



April 19, 2018

Mark Dobbs
Regional District of Nanaimo
1490 Springhill Road
Parksville, BC V9P 2T2

Via Email: mdobbs@rdn.bc.ca

**RE: JOYCE LOCKWOOD PARK BEACH ACCESS STAIRS
FIELD OBSERVATIONS APRIL 12, 2018**

1.0 INTRODUCTION

As requested, Sarah Bonar R.P.Bio of Aquaparian Environmental Consulting Ltd (Aquaparian) completed a site inspection with you of Joyce Lockwood Park beach access stairs on April 12, 2018. A site location map has been included as Figure 1. Site photographs are included as Appendix A.

As understood, erosion has occurred which has damaged the lower portion of the beach access stairs within Joyce Lockwood Park which is a popular beach destination with local residents. The residents would like the stairs to be repaired. The following is a summary of observations and regulatory requirements if the stairs are to be reconstructed.

2.0 OBSERVATIONS

The park is located on the north eastern shore of Gabriola Island off the end of Whalebone Road. A pedestrian path meanders through a forest stand aligned parallel to the top of the shoreline bank. A forested swamp is located on the west side of the trail to the beach and a small drainage course flows north crossing the trail near the end of Whalebone Road. The forested swamp appears to be vegetated with a second growth stand of black cottonwood and salmonberry with western red cedar along the trail alignment. The suite of vegetation indicates high groundwater conditions.

Two patches of what appear to be exposed shell midden were observed on the trail surface approximately halfway to the beach stairs.

The shoreline is vegetated with mature trees dominated by Douglas fir, red alder, western red cedar and an understory of shrubs. The stairs are located on a steep bank approximately 4m in

height. The bottom section of the stairs is gone and the stairs are blocked from pedestrian access at the top and what's left of the bottom.

The shoreline is entirely exposed to the Georgia Strait and the bank is comprised primarily of clay soils. The lower portion of the slope for a long distance of the shoreline is eroded forming a cut bank approximately 1.5m high of saturated and seeping clay soils with exposed tree roots. Some of the trees are failing.

The high intertidal beach zone is comprised of sand, gravel and cobble for approximately 20m with drift log accumulation near the high tide line. A review of Google earth shows an intertidal exposure of approximately 100m at low tide to a ridge of exposed bedrock which extends southeast starting from the shore opposite Whalebone Road. The bedrock ridge forms a small basin collecting sand in the lower intertidal area fronting the park.

The soils in the upland area of the park and west of the trail are saturated. A small drainage course is located to the north of the stairs on the adjacent parcel that cuts down the bank to the shoreline which is likely also draining the forested swamp located west of the trail.

3.0 RECOMMENDATIONS

- Because the bank is steep and unstable showing signs of active erosion, a geotechnical engineer should be retained to provide recommendations for the bank and to provide recommendations for the proposed stair reconstruction.
- If possible, design the stairs to span over the slope from the top of the bank to the bottom to avoid additional impacts to the slope. Footings are to be positioned as close to the bottom of the bank as possible (within 1m) to avoid Crown Land tenure requirements.
- Cut the dead tree that is next to the existing stairs leaving the stump in the ground. The log can stay on the beach.
- If the stairs can be reconstructed either on the existing or on a new alignment, Aquaparian recommends the following environmental protection measures to avoid resulting in Serious Harm as defined by the *Fisheries Act*:
 - Relocated drift logs along the beach to expose the work area.
 - Avoid using heavy equipment on the beach if possible. If it is necessary, ensure the machines use environmentally friendly hydraulic oil and are clean and free of leaks prior to coming to the site. Spill kits are to be on site adequate to manage any spill that may occur including clean-up bags.
 - Avoid vegetation removal from the bank as much as possible.

- Complete the work in the dry summer months.
- Complete the work during low tide.
- If concrete pouring is necessary for the footings, use quick setting concrete mix, no uncured concrete or concrete wash water is to enter the ocean – work during the longest tide exposure possible. Tools and equipment are not to be washed on site.
- All spills of deleterious substances are to be reported to EMBC 1-800-663-3456.
- Exposed soils are to be re-vegetated with the same native species as are found in the area. Additional planting specifications can be provided once a reconstruction plan is formulated.

Fisheries and Oceans Canada:

If the project is carried out using Best Management Practices and measures outlined in this report to avoid impacts to the marine environment, no Serious Harm to Commercial, Recreational or Aboriginal Fisheries is likely to result. If the stairs are to be replaced, Aquaparian should be given an opportunity to review the proposed design and construction plan to provide additional recommendations as necessary.

