NAITO ENVIRONMENTAL

2406 14th St Vernon BC V1T 8K5
*Phone:* (250) 558-9842
*Fax:* (250) 558-3815
gerry@naitoenvironmental.com

September 25, 2012

Our File: **400-61-01**

Okanagan Piledriving
125 Twin Lakes Rd
Enderby, BC V0E 1V3

Attention: Mr. Stephen Smith

Re: **New Dock at Lot #26 Shelter Cove, 4401 Westside Road, Regional District of Central Okanagan, BC - Environmental Assessment**

Dear Mr. Smith:

The following letter report provides an environmental assessment of a new dock proposed for Lot #26 at Shelter Cove on the west side of Okanagan Lake near Kelowna, BC.

## BACKGROUND

Mr. Mark Procknow, the owner of Lot #26 Shelter Cove on the west side of Okanagan Lake in the Regional District of Central Okanagan, BC is proposing a new dock on Okanagan Lake at that address. The proposed dock location is in a shoreline habitat red zone, considered to be very important for the long term productivity of kokanee under the Okanagan Large Lakes Foreshore Protocol[1] (OLLP). This environmental assessment of the project has been undertaken by Naito Environmental to facilitate review of the project application by regulatory agencies.

## PROJECT DESCRIPTION

The project site is located on the west side of Okanagan Lake approximately 19 km north of downtown Kelowna, BC (Figure 1). GPS coordinates at the dock origin are Zone 11 321248 E 5547737 N. The 15 m long dock will originate at the existing bedrock shoreline (Photos 1, 2) and be located approximately 6 m from the south property line, accessed by a stairway attached to the bedrock cliff face. A 1.5 m wide × 12 m long aluminum footbridge with light-penetrating ThruFlow™ decking will span the near shore habitat and connect to a 3.0 m × 4.5 m platform supported on four 20 cm diameter steel piles (Figure 2). To meet Habitat Officer Conditions[2] for docks in red zones, the walkway and dock platform will be a minimum of 0.5 m above the high

[1] Okanagan Region Large Lakes Foreshore Protocol. May 2009. Available at: http://www.env.gov.bc.ca/okanagan/esd/ollp/documents/Foreshore-protocol-May2009.pdf

[2] Habitat Officer's Terms and Conditions for changes in and about a stream specified by Ministry of Environment Habitat Officers, Okanagan Region. http://www.env.gov.bc.ca/wsd/regions/okr/wateract/terms_and_conditions_april-2011.pdf

water elevation of 343.0 m. The dock platform will consist of non-treated wood decking on ACQ-treated wood timbers.

The dock installation will be conducted from a boat and/or floating barge. Therefore, no shore access will be required.

## METHODS

I conducted site investigations on June 11, 2012 by wading and from a float tube. Measurements were taken with a 50 m fiberglass tape, 2.3 m depth stick, and weighted rope marked at 0.5 intervals. The primary information collected was a depth profile and suitability of the substrate for shore-spawning by kokanee (*Oncorhynchus nerka*) and mountain whitefish (*Prosopium williamsoni*). Spawning suitability was assessed primarily by substrate type and water depth. Water quality characteristics were measured with a Hanna Instruments HI98129 combo tester. A search was also conducted for specimens or shells of the red-listed Rocky Mountain ridged mussel (*Gonidea angulata*).

The BC Conservation Data Centre website was checked for any mapped occurrences of species or ecosystems at risk in the project vicinity.

In addition to this assessment report, a QP (Qualified Professional) Checklist for Foreshore Works has been completed as per the OLLP and is attached as Appendix 1.

## HABITAT CONDITIONS

The dock location has a narrow bedrock shelf approximately 5 m wide (Photo 1, Figure 2), with 10-25 cm rubble (broken rock) 7-9 m out from the high water mark before a sharp dropoff where depth increases rapidly. There was a thick layer of periphyton coating the substrate. Some stems of aquatic plants, suspected to be Eurasion watermilfoil (*Myriophyllum spicatum*), were present. Okanagan Lake water level[3] on the survey date of June 11, 2012 was around 342.42 m, approximately 10 cm less than the normal high water level and 0.6 m below the extreme high water mark (HWM) of 343.0 m.

