



Valley  
Environmental

Phone 250-490-0161  
[david.cassidy@shaw.ca](mailto:david.cassidy@shaw.ca)  
West Kelowna, BC

February 15, 2024

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Regional District Okanagan Similkameen  
#101 Martin Street  
Penticton, BC V2A 5J9

**Re: Review of Updated Site Plans for 4535 & 4545 Mill Road in Regards to a Riparian Areas Hardship.**

Valley Environmental (VE) has conducted a Riparian Areas Protection Regulation (RAPR) report for the above two properties. Both properties have been assessed as being in a hardship under the provincial RAPR guidelines. A RAPR report was prepared on July 28, 2023 for 4535 Mill Road and a report was completed for 4545 Mill Road on July 30, 2024.

VE understands that the RDOS Board has requested amendments to the site plan for each development. VE has reviewed these amendments and updated site plans (attached) for each property and has determined that each development still meets the requirements for the hardship. Each site plan is dated February 14, 2024.

Once the RDOS provides full support of the proposed developments, the site plan for each development will be included in an updated RAPR report for each property.

If you require any additional information or anything requires clarification, do not hesitate to contact us at 250-490-0161 or [david.cassidy@shaw.ca](mailto:david.cassidy@shaw.ca).

Regards,

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David Cassidy, BSc. / R.P.Bio. / QEP  
Biologist

# OKANAGAN DEVELOPMENT CONSULTANTS INC.



OKANAGAN DEVELOPMENT CONSULTANTS  
 1825 HEDLEY AVE. SUITE 100  
 V1V 2N6 (781) 400-1111  
 OFFICE FAX: (250) 894-0747  
 OFFICE EMAIL: okdc@okdc.ca  
 WWW.OKDC.CA