Island's Trust Official Community Plan:

A review of Gabriola Island, Official Community Plan (OCP), Bylaw 166 identifies shorelines as environmentally sensitive areas. Schedule D - Development Permit Areas, did not identify any DPAs for the shoreline of Joyce Lockwood Park.

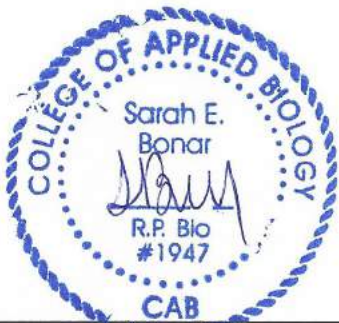
The Province protects archaeological sites, whether known or unrecorded, through the *Heritage Conservation Act*. This protection applies to both private and Crown land and means that landowners must have a provincial heritage permit to alter or develop within an archaeological site. Prior to bringing heavy equipment to the site, complete a review for known archaeological records within the area. The two patches of what appear to be exposed shell midden should be assessed by a qualified consulting archaeologist to determine if it is an archaeological deposit and of so to provide appropriate recommendations. Section 6.3 of the Gabriola Island OCP states: "*The Regional District of Nanaimo, through its building inspection function, shall be requested to ensure archaeological sites identified on Gabriola are protected during construction activities*".

4.0 CONCLUSION

Aquaparian trusts this information meets your requirements at this time. If you have any questions or require further information, please contact the undersigned.