Surface water quality measurements included a temperature of 17.1° C, conductivity of 284 µS/cm, and total dissolved solids of 141 ppm. Water clarity was high, with a Secchi depth of over 6 m.

The rubble substrate approximately 7-9 m out from the HWM had good kokanee shore spawning potential and occurred around the 341 m elevation range that would be preferred by kokanee. These shore spawning fish require interstitial spaces in the substrate to protect their eggs from predators and physical damage from waves. The observed 10-25 cm rubble substrate had numerous interstices to receive fish eggs.

[3] Environment Canada Real-Time Hydrometric Data for Station 08NM083 Okanagan Lake at Kelowna. http://www.wateroffice.ec.gc.ca/text_search/search_e.html?search_by=p&region=BC. Accessed on June 11, 2012.

Consistent with the good shore spawning potential, the shoreline at the dock site is a red zone (very important habitat) under the OLLP, which is a classification assigned to areas where kokanee spawners are consistently observed. The colour zone changes to black (critical habitat) only 60 m north of the dock location (Figure 3). There are several other existing docks or platforms along this section of lakeshore, with adjacent docks located less than 10 m south (Photo 3) and 35 m north (Photo 4).

Vegetation at the site (Photos 1, 2) included typical riparian species such as red-osier dogwood near the water's edge and those common to a dry, bedrock-dominated site further upslope (Table 1).

Table 1. Plant species observed in riparian zone at Lot 26 Shelter Cove on June 11, 2012.

| Common Name | Scientific Name |
|---|---|
| red-osier dogwood | *Cornus sericea* |
| black cottonwood | *Populus trichocarpa* |
| Douglas maple | *Acer glabrum* |
| rose | *Rosa sp.* |
| tall Oregon grape | *Mahonia aquifolium* |
| common snowberry | *Symphoricarpos albus* |
| mock orange | *Philadelphus lewisii* |
| Saskatoon | *Amelanchier alnifolia* |
| common juniper | *Juniperus communis* |
| shrubby penstemon | *Penstemon fruticosus* |
| bluebunch wheatgrass | *Agropyron spicatum* |
| cheatgrass | *Bromus tectorum* |

The subject property appears to be classified as coniferous woodland in the RDCO Sensitive Ecosystem Inventory. This forest ecosystem has a very open canopy or only scattered ponderosa pine or Douglas-fir trees, and most commonly occurs on very dry sites where soils are shallow or very shallow.

The only mapped occurrence of an element tracked by the Conservation Data Centre[4] in the vicinity of the proposed dock site is one for the blue-listed giant helleborine (*Epipactis gigantea*) on the west side of Okanagan Lake approximately 5 km south. This does not mean that no other sensitive species or ecosystems are present, only that none are presently recorded in the database. However, given the small project size, none are expected to be affected. No specimens or shells of the red-listed Rocky Mountain Ridged Mussel (*Gonidea angulata*) were observed, and this species is not expected to occur at this location because this species prefers substrate with at least some fines (COSEWIC 2003)[5], and the proposed dock location is within a no-colour zone for this species under the OLLP.

[4] BC Conservation Data Centre Internet Mapping Service http://www.env.gov.bc.ca/atrisk/ims.htm. Accessed on September 24/12.
[5] COSEWIC Assessment and status report for the Rocky Mountain Ridged Mussel *Gonidea angulata* in Canada. Special Concern 2003.

## IMPACT ASSESSMENT

A dock installation is considered a high risk activity within red zones of the OLLP. However, with the dock design of a full-spanning walkway with light-penetrating material, no piles in spawning habitat (only 6 piles total), dock and walkway a minimum of 0.5 m above the high water elevation, a dock platform with area of only 13.5 $m^2$, and construction from a floating barge during the appropriate timing window of June 1-September 30, environmental impacts are anticipated to be minimal. No species at risk are known to occur at or near the project site.