**PROJECT:**  
 PROPOSED SINGLE FAMILY DWELLING FOR RENE DOUCETTE

**PROJECT ADDRESS:**  
 4535 MILL ROAD, NARAMATA, BC

**LEGAL DESCRIPTION:**  
 LOT 21, PLAN KAP3889, DISTRICT LOT 211, SOYLD

**CURRENT ZONING:**  
 RST - LOW DENSITY RESIDENTIAL

**DATE:** 01/1/25

**REVISIONS:** 01/08/24

**DATE:** 01/26/24

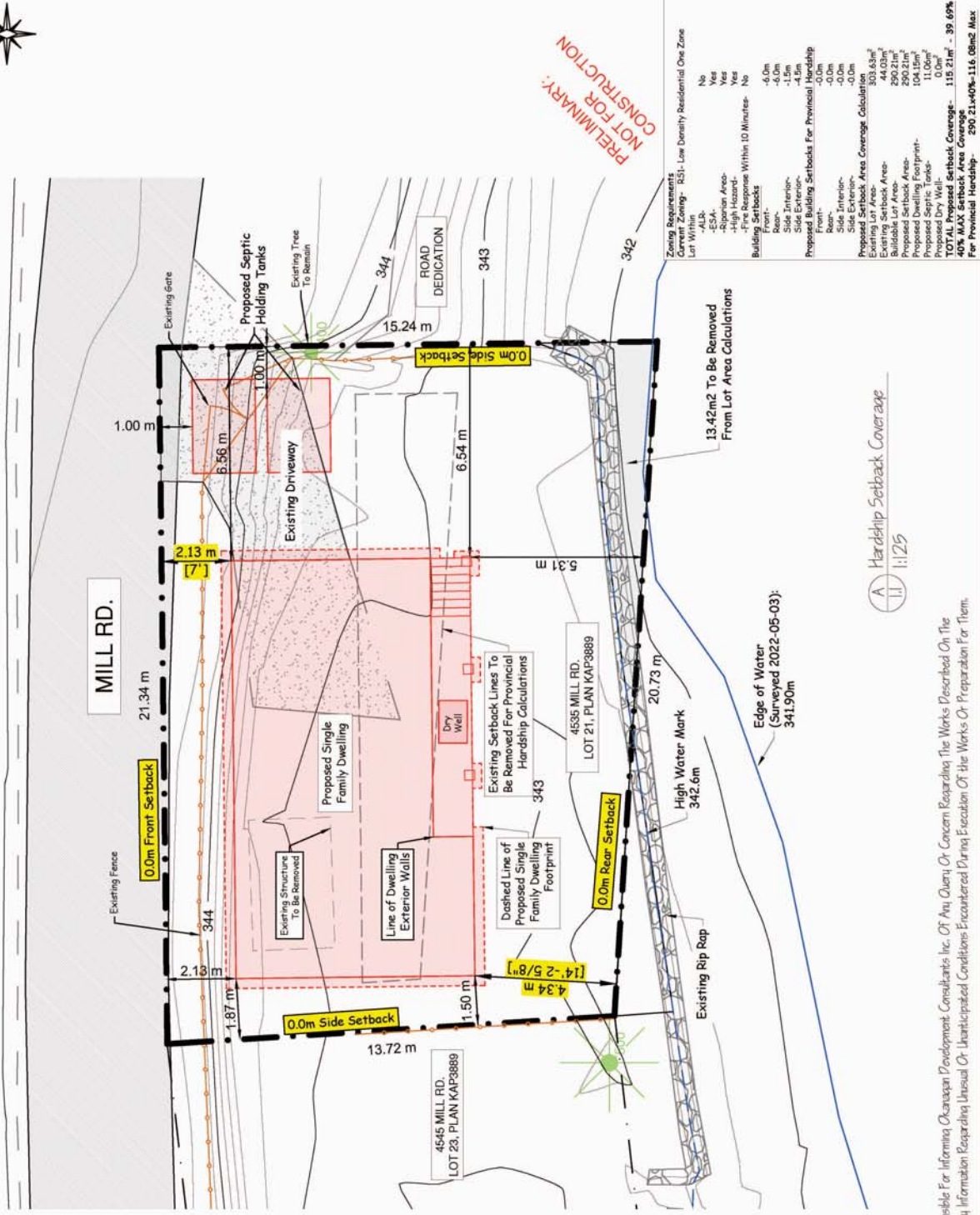
**DATE:** 1/1/24

**DESIGNED BY:** MIC & JEFF

**DRAWN BY:** DEWAN SH, JEFF GAHAN, JUSTIN HILDITCH

**SHEET:** A-11

**SCALE:** February 14, 2024



| Lot Within   | Yes                                       | No              |
|--|---|-----------------|
| -ALR   | Yes                                       | No              |
| -ESA   | Yes                                       | No              |
| -High Hazard                                       | Yes                                       | No              |
| -Fire Response Within 10 Minutes                   | Yes                                       | No              |
| Building Setbacks                                  | Front: -4.0m                              | Side: -4.0m     |
| Proposed Building Setbacks For Provincial Hardship | Front: -0.0m                              | Side: -0.0m     |
| Side Exterior                                      | -0.0m                                     | -0.0m           |
| Side Interior                                      | -0.0m                                     | -0.0m           |
| Proposed Setback Area Coverage Calculation         | 303.63m <sup>2</sup>                      |                 |
| Existing Lot Area                                  | 290.21m <sup>2</sup>                      |                 |
| Building Footprint Area                            | 290.21m <sup>2</sup>                      |                 |
| Proposed Setback Area                              | 104.15m <sup>2</sup>                      |                 |
| Proposed Dwelling Footprint                        | 11.00m <sup>2</sup>                       |                 |
| Proposed Septic Tanks                              | 0.0m <sup>2</sup>                         |                 |
| Proposed Dry Well                                  | 0.0m <sup>2</sup>                         |                 |
| <b>40% MAX Setback Coverage</b>                    | <b>115.21m<sup>2</sup></b>                | <b>- 39.69%</b> |
| <b>40% MAX Setback Area</b>                        | <b>290.21x40%=116.08m<sup>2</sup> Max</b> |                 |



The Client, Works Manager, Or Contractor Is Responsible For Informing Okanagan Development Consultants Inc. Of Any Query Or Concern Regarding The Works Described On The Drawings, Including Verification Of Dimensions And Any Information Regarding Unusual Or Unanticipated Conditions Encountered During Execution Of The Works Or Preparation For Them.

# OKANAGAN DEVELOPMENT CONSULTANTS INC.



OKANAGAN DEVELOPMENT CONSULTANTS  
 1825 HEDLEY AVE. SUITE 100  
 V1V 2N6, P.O. BOX 174, WILLOW  
 BEND, BC V2Y 1K1  
 OFFICE PH: (250) 864-0747  
 OFFICE FAX: (250) 864-0748  
 WWW.ODC.VIC.BIZ

**PROJECT:**  
 PROPOSED SINGLE  
 FAMILY DWELLING  
 FOR  
 ROB & DONALYN HIRTZ

**PROJECT ADDRESS:**  
 4545 MILL ROAD,  
 NARAMATA, BC

**LEGAL DESCRIPTION:**  
 LOT 22, PLAN KAP3889,  
 DISTRICT LOT 211,  
 SOYLD

**CURRENT ZONING:**  
 RSI - LOW DENSITY  
 RESIDENTIAL

**DATE:** 01/1/25

**REVISIONS:** 01/08/24

**DATE:** 01/29/24

**DATE:** 1/1/24

DESIGNED BY:  
 MHC & JEF  
 DRAWN BY:  
 JEFF GAUGHAN  
 JUSTIN HILDITCH

SHEET:

