the future of the Wharf. As a member of the Jericho Sailing Center Association Board of Directors and its Safety Committee, Gail has ties to that organization and supports the need to increase safety and expand capacity to launch naturally powered by removing the Wharf. Gail also believes the Wharf should be removed for environmental reasons and has promoted a petition to retain a small portion of the Wharf and restore the rest of the beach to its natural state.

*Gary Wedeking, Community Member.* Gary supports the retention and restoration of the Wharf. He represents one perspective of the "casual user" and enjoys regular walks to the Wharf as a destination and viewpoint. Gary joined Joan Bunn in the Save the Wharf campaign, and similarly believes that the Wharf is a significant and unique artifact of Vancouver's history that should be retained.

## STAKEHOLDER INTERESTS

The interests and options to address interests among the stakeholder group were identified as:

Interests	Options to Address Interests
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Interests	Options to Address Interests
<ul style="list-style-type: none"> <li>• Provide unique Park experience compared to using more structured recreational facilities, beaches and green space.</li> <li>• Provide experience of being over water on a vast expanse for those who do not engage in on-water activities, including those with limited mobility.</li> <li>• Provide a destination point with interesting and beautiful views.</li> </ul>	<ul style="list-style-type: none"> <li>• Retain and restore at least 50% of Wharf, including a large portion of the long north side over the water.</li> <li>• Retain Wharf and restore with transparent panels or a raised platform to provide view line for people in wheelchairs. Platform could also be used for performance activities.</li> <li>• Remove Wharf and restore and increase width of and access path to pier that lies west of JSC.</li> <li>• Remove Wharf and recycle concrete to create viewing platforms over the two groynes on either side of the current Wharf.</li> </ul>
<ul style="list-style-type: none"> <li>• Engage the community in the space by providing programmed activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Retain and restore at least 50% of Wharf, including a large portion that will accommodate community activities, e.g., farmers' markets, Earth Day events, and dances.</li> </ul>
<ul style="list-style-type: none"> <li>• Reduce current and future safety risk due to crowded launch area for human-powered watercraft, as well as the current risk for individuals on watercraft being swept under the Wharf.</li> <li>• Allow the DSA to provide increased access to sailing for individuals with significant physical disabilities.</li> <li>• Allow the JSC to provide increased access to naturally powered watercraft activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep only a small portion of Wharf on eastern shore and increase launch area by allowing launches from beach in the area where the Wharf now stands.</li> <li>• Add launch area on Locarno Beach.</li> <li>• Provide space for a floating dock to allow the DSA to increase capacity (JSC &amp; DSA to raise funds for building dock).</li> </ul>
<ul style="list-style-type: none"> <li>• Remove what is perceived as an environmental threat.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove the Wharf to remove the environmental threat.</li> </ul>
<ul style="list-style-type: none"> <li>• Determine environmental impact of the Wharf's retention and removal, particularly with respect to the creosote leeching from pilings supporting the existing Wharf.</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain definitive answer on whether creosote is still leeching from pilings and, if yes, address this finding a way to stop leeching or minimize damage.</li> </ul>



Interests	Options to Address Interests
<ul style="list-style-type: none"> <li>Increase or improve natural habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Take advantage of a rare opportunity to restore an uninterrupted beach-to-forest habitat.</li> <li>Work toward meeting goals in Vancouver 2020 Action Plan, specifically recommendations to increase public access to green space, restore shoreline and inter-tidal zones and advocate for a healthy Pacific Ocean.</li> </ul>
<ul style="list-style-type: none"> <li>Increase public knowledge of the history of Jericho Beach, dating back to the First Nations settlement.</li> </ul>	<ul style="list-style-type: none"> <li>Include interpretive signage about the history of the area, indicating First Nations settlement and used by whalers and military and non-military aircraft.</li> <li>Embed a full size shadow of aircraft onto the restored Wharf surface.</li> <li>Build a representation (though not full replica) of the longhouse that stood near the beach.</li> </ul>
<ul style="list-style-type: none"> <li>Improve aesthetics of the Jericho Beach area.</li> </ul>	<ul style="list-style-type: none"> <li>Retain and restore the Wharf into a more useable space by improving the deck with artistic benches (perhaps incorporating an aircraft theme), decorative motifs in the new decking and restoring the existing Wharf railings.</li> <li>Remove the Wharf and restore the natural beach habitat with dune grass and other indigenous plants.</li> </ul>