Due to the steep dropoff beyond 9 m from HWM, the dock will easily meet the MFLNRO requirement for a water depth of 1.5 m below the Okanagan Lake low water level of 341.34 m before the dock can widen beyond 1.5 m, as the required water depth is reached just beyond 9 m from HWM whereas the full-spanning aluminum walkway extends out 12 m to reach the dock platform (Figure 2). The shoal width is somewhat variable along the property shoreline but the bridge length of 12 m will be sufficient to span the potential spawning habitat regardless of exactly where the dock is installed.

## IMPACT MITIGATION PLAN

The following impact mitigation plan specifies requirements relating to construction methods and environmental monitoring.

### Environmental Monitoring

An environmental monitor will meet on-site with the dock contractor at start of work and be present during the initial phases of construction long enough to confirm that these activities present no risk to environmental values and that the mitigation measures described in the following section are being observed.

### Construction

The following standard impact mitigation measures must be employed during construction:

- keep all machinery and equipment clean and free of leaks, excess oil, and grease;
- keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
- prevent any potentially deleterious substances from entering the water, including sawdust or drilling shavings from treated wood;
- minimize disturbance of the lakebed (e.g., do not allow boats or barges to ground on the bottom) to prevent disturbance of aquatic organisms and spawning habitat and to avoid creating suspended sediment; and
- if the environmental monitor deems that unacceptable levels of suspended sediment are being generated or are likely to result, this suspended material must be contained (e.g., by using a tightly sealed silt curtain).

Any changes to the preceding mitigation measures will require prior agreement from the environmental monitor.

## CONCLUSIONS

If the new dock at Lot 26 Shelter Cove is constructed observing applicable best management practices and employing the mitigation measures prescribed in the foregoing report, no harmful alteration, disruption or destruction (HADD) of natural features, functions and conditions that support fish life processes is anticipated to occur.

Please contact me if you have any questions or require further information.

Sincerely yours,
**NAITO ENVIRONMENTAL**

Gerry Naito

Gerry Naito, RPBio
*Senior Biologist/Principal*

COLLEGE OF APPLIED BIOLOGY
SEP 25/12
Gerry J. Naito
GN
R.P. Bio #708
CAB

Attachments: Figure 1. Location of Lot 26 Shelter Cove, 4401 Westside Road, RDCO, BC.
Figure 2. Plan View and Section View of New Dock.
Figure 3. Shoreline habitat colour zones in vicinity of subject property.
Photos 1-4.
Appendix 1 – QP Checklist for Foreshore Works.