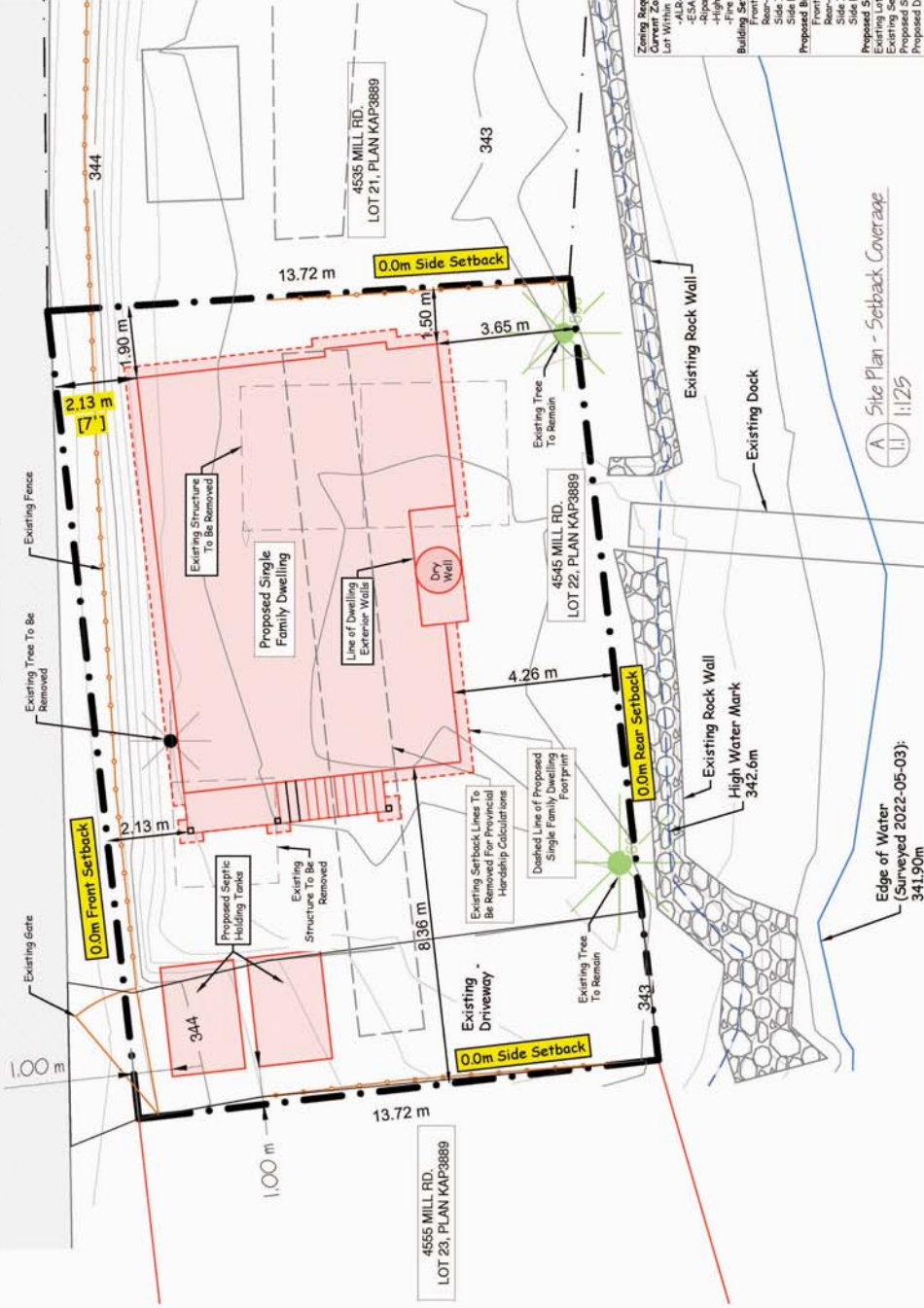
A-11

SCALE:

February 14, 2024



MILL RD.



Site Plan - Setback Coverage  
 1:125

Edge of Water  
 (Surveyed 2022-05-03):  
 341.90m

| Zoning Requirements                                   | Current Zoning       | RSI - Low Density Residential One Zone Lot Within | Yes/No |
|---|----------------------|---|--------|
| -ESA  | Yes                  | Yes   | Yes    |
| -High Hazard  | Yes                  | Yes   | Yes    |
| -Fire Response Within 10 Minutes                      | No                   | No  | No     |
| Building Front Setbacks                               | -6.0m                | -6.0m   | Yes    |
| Side Setbacks   | -1.5m                | -1.5m   | Yes    |
| Side Interior Setbacks                                | 4.5m                 | 4.5m  | Yes    |
| Proposed Building Setbacks For Provincial Handship    | -0.0m                | -0.0m   | Yes    |
| Side Interior Setbacks                                | -0.0m                | -0.0m   | Yes    |
| Side Exterior Setbacks                                | -0.0m                | -0.0m   | Yes    |
| Proposed Lot Area                                     | 287.84m <sup>2</sup> | 287.84m <sup>2</sup>                              | Yes    |
| Existing Lot Area                                     | 30.81m <sup>2</sup>  | 30.81m <sup>2</sup>                               | Yes    |
| Proposed Setback Area                                 | 287.84m <sup>2</sup> | 287.84m <sup>2</sup>                              | Yes    |
| Proposed Dwelling Footprint                           | 100.70m <sup>2</sup> | 100.70m <sup>2</sup>                              | Yes    |
| Proposed Deck Footprint                               | 0.0m <sup>2</sup>    | 0.0m <sup>2</sup>                                 | Yes    |
| TOTAL Proposed Setback Coverage                       | 111.70m <sup>2</sup> | 111.70m <sup>2</sup>                              | 38.82% |
| 40% MAX Setback Area Coverage For Provincial Handship | 287.84x40%           | 115.14m <sup>2</sup>                              | Max    |

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**Riparian Area Protection Regulation (RAPR)  
Assessment Report For  
4545 Mill Road, Naramata, BC**



**Prepared by:**

**VALLEY ENVIRONMENTAL**

**David Cassidy, BSc. R.P. Bio.**

**3265 Webber Road  
Westbank, BC  
V4T 1G3**

Date 

|               |
|---------------|
| July 30, 2023 |
|---------------|

**I. Primary QEP Information**

|                |                |             |                       |
|----------------|----------------|-------------|-----------------------|
| First Name     | David Cassidy  | Middle Name | William               |
| Last Name      | Cassidy        |             |                       |
| Designation    | Biologist      | Company     | Valley Environmental  |
| Registration # | 1556           | Email       | david.cassidy@shaw.ca |
| Address        | 3265 Webber Rd |             |                       |
| City           | Westbank       | Postal/Zip  | V4T 1G3               |
| Prov/state     | BC             | Country     | Canada                |
|                |                | Phone #     | 250-490-0161          |

**II. Secondary QEP Information**

|                |  |             |  |
|----------------|--|-------------|--|
| First Name     |  | Middle Name |  |
| Last Name      |  |             |  |
| Designation    |  | Company     |  |
| Registration # |  | Email       |  |
| Address        |  |             |  |
| City           |  | Postal/Zip  |  |
| Prov/state     |  | Country     |  |
|                |  | Phone #     |  |