### CONVERGENCE AND DIVERGENCE OF INTERESTS

At the end of the consultation process, the stakeholders did not reach consensus on the future of the Wharf. The major points of convergence and divergence of interests were as follows:

- All parties supported the concept of increasing public knowledge about the diverse history of the area, which they believe should capture far more than just the military background of the Wharf. Most of the stakeholders were well versed on the history of the area and shared their pictures and stories of a vibrant First Nations community, whalers, and the first "airport" in the area from where beach-launched seaplanes participated in developing the province.
- There was strong support for addressing environmental issues at the Wharf site, though no consensus as to the extent of environmental hazards posed



by the Wharf, nor the extent of removal or restoration that would need to occur to satisfactorily address any hazards.

- There was strong support for providing space for a floating dock, which would primarily improve access for disabled sailors. Early discussions on this topic referred simply to the need for the floating dock, while later discussions raised the further concern that a floating dock might need to be connected to a pier. Some stakeholders, while not disagreeing with the idea of increasing access for the DSA, were concerned with how the combined pier and dock would impact the area visually and did not want to commit to a specific agreement on this issue.
- The stakeholders advocating for increased access for naturally powered watercraft did not disagree with the interest of having a location in the area as a destination and viewpoint, however they felt this interest could be addressed by any of the following: (1) improving the pier to the west of JSC, (2) building viewing platforms over the groynes adjacent to the current Wharf, or (3) retaining only a small portion of the Wharf on the east side of the beach as was envisaged in June 2008 as Option 1(c), perhaps with a slightly larger portion preserved.
- Stakeholders advocating for retaining at least 50% of the Wharf felt that expansion of JSC and DSA activities should come not at the expense of the desire for a long expanse of Wharf and suggested expanding these water-based activities to Locarno Beach. Stakeholders interested in increasing the launch area for naturally powered watercraft stated that a regular launch area on Locarno Beach was not acceptable as it had its own risk factors due to depth of water and possibility of being blown in to the pier.

### Conclusion

Individual stakeholders remained strongly attached to their interests and divided along the same lines at the end of the process as they had been at the beginning. All participants made an effort to work towards consensus, but ultimately the inability to find a way to address two competing interests prevented the group from finding a solution. Nonetheless, this process was successful in clarifying the various community interests at a deeper level, and we believe that most stakeholders left the process with a much better understanding of other's hopes and vision for the Wharf. All stakeholders brought their commitment to community participation and appreciation for Jericho Beach to the table.

While some interests and ideas converge as to what should be done with the Wharf in a general sense, the most profound conflict rests between the interests in retaining a long stretch of the Wharf for on-land recreational walkers, cyclists or public events and the removal of all or most of the Wharf perceived as essential to provide a larger, safer launch area for human powered water-craft. Although options were reviewed to bridge this gap in interests with the structural engineer and landscape architects at the second

public meeting, there was limited time and information to adequately close this gap and find consensus.





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August 24, 2010

*Your file*      *Votre référence*

*Our file*      *Notre référence*  
10-HPAC-PA2-00343

Mr. Tilo Driessen  
Vancouver Board of Parks and Recreation  
2099 Beach Avenue  
Vancouver, British Columbia  
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Dear Mr. Driessen:

**Subject:** Jericho Wharf Project

Further to our telephone conversation of July 27, 2010, Fisheries and Oceans Canada is providing you with a brief summary of the fish habitat value at Jericho Beach, and the potential impacts to this habitat which are presented by the Jericho Wharf. We understand this information will be used by the Vancouver Board of Parks and Recreation to inform the decision on the Jericho Wharf project.