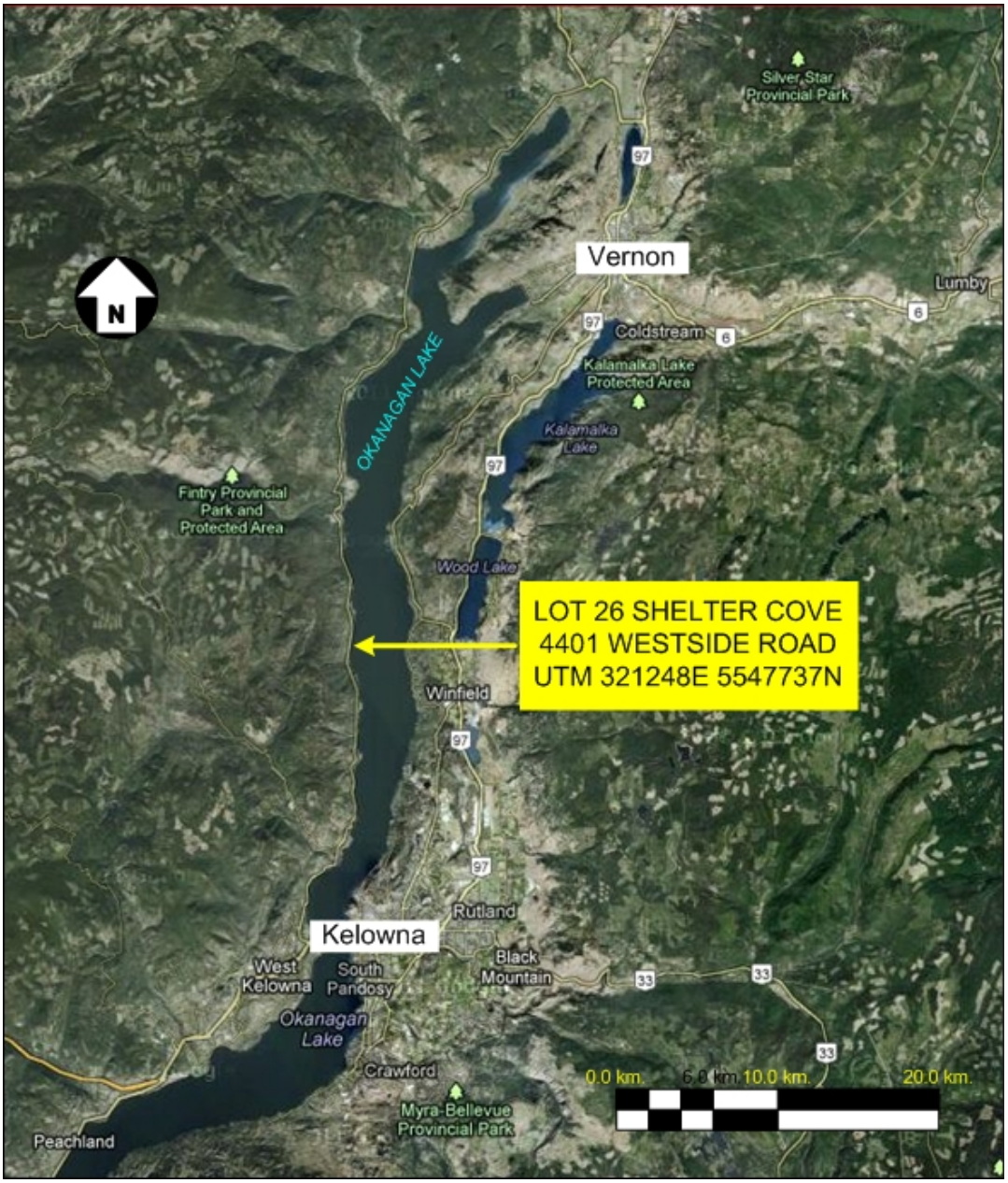