**II. Additional QEP Information**

|                |  |             |  |
|----------------|--|-------------|--|
| First Name     |  | Middle Name |  |
| Last Name      |  |             |  |
| Designation    |  | Company     |  |
| Registration # |  | Email       |  |
| Address        |  |             |  |
| City           |  | Postal      |  |
| Prov/state     |  | Country     |  |
|                |  | Phone #     |  |

**III. Developer Information**

|            |                    |             |                |
|------------|--------------------|-------------|----------------|
| First Name | Robert             | Middle Name |                |
| Last Name  | Hirtz              |             |                |
| Company    |                    |             |                |
| Phone #    | 250-870-0746       | Email       | rhirtz@shaw.ca |
| Address    | 1701 SHALERIDGE PL |             |                |
| City       | West Kelowna       | Postal/Zip  | V1Z 3E4        |
| Prov/state | BC                 | Country     | Canada         |

**IV. Development Information**

|                          |   |                       |                |
|--------------------------|---|-----------------------|----------------|
| Development Type         | Construction: Single Family Residential |                       |                |
| Area of Development (ha) | 0.0114                                  | Riparian Length (m)   | 22             |
| Lot Area (ha)            | 0.029                                   | Nature of Development | Re-Development |
| Proposed Start Date      | 2022-12-16                              | Proposed End Date     | 2024-12-31     |

**V. Location of Proposed Development**

|                                  |   |    |    |           |                      |    |    |
|----------------------------------|---|----|----|-----------|----------------------|----|----|
| Street Address (or nearest town) | 4545 Mill Road                            |    |    |           |                      |    |    |
| Local Government                 | Regional District of Okanagan-Similkameen |    |    |           | City Naramata        |    |    |
| Stream Name                      | Okanagan Lake                             |    |    |           |                      |    |    |
| Legal Description (PID)          | 010-694-471                               |    |    |           | Region Okanagan (8)  |    |    |
| Stream/River Type                | Lake                                      |    |    |           | DFO Area BC Interior |    |    |
| Watershed Code                   | 310                                       |    |    |           |                      |    |    |
| Latitude                         | 49  | 36 | 27 | Longitude | 119                  | 35 | 58 |

**Table of Contents for Assessment Report**

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- 2. Results of Riparian Assessment (SPEA width) .....
- 3. Site Plan .....
- 4. Measures to Protect and Maintain the SPEA  
(detailed methodology only).
  - 1. Danger Trees.....
  - 2. Windthrow.....
  - 3. Slope Stability.....
  - 4. Protection of Trees.....
  - 5. Encroachment .....
  - 6. Sediment and Erosion Control.....
  - 7. Floodplain.....
  - 8. Stormwater Management.....
- 5. Environmental Monitoring .....
- 6. Photos .....
- 7. Assessment Report Professional Opinion .....

## Section 1. Description of Fisheries Resources Values and a Description of the Development proposal

Okanagan Lake supports a wide variety of salmonid and non-salmonid fish species which include the following: re-introduced sockeye (*Oncorhynchus nerka*), kokanee (*O. nerka*), rainbow trout (*O. mykiss*), carp (*Cyprinus carpio*), largescale sucker (*Catostomus macrocheilus*), mountain whitefish (*Prosopium williamsoni*), lake whitefish (*Coregonus clupeaformis*), northern pikeminnow (formerly northern squawfish) (*Ptychocheilus oregonensis*), smallmouth bass (*M. dolomieu*), prickly sculpin (*Cottus asper*), burbot (*Lota lota*), chiselmouth (*Acrocheilus alutaceus*), reidside shiner (*Richardsonius balteatus*), black bullhead (*Ameiurus melas*), lake chub (*Couesius plumbeus*), longnose sucker (*Catostomus catostomus*), pumpkinseed *Lepomis gibbosus*), pygmy whitefish (*Prosopium coulterii*), and peamouth chub (*Mylocheilus caucrinus*). The lake supports a sport fishery for smallmouth bass, kokanee and rainbow trout.

Okanagan Lake provides habitat for all life-history traits of the present salmonid and non-salmonid species. Specifically, rearing (summer and over-wintering) for kokanee and rainbow trout. The lake also provides spawning, incubation and rearing habitat for the non-salmonid species. Near shore habitat is almost entirely natural and consists of sand and small gravel substrate with moderate cover and vegetation (emergent and overhanging).

Much of native ecosystem surrounding the lake is ponderosa pine (*Pinus ponderosa*)/bunchgrass (*Agropyron spicatum*). Water birch (*Betula occidentalis*), a bush-like tree and black cottonwoods (*Populus balsamifera*) are native species also found in the immediate area of the property. These two species make up many of the South Okanagan riparian woodlands. These native plant species exist in small pockets within the 30 meter assessment area. However, the majority of the area immediately surrounding the proposed development is previously developed with single-family homes. Invasive weed species exist on neighbouring lots due to previous disturbance of ground soil and removal of vegetation.

The subject lot has been extensively modified in the past and there is only a few native shrub species along the shoreline and the edges of the property. The property has been continuously manicured (mowed) and was/is used as an amenity/recreational property for camping, beach/swimming and boating use. Neighbouring properties have been highly modified and are primarily manicured beach and grassy areas.

Prior to this riparian assessment, a couple of non-native hazard trees were removed (July 2022) under the RDOS's riparian / watercourse development permit exemption bylaw OCP Bylaw No. 2905, 2021, updated May 18, 2023 – Section 23.4.8 Exemptions (.7) Hazard Tree Removal.