Regards,

AQUAPARIAN ENVIRONMENTAL CONSULTING LTD



Sarah Bonar, B.Sc., R.P.Bio
Principal

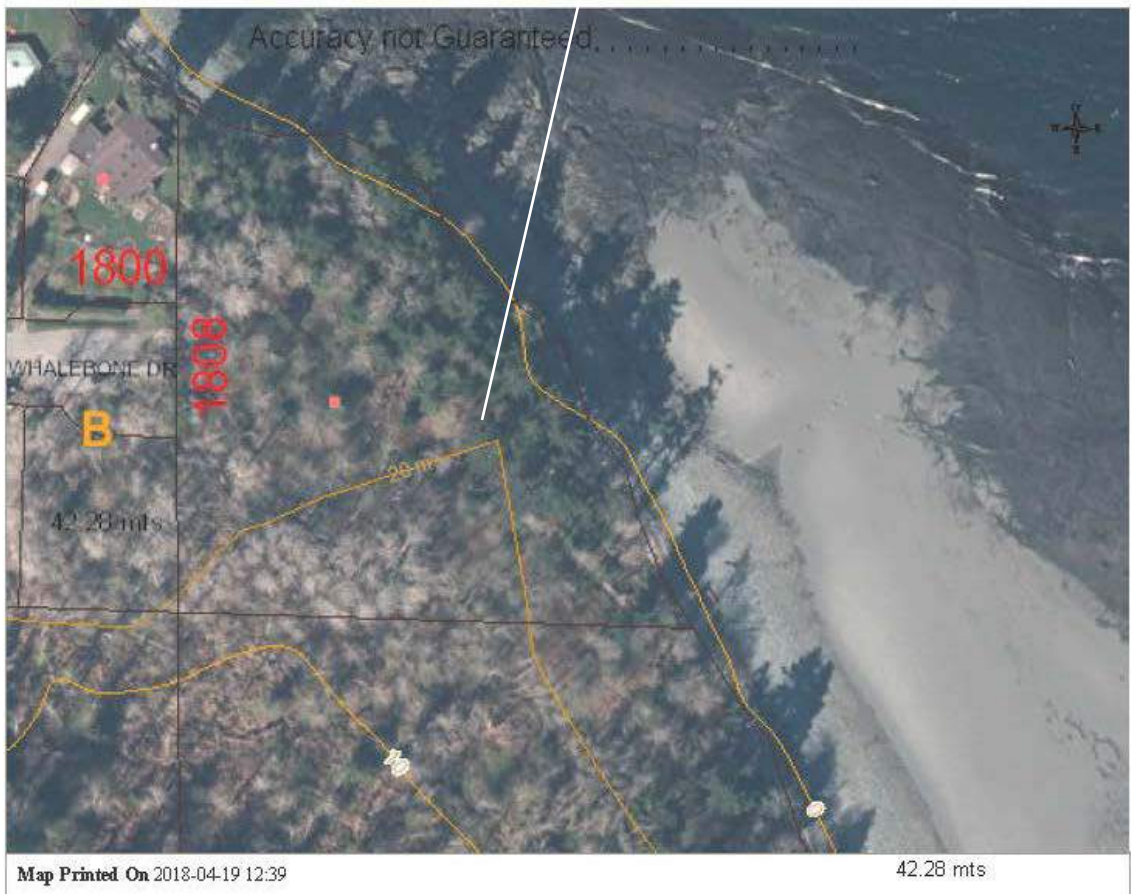
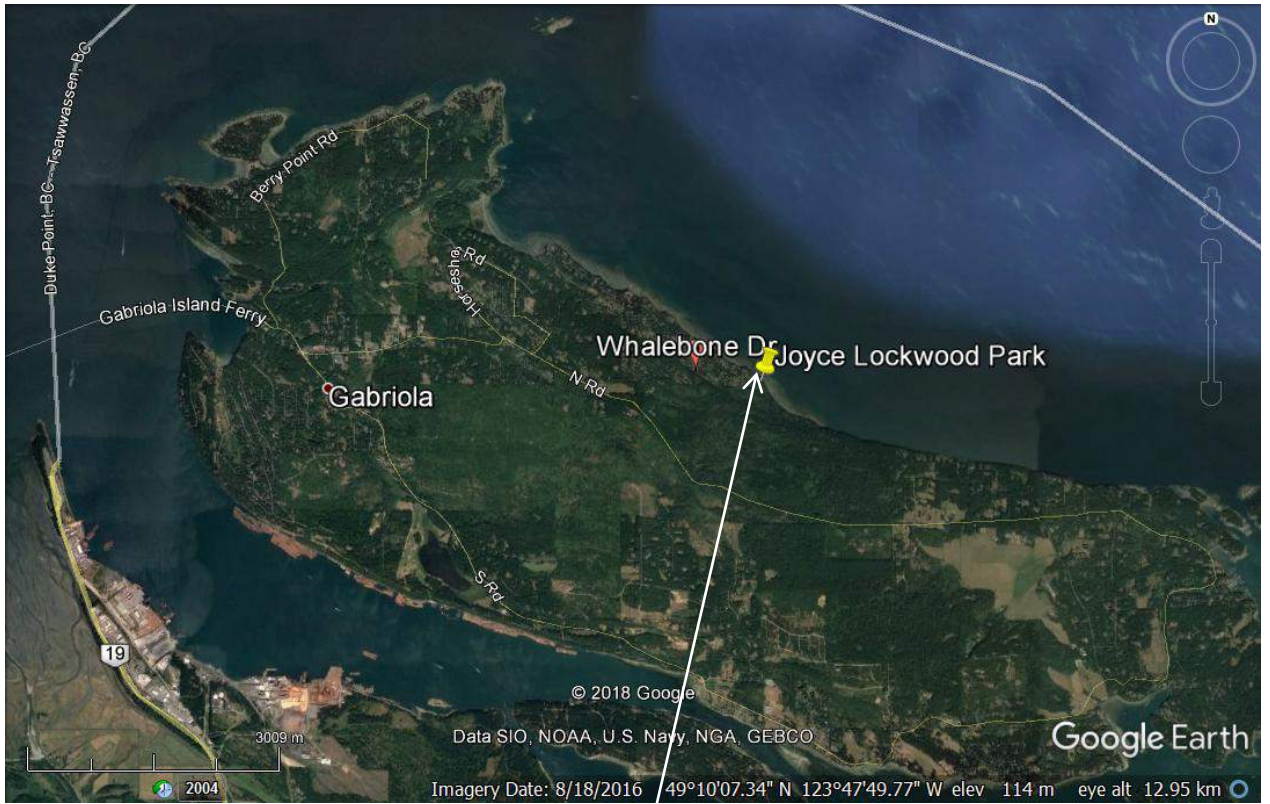
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FIGURE 1
SITE LOCATION MAP



201-321 WALLACE ST, NANAIMO, BC V9R 5B6
SARAH BONAR 250-714-8446 CHRIS ZAMORA 250-714-8864

FIGURE 1. SITE LOCATION MAP



APPENDIX A
SITE PHOTOGRAPHS



201-321 WALLACE ST, NANAIMO, BC V9R 5B6
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APPENDIX A
SITE PHOTOGRAPHS – PHOTO SHEET 1



Photo 1. Looking directly at the stairs.



Photo 2. Immediately north of the stairs is a potential alternative alignment.

PHOTO SHEET 2



Photo 3. Looking south along the shoreline which is showing the same cut bank at the base of the slope all along the shoreline.



Photo 4. Looking north along the shoreline.



Photo 5-8. Showing the upslope forested swamp and drainage channels to the ocean through and adjacent to the park.