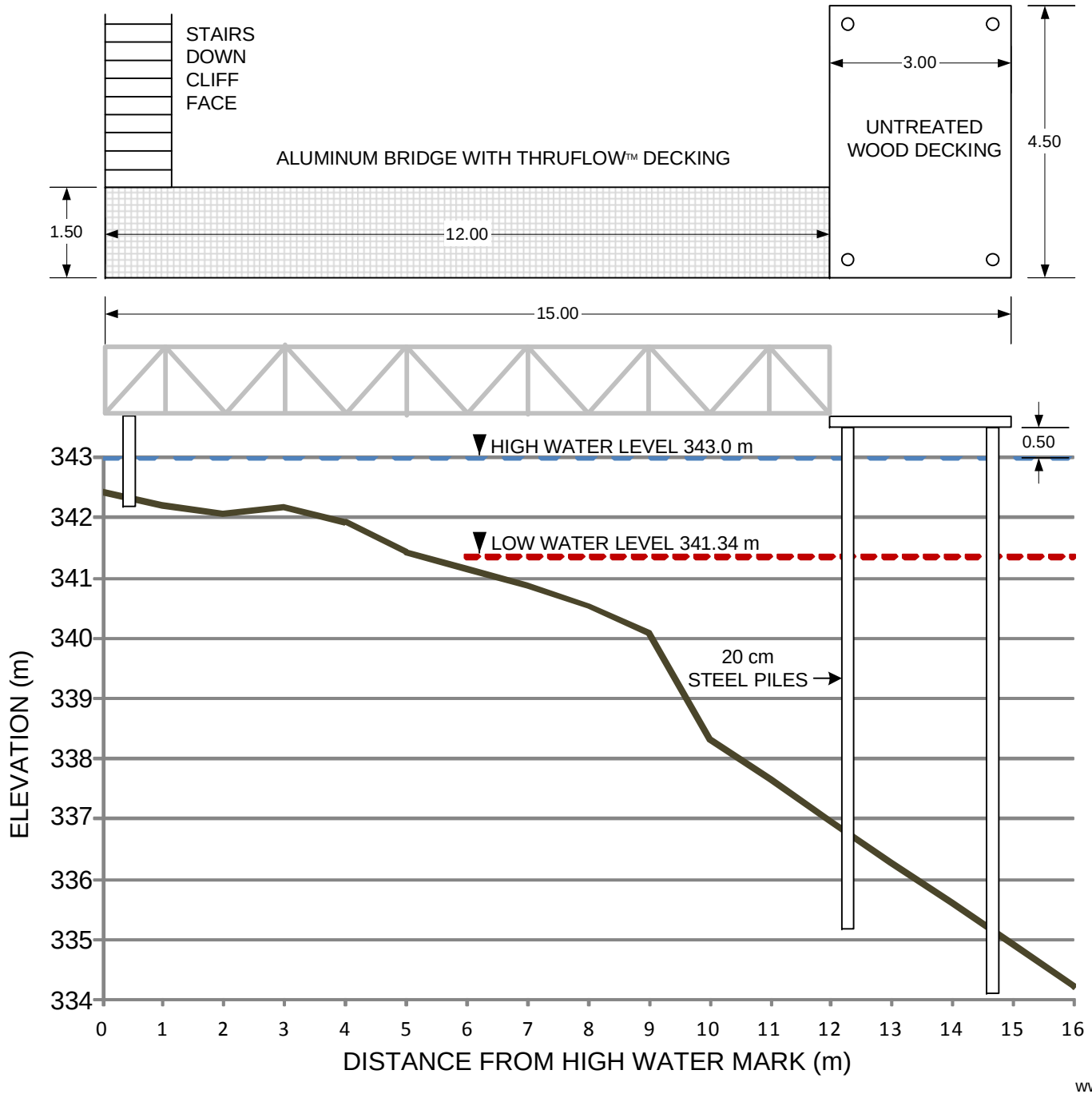