The development is the removal of an existing cabin & shed and the construction of a new home (101.63 m<sup>2</sup>), septic tanks (11.06 m<sup>2</sup>) and dry well (1.13 m<sup>2</sup>). A portion of the existing gravel driveway will remain. Total footprint of new structures is 113.82 m<sup>2</sup>.

### Hardship Calculation/Determination

**Developable Area (DA)** = area of the lot outside of SPEA including natural, legal or local government restrictions such as building setbacks (front, rear, side yard etc.). **Total Potential Developable Area (TPDA)** = area of the lot regardless of SPEA including natural/legal restrictions which may include building setbacks. **Allowable Footprint (AF)** is the % (30% or 40%) of the TPDA.

Property is a Brownfield as historical human disturbance such as the existing cabin, shed, manicured grass, concrete blocks and other amenity areas on the property have removed >70% of the site potential vegetation (SPV). Therefore TPDA is 40% of AF.

Existing Lot:

DA = 0 m<sup>2</sup> (15 m riparian setback covers most of the property)

TPDA = 290.28 m<sup>2</sup> (0 m building setbacks supported by RDOS & and section of titled property below the stream boundary subtracted from total lot size (Lot size – section of lot below stream boundary = 303.63 m<sup>2</sup> – 13.42 m<sup>2</sup>)... (See site plan)

AF = 0.4 x TPDA = 0.4 x 287.84 m<sup>2</sup> = 115.14 m<sup>2</sup>

DA < AF = hardship

Footprint Calculations:

Footprint of Existing Cabin & Shed to be removed = 33.83 m<sup>2</sup>

Footprint of Proposed New Dwelling = 101.63 m<sup>2</sup>

Footprint of Proposed Septic Tanks = 11.06 m<sup>2</sup>

Footprint of Proposed Dry Well (under deck of house) = 1.13 m<sup>2</sup>

Total Proposed Lot Coverage Under Hardship = 113.82 m<sup>2</sup> or 39.54%

In summary, the above calculation proves hardship status & the proposed development footprints are less than the 40% calculation for allowable footprint. In addition, the development is as far from the lake as possible and is contiguous with the foreshore of the lake.

The attached site plan details the proposed new development using the 40% hardship calculation.

Mitigation:

As part of a restoration plan, VE has proposed that a portion of the amenity space and manicured grass areas will be replaced with 26 native plants consisting of 1 trees and 25 shrubs (see Section 3: Vegetation Plan).

RDOS Support:

- a. a reduction in setback(s) is supported by Planning staff;
- b. that Section 23.3.6 Variances to Protect the SPEA under [Electoral Area “E” OCP](#) states: “The Regional District encourages Development Variance Permit (DVP) applications for the relaxation of zoning (parcel line) setbacks on existing small lots in order to reduce impacts and preserve the SPEA.”
- c. that DVP application has been submitted to RDOS for approval.



## 2. Results of Detailed Riparian Assessment

Refer to Chapter 3 of Assessment Methodology

Date: July 28, 2023

Description of Water bodies involved (number, type)

|                   |          |
|-------------------|----------|
| Stream            |          |
| Wetland           |          |
| Lake              | Okanagan |
| Ditch             |          |
| Number of reaches | 1        |
| Reach #           |          |

**Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)**

|                             | Channel Width(m) |     | Gradient (%)   |     |
|-----------------------------|------------------|-----|--|-----|
| starting point              |                  |     | I, <u>David Cassidy</u> , hereby certify that:<br>a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;<br>b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u> ;<br>c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and<br>d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation. |     |
| upstream                    |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
| downstream                  |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
|                             |                  |     |  |     |
| Total: minus high /low mean |                  |     |  |     |
|                             | R/P              | C/P |  | S/P |
| Channel Type                |                  |     |  |     |

### Site Potential Vegetation Type (SPVT)

|               | Yes | No |  |
|---------------|-----|----|--|
| SPVT Polygons |     | X  | Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes  |
|               |     |    | I, <u>David Cassidy</u> , hereby certify that:<br>a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;<br>b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u> ;<br>c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and<br>d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation. |
| Polygon No:   |     |    | Method employed if other than TR   |
| SPVT Type     | LC  | SH |  |
|               |     |    |  |
| Polygon No:   |     |    | Method employed if other than TR   |
| SPVT Type     | LC  | SH |  |
|               |     |    |  |
| Polygon No:   |     |    | Method employed if other than TR   |
| SPVT Type     |     |    |  |

### Zone of Sensitivity (ZOS) and resultant streamside protection enhancement area (SPEA)

|   |      |   |
|---|------|---|
| Segment No:                             | 1    | If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons |
| LWD, Bank and Channel Stability ZOS (m) | 15 m |   |
| Litter fall and insect drop             | 15 m |   |

|                     |   |                             |   |
|---------------------|---|-----------------------------|---|
| ZOS (m)             |   |                             |   |
| Shade ZOS (m) max   | 0 m (30 m)  | South bank                  | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> x |
| Ditch               | Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow) |                             |   |
| Ditch Fish Bearing  | Yes <input type="checkbox"/>  | No <input type="checkbox"/> | If non-fish bearing insert no fish bearing status report              |
| <b>SPEA maximum</b> | <b>15 m</b>   | (For ditch use table3-7)    |   |

Segment No:  If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

|   |  |            |                              |                             |
|---|--|------------|------------------------------|-----------------------------|
| LWD, Bank and Channel Stability ZOS (m) |  | South bank | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Litter fall and insect drop ZOS (m)     |  |            |                              |                             |
| Shade ZOS (m) max                       |  |            |                              |                             |

