

MEMORANDUM

Date:	July 13, 2015
To:	Charlotte Olson, P.Geo., PMP
From:	Jim Roberts, B.Sc., R.P.Bio; Scott Northrup, P.Biol., R.P.Bio.
File:	302-035.04
Re:	Port Metro Vancouver's Habitat Enhancement Program - New Brighton Park Shoreline Habitat Restoration Project QEP Assisted Assessment, in accordance with DFO Fisheries Protection Program Guidance

1.0 INTRODUCTION

The New Brighton Park Shoreline Habitat Restoration Project, located on the south side of Burrard Inlet in the City of Vancouver, British Columbia (**Figure 1**), is being considered in 2015 under Port Metro Vancouver's (PMV's) Habitat Enhancement Program. The project is being undertaken in accordance with the 2012 working agreement between PMV and Fisheries and Oceans Canada (DFO) entitled "Working Agreement Concerning Procedures for Development and Operation of the Port Metro Vancouver Habitat Bank". This agreement acknowledges the mutual benefits of the habitat bank to both parties and provides guidelines for the establishment of habitat enhancement sites.

Recently, the results of an assisted Serious Harm Assessment were provided in support of the Glenrose Tidal Marsh Project. As would be expected for a viable habitat enhancement opportunity, the Glenrose assessment concluded that proposed enhancement would not result in Serious Harm to fish that contribute to commercial, recreational or Aboriginal (CRA) fisheries or fish that support such fisheries. A similar conclusion applied to an assessment that was completed for the Westham Island/Canoe Pass Tidal Marsh Project. In both cases, the self-assessment was guided by information presented on DFO's Projects Near Water web site (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>).

Consistent with this approach and subject to guidance from Qualified Environmental Professionals (QEPs, Scott Northrup and Jim Roberts, Hemmera), please consider this memo to comprise an assisted assessment for the New Brighton Park Shoreline Habitat Restoration Project.

This assessment for the New Brighton Park Shoreline Habitat Restoration Project is also based on consideration of DFO's "Science Advice for Managing Risk and Uncertainty in Operational Decisions of the Fisheries Protection Program" (DFO Science Advisory Report, dated September, 2014; available at http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2014/2014_015-eng.html).

This project will involve the conversion of a historically filled site that supports low-quality terrestrial habitat into high value subtidal, intertidal and marine riparian habitats (salt marsh, tidal lagoon, subtidal rocky reef, dunegrass meadow, and riparian forest) that will provide long-term benefits for juvenile salmon that utilize Burrard Inlet, along with other fish and wildlife species (**Figure 2**). Existing site vegetation primarily includes a maintained lawn interspersed with some native western redcedar (*Thuja plicata*). Upper foreshore areas are generally characterized by bank protection (riprap) and a narrow fringe of early seral stage riparian vegetation. Many native shrub and tree species in the riparian habitats bordering the shoreline were planted during shoreline stabilization works in 2006-2007. Upper intertidal areas are characterized by fine gravel, cobble substrates and boulders that do not currently support algae, encrusting life or emergent vegetation (**Photo 1**). Subtidal areas adjacent to the site are characterized by smaller substrates, limiting the growth and persistence of macroalgae (kelp). Macrophytes, including bull kelp and rock kelp, occur further offshore of the proposed site. In general, despite the presence of small bands of productive riparian and marine habitat along the shoreline the overall existing fish and wildlife habitat values at the site are considered to be very limited.

Historic aerial photos indicate the majority of the site was tidally wetted habitat, which was covered with fill in 1969. Wave-related erosion along the eastern portion of the park was addressed with shoreline stabilization works in 2006-2007, including large boulder armouring of the backshore, bioengineered banks and re-working of rip-rap groynes. As part of this work, marine riparian habitat values were improved via the installation of native dune grass (*Lymus mollis*) benches at the seaward toes of the stabilized banks (**Photo 2**) and on the tops of the groynes. Native shrubs were transplanted to the tops of stabilized banks. This work represents a very small portion of the overall site; the majority of the site consists of a maintained lawn, interspersed with trees, which sustains low habitat values. Conversion of portions of this site to high value habitat types, including further “softening” of the shoreline, will result in a dramatic improvement to the overall fish habitat productivity of the site. Habitat enhancement and restoration, which includes “physical manipulation of existing habitat to improve habitat function and productivity”, is one of the accepted offsetting methods outlined in the Fisheries Productivity Investment Policy (FPIP).