Figure 1. Location of Lot 26 Shelter Cove, 4401 Westside Road, RDCO, BC.

**FIGURE 2. PROPOSED DOCK AT LOT 26 SHELTER COVE, 4401 WESTSIDE ROAD, KELOWNA, BC.**

PLAN VIEW

SECTION VIEW

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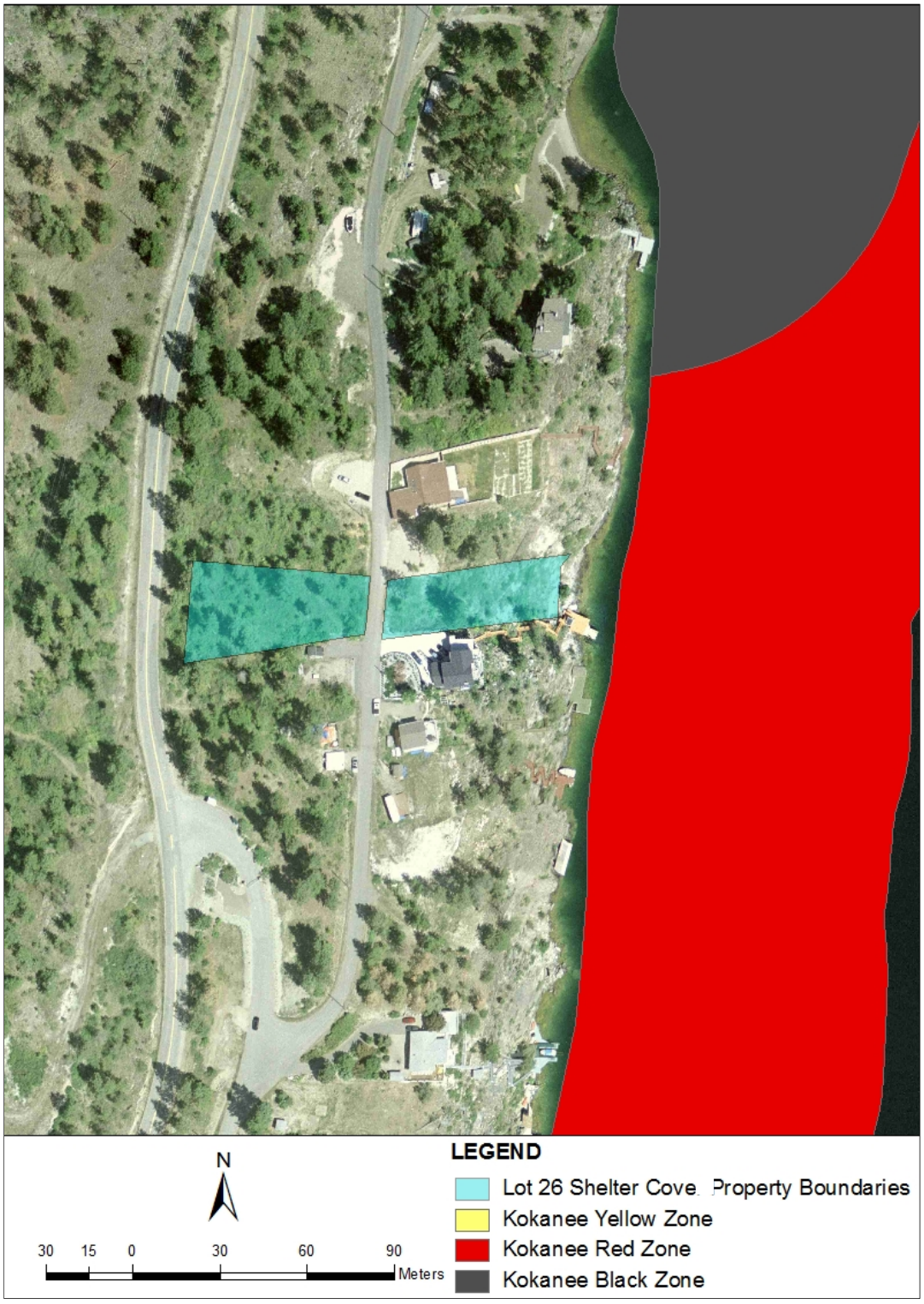


Drawing by Framework Environmental Consulting, Coldstream, BC.

Figure 3. Shoreline habitat colour zones in vicinity of subject property.

| | |
|---|---|
|  | Photo 1.<br>Looking down at approximate proposed dock location (yellow arrow) showing bedrock shelf and abrupt dropoff to deep water.<br>Jun 11/12 |
|  | Photo 2.<br>Looking in along proposed dock alignment.<br>Jun 11/12 |
|  | Photo 3.<br>Looking south from proposed dock location showing existing shoreline development.<br>Jun 11/12 |

| | |
|---|---|
|  | Photo 4.<br>Looking north from proposed dock location showing existing shoreline development.<br>Jun 11/12 |

APPENDIX 1. Qualified Professional Checklist for Foreshore Works - Okanagan LLP

Project Name: Date: September 25, 2012

**Proposed Dock at Lot 26, Shelter Cove, 4401 Westside Road, RDCO, BC**

NOTE: The items in this checklist apply to the site of works and the surrounding area. * The explanation column is mandatory.