**SPEA maximum**  (For ditch use table3-7)

Segment No:  If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons

|   |  |            |                              |                             |
|---|--|------------|------------------------------|-----------------------------|
| LWD, Bank and Channel Stability ZOS (m) |  | South bank | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Litter fall and insect drop ZOS (m)     |  |            |                              |                             |
| Shade ZOS (m) max                       |  |            |                              |                             |

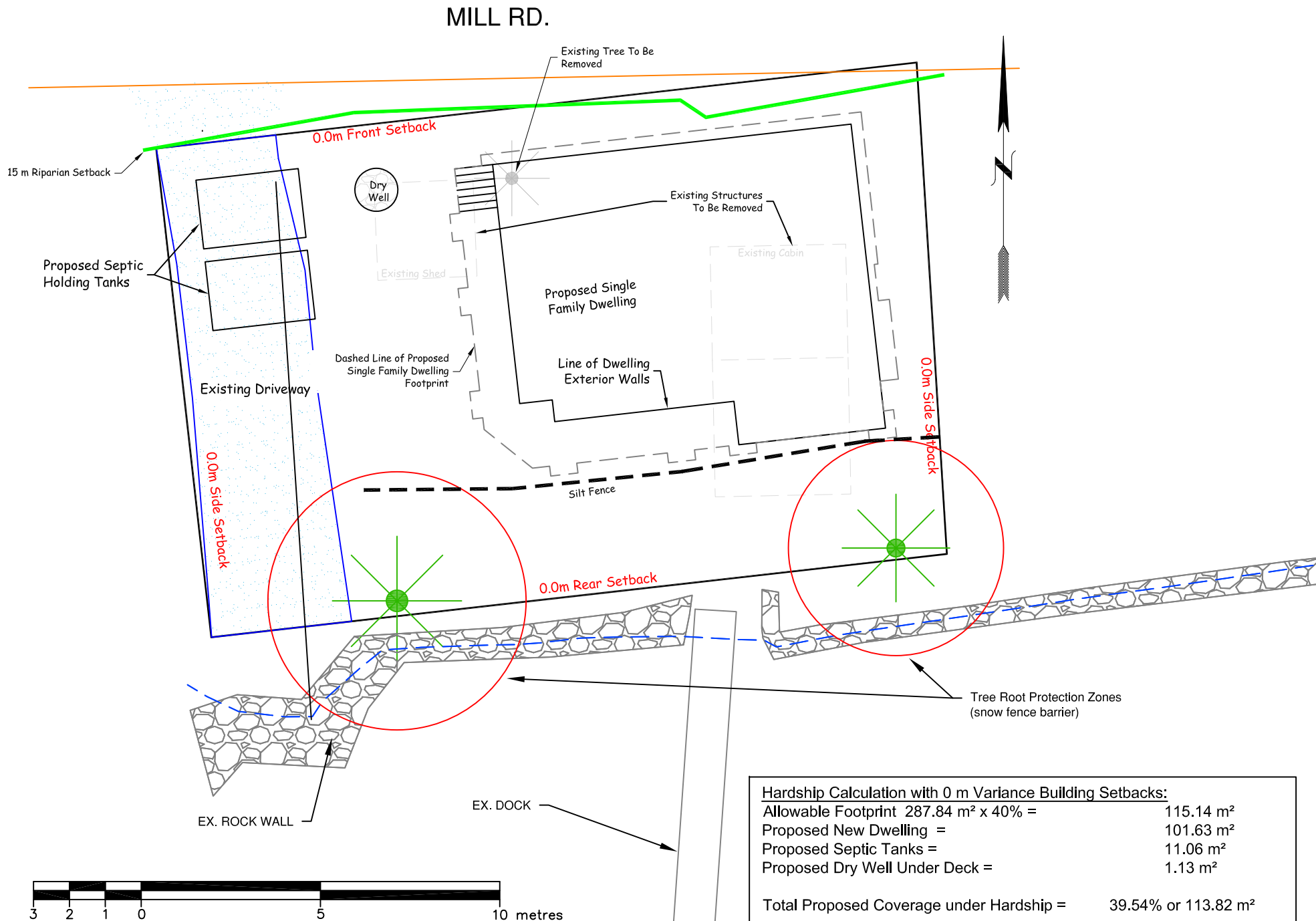
**SPEA maximum**  (For ditch use table3-7)

I, David Cassidy, hereby certify that:

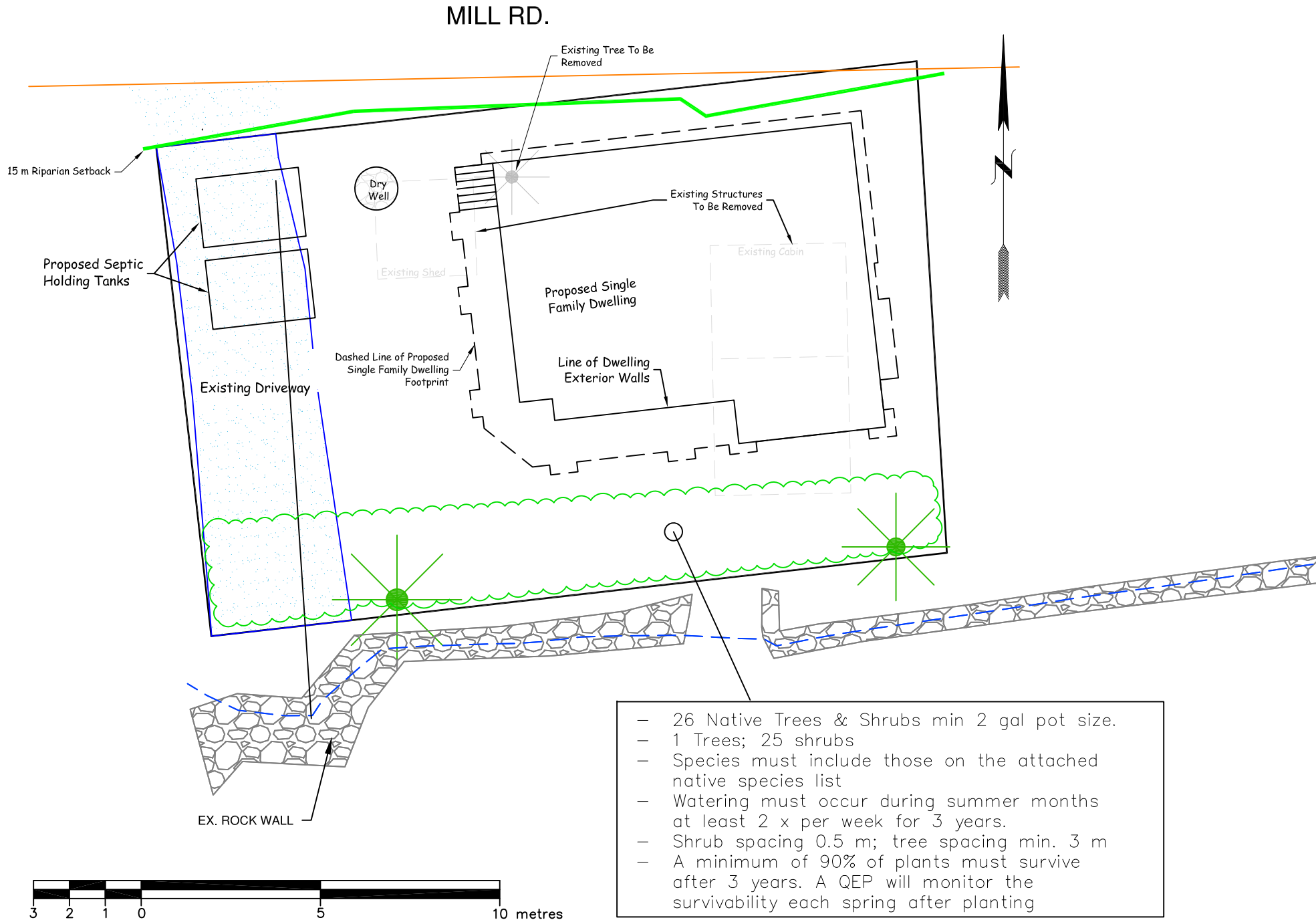
- I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- I am qualified to carry out this part of the assessment of the development proposal made by the developer Robert Hirtz;
- I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
- In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

**Comments**

# Section 3: Site Plan



# Section 3: Vegetation Plan



- 26 Native Trees & Shrubs min 2 gal pot size.
- 1 Trees; 25 shrubs
- Species must include those on the attached native species list
- Watering must occur during summer months at least 2 x per week for 3 years.
- Shrub spacing 0.5 m; tree spacing min. 3 m
- A minimum of 90% of plants must survive after 3 years. A QEP will monitor the survivability each spring after planting

## Section 4. Measures to Protect and Maintain the SPEA

There is currently no construction proposed at this time however, below are some site specific measures that would be required for a single-family home on the child lot if construction were to occur

|   |  |
|---|--|
| 1. Danger Trees   |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 2. Windthrow  |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 3. Slope Stability  |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 4. Protection of Trees  |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 5. Encroachment   |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 6. Sediment and Erosion Control   |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 7. Stormwater Management  |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |
| 8. Floodplain Concerns (highly mobile channel)  |  |
| <p>I, <u>David Cassidy</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Robert Hirtz</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p> |  |

- 1) Danger Trees – There are no hazard trees on the subject property or within the 15 m riparian setback. Hazard trees were recently removed as per the RDOS watercourse development permit exemption bylaws. The exemption notes that the removal of danger, infested or diseased trees within a riparian areas is exempt from a Watercourse Development Permit under the Electoral Area “E” Official Community Plan No. 2458, 2008, updated May 18, 2023 – Section 23.4.8 Exemptions (.7) Hazardous Tree Removal.
- 2) Windthrow – There are no forests being removed therefore, no windthrow.
- 3) Slope stability – The area of the development is on a flat surface. Slope stability is not anticipated to be an issue in the area of the development however, there is a steep slope across Mill Road. Both the slope and the subject property are within a geotechnical hazard zone according the RDOS mapping layer. A geotechnical assessment was completed by a Geotechnical engineer at Interior Testing Services Ltd. (see attached).

As there is no slope on the property and within the development, there are no slope stability concerns with regards to the proposed home development.

- 4) Tree Protection in the SPEA –The proposed development will remove one existing trees but will not encroach on any existing tree root protection zones. Compensation for the removal of this tree is covered within the restoration planting plan (see attached).
- 5) Encroachment in the SPEA – As the proposed development is a hardship and most of the property is within the 15 m SPEA, there is proposed encroachment into the SPEA setback due to the demolition of the existing cabin and the construction of a new single-family home.
- 6) Sediment and erosion during construction – Sediment delivery is not anticipated to be a significant problem as the areas of development are relatively flat. However, in an abundance of caution, a silt fence will be installed as shown in the site plan.
- 7) Stormwater Management – Resulting stormwater will be directed to a rock pit.
- 8) VE has determined that the location of the active floodplain/stream boundary is located in the area noted in the site plan and ensures that the SPEA starts at the edge of this feature. VE determined that the active floodplain/stream boundary is located along the edge of the rock wall / edge of manicured grass area. The rock wall is intact and the area above and behind the wall has not eroded indicating that flooding with wave action is not commonly above and beyond the rock wall. Therefore, the stream channel at this location would not be considered dynamic such that the area above the wall is typically flooded. As such VE feels that the location of the stream boundary / active floodplain is sufficient in protecting the SPEA as well as the development.