The project is currently in the conceptual design phase, but it is anticipated that the final design will include the creation of a salt marsh, tidal lagoon, subtidal rocky reefs, a dunegrass meadow, and the enhancement of marine riparian habitat. The works in the current design will affect minor components of the shoreline stabilization completed in 2006-2007 (as described above), but ultimately a net enhancement to fish habitat will result. The proposed habitat enhancement and restoration work is consistent with the City of Vancouver’s plans for daylighting Hastings Creek; there is some potential for the lower reach of this watercourse to be restored and flow into the newly constructed intertidal features (salt marsh with intertidal channel) of the project.

Project works will be undertaken using heavy equipment, working within existing upland areas. It is anticipated that excavated materials (i.e., soil and sands) will be spoiled on-site. The majority of salt marsh construction works can be completed in the dry; however final tidal connection may require some in-water work. The primary in-water work will be construction of the subtidal rocky reefs (if undertaken).

2.0 MANAGING RISK AND UNCERTAINTY IN THE FISHERIES PROTECTION PROGRAM

DFO's science advisory report entitled "Science Advice for Managing Risk and Uncertainty in Operational Decisions of the Fisheries Protection Program" (September, 2014) provides direction for self-assessments (completed by proponents) or assisted assessments (prepared by QEPs). Assessments of this type are used to determine if a proposed project requires DFO review and/or approval. For a project to proceed under a self- or assisted assessment, both the death of fish and residual adverse habitat effects need to be avoided. Furthermore, the project should be designed in such a way that there will be no loss of local productivity which would otherwise result in the need for offsetting.

By design, the project is habitat restoration that will result in an overall net benefit to fish and fish habitat. The project will not result in any residual adverse effects on habitat and is, in fact, expected to result in a net increase in local productivity. Furthermore, it is noted that fish mortality (including fish that contribute to CRA fisheries) can be avoided during construction through application of appropriate best management practices.

DFO (September 2014) states that assessments of this type need to provide appropriate consideration for risk. For a project to proceed under a self- or assisted assessment and without DFO review/approval, low likelihood and low uncertainty needs to apply to both the death of fish and any net residual habitat impacts.

2.1 PROJECTS NEAR WATER WEB PAGE GUIDANCE

DFO's "Projects Near Water" website guides proponents to either self-assess a project, submit a Request for Review to DFO or to apply for an Authorization. Projects that do not require a review can include "Habitat Restoration" projects:

- **Habitat Restoration**
 - Habitat restoration projects including riparian planting, bank stabilization, bio-engineering and creation of in-stream structure do not require DFO review if:
 - No new temporary or permanent fill is placed below the High Water Mark; and,
 - Works are undertaken such that any obstruction to fish passage will respect timing windows.

The New Brighton Park Shoreline Habitat Restoration Project will not result in “fill”, which is defined as the creation of new land. Given this, it appears appropriate that this project be assessed by a QEP to definitively confirm that there is no Serious Harm associated with the proposed works.

2.2 FISHERIES ACT AND SERIOUS HARM TO FISH

The *Fisheries Act* requires that proposed projects avoid Serious Harm to fish that contribute to CRA fisheries, unless authorized. PMV is committed to following appropriate measures to avoid harm and ensure compliance with the *Fisheries Act* for the New Brighton Park Shoreline Habitat Restoration Project, as well as all other projects which are advanced under PMV’s Habitat Enhancement Program.

Under the updated *Fisheries Act* (November 25, 2013) and associated policy guidance, proponents are asked to consider the following key project-related effects when making determinations about whether a project is likely to cause Serious Harm to fish:

1. **Impacts to fish and fish habitat caused by the project:** Existing, primarily terrestrial, habitats at the project site will be enhanced through the creation of high value subtidal and intertidal habitats that will provide long-term benefits for salmon stocks that utilize Burrard Inlet (i.e., the Indian and Seymour rivers). In addition, enhanced riparian values will be established along the upland interface with these new foreshore habitats.

Existing fish habitat values are generally low, as this is a historically filled site. Some habitat features (primarily riparian) were established with the 2006-2007 erosion mitigation/enhancement works and provide some fish habitat opportunities, however these features make up a small portion of the overall site. Given the historic presence of natural habitats at this site as recently as 60 years ago, this project can be considered true “restoration”. The existing shoreline consists of riprap in upper foreshore areas, with fine gravel, cobbles and boulders in adjacent intertidal areas that do not currently support intertidal vegetation (tidal marshes or algae). These intertidal habitats will be substantially improved through the creation of new salt marsh habitats; existing productive marine and riparian habitats will be avoided where possible, and any necessary impact is expected to be offset by an overall net gain in productivity as a result of the project. Similarly, subtidal habitats will be enhanced following construction of subtidal reefs which will increase habitat complexity and stability. An overall increase in site productivity can be expected almost immediately after completion of project construction.