| **Have you …** | | **Yes** | **No** | **N/A** | **Explain** |
|---|---|---|---|---|---|
| **1.0 SITE SURVEY** | | | | | |
| 1.1 reviewed existing fish, emergent vegetation, SAR & habitat mapping data, including: | a) Conservation Data Centre (CDC)? | X | | | no known occurrences of SAR |
| | b) local MOE (Ecosystem Staff)? | | X | | used OLLP |
| | c) Foreshore Inventory Mapping? | X | | | OLLP |
| | d) Sensitive Ecosystem Inventory? | X | | | ecosystem is coniferous woodland |
| 1.2 conducted any inventories to confirm presence/absence of fish, emergent vegetation and SAR or their habitats on site? | | X | | | refer to assessment report |
| 1.3 confirmed environmentally sensitive features or ecosystems on the site? (*only if the upland is within an environmental development permit area*) | | X | | | coniferous woodland |
| 1.4 evaluated and described local soil and foreshore substrate? | | X | | | mainly bedrock; refer to assessment report |
| 1.5 assessed potential changes to local shoreline and stream mouth accretion/erosion dynamics? (*only required for marina, infill and erosion protection works*) | | | | X | not a marina, infill, or erosion protection works |
| **2.0 SITE DESIGN & RECOMMENDATIONS** | | | | | |
| 2.1 applied DFO's principal of 'no net loss'? | a) Redesign? | X | | | full-spanning structure avoids piles in potential spawning habitat |
| | b) Relocate? | | X | | design will not result in loss of fish habitat |
| | c) Mitigation? | X | | | follow BMPs for working in and around water |
| | d) Compensation? | | | X | not required |
| 2.2 followed the Habitat Officer's Terms and Conditions? | | X | | | construct in timing window of June 1-September 30; dock 0.5 m above high water level |
| 2.3 followed all BMPs? If not, have you described in the EIA alternatives to BMPs that are being used (pg #) | | X | | | BMPs followed |
| 2.4 included measures to avoid or minimize impacts to aquatic and riparian habitat? (*in relation to existing or potential fish and SAR use*) | | X | | | follow BMPs |
| 2.5 included measures to avoid or minimize impacts to any fish, emergent vegetation or SAR identified on the site? | | X | | | follow BMPs |

| Have you … | | Yes | No | N/A | Explain |
|---|---|---|---|---|---|
| 2.6 | applied the least risk timing windows? | X | | | June 1-September 30 |
| 2.7 | minimized the footprint of the works? | X | | | small diameter steel piles |
| 2.8 | considered one common lakeshore access on multiple lot sites? | | | X | site is single lot |
| 2.9 | maintained a 50 m lakeshore frontage between moorage structures on single lots? | | X | | existing dock is <50 m from docks on adjacent lots |
| 2.10 | minimized access related disturbance from machinery/equipment? | X | | | access by boat or barge |
| 2.11 | included measures to ensure no erosion or sediment releases result from proposed works? | | X | | minimal substrate disturbance will result from construction |
| **3.0 MONITORING & REPORTING** | | | | | |
| 3.1 | included provisions to ensure protective measures & BMPs are followed? | X | | | full-time monitoring at startup |
| 3.2 | included provisions for monitoring to ensure the completed works function as expected over time? | | X | | not deemed necessary |
| 3.3 | provided recommendations for any impacts from future maintenance? | | X | | none anticipated |
| 3.4 | considered long term water quality issues? | | X | | none anticipated |
| 3.5 | reported new SAR occurrences to MOE Ecosystem Staff and CDC using CDC Field Observation Forms | | | X | no new SAR occurrences |
| 3.6 | reported null data for rare plant species to MOE Ecosystem Staff **(Osoyoos Lake Only)** | | | X | not Osoyoos Lake |
| **4.0 LEGISLATIVE REQUIREMENTS** | | | | | |
| 4.1 | avoided a HADD? | X | | | no piles in spawning habitat |
| 4.2 | received a letter of advice or authorization from DFO if the works do cause a HADD? | | | X | no HADD |
| 4.3 | conducted a RAR assessment for upland works? If yes, list RAR assessment # and indicate if the RAR assessment included provisions for foreshore access | | X | | falls within RDCO Aquatic Ecosystem Development Permit requirements |

This development activity is in the following zone: Black (Red) Yellow No Colour

The development activity risk is Very High (High) Moderate Low

*I confirm that all information provided in this checklist is to the best of my professional knowledge true and complete.*

Gerry Naito
_____
**Original signature of Qualified Professional**

__Gerry Naito_____
**Printed Name of Qualified Professional**

RPBio #708 (BC College of Applied Biology)
**Professional Association #**

September 25, 2012
**Date**