The shallow intertidal waters of Jericho Beach provide rearing habitat for many species of fish including juvenile Pacific salmon (particularly pink, chum, chinook and coho). Juvenile Pacific salmon are found in highest abundance from March to August, feeding and seeking refuge close to the shoreline in shallow water of a few centimeters depth to about 2 meters, moving up and down the beach with the tide. This habitat is considered to be very important to the survival of these species during the early stages of their ocean development. A rapid early growth rate also enables the fish to reach a sufficient size to thrive when they move offshore.

Other fish species that are common in the nearshore areas of Jericho Beach include surf smelt, Pacific sandlance, starry flounder, sand dab, juvenile Pacific herring, staghorn sculpin, arrow goby, shiner perch, and striped sea perch. These fish are reliant on shallow intertidal beach habitat at various stages of their life histories. For example, surf smelt and sand lance spawn on the upper intertidal elevations of beaches, juvenile starry flounder rear in the shallow waters, and arrow gobies are present throughout their life cycle, producing extremely high numbers of offspring in summer months. All of these fish are important both ecologically (e.g. as forage for fish and wildlife) and in providing recreational and/or commercial fisheries (e.g. surf smelt, perch).

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Numerous shellfish species are also present at Jericho Beach, including Dungeness crab, heart cockle, manila clam, littleneck clam and varnish clam and provide similar ecological and economic value.

The Jericho wharf casts deep shade over the intertidal beach. This effect is enhanced by the north facing aspect and extended width of the structure, its solid concrete deck, the low elevation of the deck relative to the high water mark, and the enclosed west end of the structure. Juvenile salmon are known to exhibit behavioural avoidance of heavily shaded areas beneath overwater structures such as the Jericho wharf, and thus the area occupied by the wharf can be considered to be of low habitat value to juvenile salmon. The shaded habitat beneath the wharf provides poor fish habitat conditions by impeding the ability of visual feeders to locate prey, and by lowering the production of marine algae.

Beyond the loss of physical area directly beneath the wharf, further negative impacts on juvenile salmon and other fish species may occur through several mechanisms:

- Forcing fish into deeper water, where they may be susceptible to increased predation rates.
- Delaying or otherwise disrupting migration behaviour.

The pilings provide poor quality habitat to sessile marine organisms owing to the lack of sunlight which precludes the growth of marine algae, the creosote treatment, and the vertical attachment surface of the pilings. The presence of pilings is often associated with a significant accumulation of organic debris at pile base, which can result in anoxic substrates in the vicinity of the piles. Anaerobic conditions are not typical of the upper intertidal beach at Jericho in its natural condition.

The issue of polycyclic aromatic hydrocarbon (PAH) contamination associated with creosote pilings should be addressed by Environment Canada, as that agency is responsible for the aquatic and marine pollution provisions of the *Fisheries Act*. However, DFO research has shown that creosote leaching from piles leads to higher levels of PAH in sediments for several years after placement, and we would expect this to be the case, should the structure be rebuilt.

The natural sediment transport processes at Jericho Beach and across Spanish Banks have been historically impacted by human activity including the construction of the entrainment jetty (on the north arm of the Fraser River), numerous breakwaters and rock groins, wharfs and floats, and the placement of sand, cobble, and boulder on the beach. These activities are typical of urban shorelines and tend to perpetuate erosion and lead to the loss of beach elevation. Although it is difficult to quantify the cumulative impact of these works on the fish production of the beach, any opportunity to restore a small portion of natural ecological process on the beach would be valuable.

Fisheries and Oceans Canada is supportive of the option to completely remove the wharf from Jericho Beach. This work would likely require some restoration of the shoreline to maximize the environmental value of the project, and prevent shoreline erosion in the park. The shoreline work that was completed immediately to the east of the wharf in 2006 appears to have been successful, and a similar design may satisfy these objectives. Should you decide to pursue this option, we would be pleased to review and comment on any detailed plans which you bring forward. If you have any questions or comments, please contact me directly by telephone at (604) 666-8327, by fax at (604) 666-6627, or by e-mail at [murray.manson@dfo-mpo.gc.ca](mailto:murray.manson@dfo-mpo.gc.ca).

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Murray Manson', written in a cursive style.

Murray Manson  
Habitat Biologist