Similar restoration and enhancement work has been undertaken in Burrard Inlet and elsewhere in the Pacific Northwest, which demonstrates the success of projects of this type. It is also well understood that construction can be undertaken with well-established mitigation measures in place, reducing the risk of impacts to fish or fish habitat.

Once physical construction is complete, salt marsh and riparian planting will be undertaken. Establishment of marsh vegetation by this pro-active planting program will facilitate improved site-specific productivity during the first year post-construction. By the first year of juvenile salmonid outmigration following the initial establishment of these habitats, a dramatic improvement to site productivity will occur.

2. **The duration of the impacts:** Enhanced productivity associated with this new salt marsh, tidal lagoon, dunegrass and other riparian habitats, and subtidal habitat will begin contributing to the fish habitat values of the site in a substantive way following its first season of growth. As a result, the project will provide direct benefits to the next generation of out-migrating juvenile salmonids in Burrard Inlet. Full productivity of these new habitats is expected within a three year period and will be confirmed by a monitoring program.
3. **The geographic scale of the impacts:** Burrard Inlet sustains substantial shoreline habitats characterized by shoreline protection (rip rap), more productive intertidal habitats and subtidal areas of higher value fish habitat. The geographic scale of any construction-related effects of the project will be very small within the context of the extensive foreshore and intertidal habitat mosaic of the local setting.
4. **The availability and condition of nearby fish habitat:** In the context of the fish habitat mosaic currently present within Burrard Inlet, nearby shoreline habitats (including existing marine and foreshore habitats at site and intertidal habitats at Montrose and Confederation parks and other productive fish habitats across Burrard Inlet at the Seymour river estuary and the Maplewood conservation area) will continue to be available during and immediately after project construction. The proposed project will enhance habitat values and provide for an overall net gain in productivity, without impacting fish access or use of these nearby habitats.
5. **Impact on the relevant fish:** No localized effect on fish populations or stocks (e.g., juvenile Pacific salmon) will result from the proposed works. Works with the risk of impacts to fish will be undertaken during the appropriate low risk foreshore work window. The potential for any direct injury to, or mortality of, fish will be minimized through construction mitigation measures. There will be no measurable effect to Pacific salmon or other CRA fish populations as a result of the physical works and the project will result in enhanced productivity for these fish (including rearing juvenile salmonids).
6. **Proposed avoidance and mitigation measures:** Similar restoration and enhancement projects have been successfully undertaken in Burrard Inlet and elsewhere in the Pacific Northwest. Avoidance of potential impacts to fish will be provided through the application of well-established mitigation measures, including low risk work windows where warranted. These mitigation measures are designed to prevent Serious Harm, by avoiding CRA fish mortality or residual habitat impacts. The project will be monitored through both construction and post-construction (effectiveness) monitoring to ensure its success as a habitat restoration project under PMV's Habitat Enhancement Program.

2.3 CONSIDERATION OF UNCERTAINTY AND RISK

In assessing the New Brighton Park Shoreline Habitat Restoration Project, both uncertainty and risk need to be properly considered to ensure compliance with DFO's science advisory report entitled "Science Advice for Managing Risk and Uncertainty in Operational Decisions of the Fisheries Protection Program" (September, 2014). This assisted assessment finds that there is a low likelihood for the death of fish or net negative residual habitat impacts and there is strong confidence in this conclusion.

Regarding the likelihood of effects, the death of fish can be avoided during construction through application of appropriate best management practices and construction mitigation. In particular, application of an appropriate low risk work window will protect out-migrating juvenile Pacific salmon and other CRA fish species. Furthermore, there is extremely low likelihood that residual habitat impacts will apply as the project primarily involves restoration of a degraded upland site.

There is high certainty that this project will result in an overall net benefit for fish and fish habitat. Projects of this type have been successfully implemented in the past and it is well understood that construction can be successfully completed with appropriate mitigation measures in place. There is no notable uncertainty in the ability of the project to avoid the death of fish in the short-term. Furthermore, residual habitat benefits will apply over the long-term.

2.4 SELF-ASSESSMENT SUMMARY

Based on the above information, it is our opinion that the proposed project will not result in Serious Harm to fish that are part of any CRA fisheries, or to any fish that support such a fisheries, and that a Section 35(2)(b) Authorization is not required for this project. We are also confident that both low likelihood and low uncertainty apply to the potential death of fish or net negative residual habitat impacts.

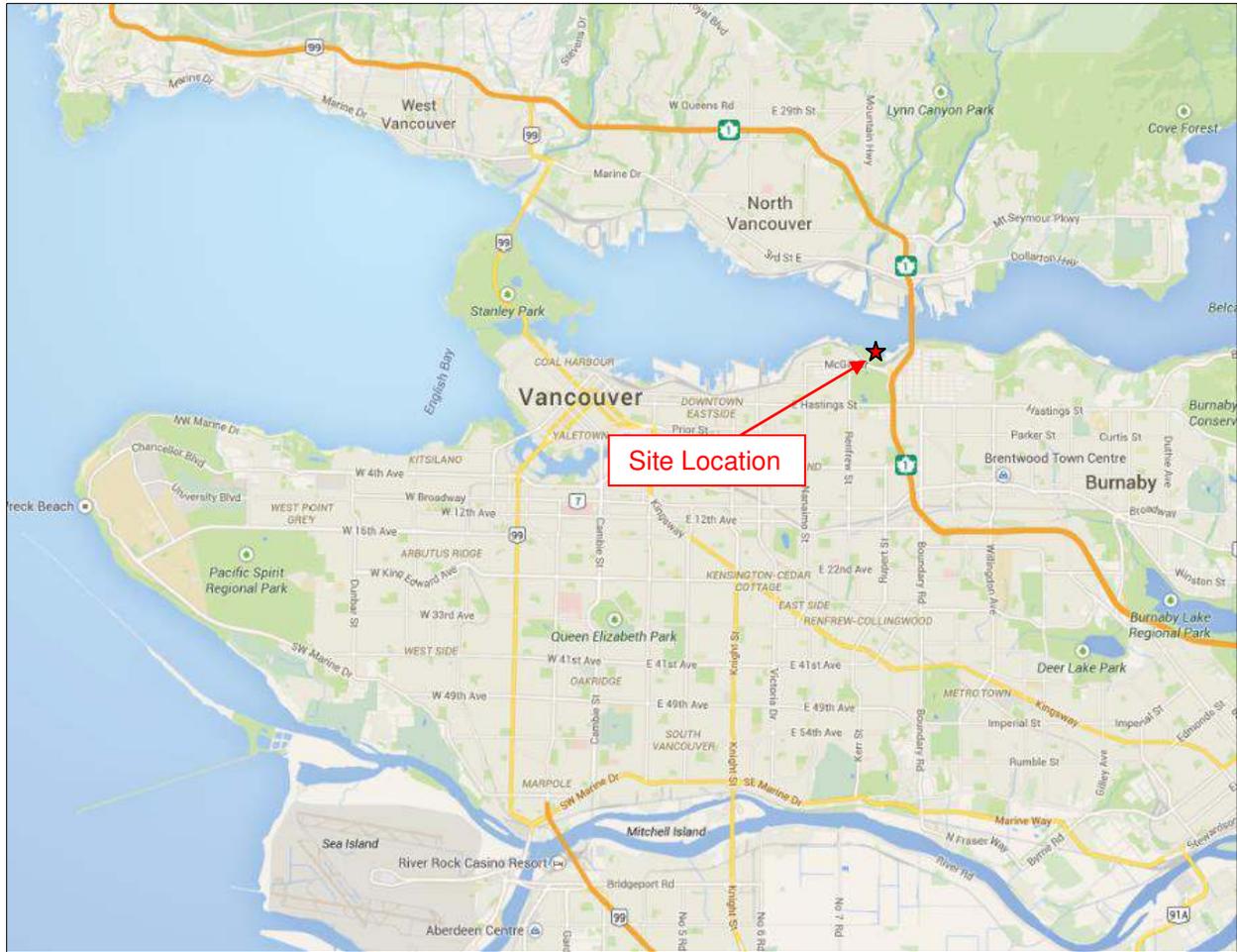


Figure 1 Regional setting for the New Brighton Park Shoreline Habitat Restoration Project (Google Maps 2014).



Photo 1 Foreshore with riprap and fringe of vegetation on upland side (previous erosion mitigation/enhancement works). Unvegetated intertidal area characterized by gravel, boulders and cobbles.



Photo 2 Previous erosion mitigation/enhancement works, showing dunegrass bench at seaward toe of bank.