The RDOS has a Floodplain Designation and Flood Construction Level within their Zoning Bylaw (2800, July 7, 2022) to protect structures: 10.1.2 d) *Okanagan Lake: 343.66 m Geodetic Survey of Canada (GSC) datum.*

## **Section 5. Environmental Monitoring**

Monitoring will occur during the initial excavation stages of the proposed development to ensure protection of the identified SPEA setback. Following initial excavation for construction, monitoring will occur on a full time basis until the development is completed to ensure compliance and protection of existing riparian vegetation and near stream habitat. Each contractor involved with the proposed development will relay to their site workers the specific measures indicated in this document (Section 4), to protect and maintain the SPEA and riparian habitat. If the measures are breached site workers will immediately inform their foreman or supervisor who will in turn immediately contact the Environmental Monitor. In the absence of a foreman the site worker will contact the Environmental Monitor directly by phone. All work leading to the breach of the measures will stop immediately until consultation and approval from the Environmental Monitor. The environmental monitor or QEP for this development is David Cassidy of VE at 250-490-0161.

A post-development monitoring report will be prepared and filed with the Ministry of Environment following construction. A post vegetation planting report will also be prepared and filed with the local government.

**Section 6. Photos**



August 7, 2022 – View looking west and upstream along the stream boundary of Okanagan Lake adjacent to the subject property. Visible is the rock wall and manicured beach and lawn areas.



August 7, 2022 – View looking east and downstream along the stream boundary of Okanagan Lake adjacent to the subject property. Much of the riparian assessment area of adjacent properties contain a manicured amenity area. Much of the property has been historically used as a recreational property where the SPEA contains beach areas, manicured grass and gravel parking and picnic areas. Some native trees such as pines and cottonwoods are visible on adjacent properties however, understory species such as shrubs and grasses have been removed historically removed including the subject property.



August 7, 2022 – View looking north east at the existing cabin area, manicured lawn and gravel areas. Much of the property has been modified and >70% of the natural site potential vegetation has been removed. The property has been used as an amenity space and recreational property. As such the property is currently and historically a brownfield.



## Section 7. Professional Opinion

Qualified Environmental Professional opinion on the development proposal's riparian assessment.

Date

1. I/We David Cassidy, RPBio.

hereby certify that:

- a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*,
- b) I am/We are qualified to carry out the assessment of the proposal made by the developer Robert Hirtz, which proposal is described in section 3 of this Assessment Report (the "development proposal"),
- c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
- d) In carrying out my/our assessment of the development proposal, I have/We have followed the specifications of the Riparian Areas Protection Regulation and assessment methodology set out in the minister's manual; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a)  the site of the proposed development is subject to undue hardship, (if applicable, indicate N/A otherwise) and
- b)  the proposed development will meet the **riparian protection standard** if the development proceeds as proposed in the report and complies with the measures, if any, recommended in the report.

# Recommended Native Plant Species for Riparian Fish and Wildlife Habitat in the Southern Interior - Okanagan

## Deciduous Trees

| <b>Botanical Name</b>                               | <b>Common Name</b> |
|---|--------------------|
| <i>Acer glabrum</i> var. <i>douglasii</i>           | Douglas maple      |
| <i>Acer macrophyllum</i>                            | broadleaf maple    |
| <i>Populus balsamifera</i> or <i>P. trichocarpa</i> | black cottonwood   |
| ♦ <i>Prunus virginiana</i>                          | choke cherry       |
| <i>Rhamnus purshiana</i>                            | casacara           |
| <i>Salix lucida</i> ssp. <i>lasiandra</i>           | Pacific willow     |

## Coniferous Trees

| <b>Botanical Name</b>        | <b>Common Name</b> |
|------------------------------|--------------------|
| <i>Pinus ponderosa</i>       | ponderosa pine     |
| <i>Pseudotsuga menziesii</i> | Douglas-fir        |
| <i>Populus tremuloides</i>   | trembling aspen    |

## Shrubs

| <b>Botanical Name</b>                            | <b>Common Name</b> |
|--|--------------------|
| <i>Amelanchier alnifolia</i>                     | saskatoon          |
| <i>Cornus sericea</i> or <i>C. stolonifera</i>   | red-osier dogwood  |
| <i>Corylus cornuta</i> var. <i>californica</i>   | beaked hazelnut    |
| <i>Holodiscus discolor</i>                       | oceanspray         |
| <i>Physocarpus capitatus</i>                     | Pacific ninebark   |
| <i>Prunus virginiana</i>                         | choke cherry       |
| <i>Rosa nutkana</i>                              | Nootka rose        |
| <i>Rubus parviflorus</i>                         | thimbleberry       |
| <i>Rubus spectabilis</i>                         | salmonberry        |
| <i>Salix lucida</i> spp. <i>lasiandra</i>        | Pacific willow     |
| <i>Salix scouleriana</i>                         | Scouler's willow   |
| <i>Salix sitchensis</i>                          | Sitka willow       |
| <i>Sambucus caerulea</i> or <i>S. glauca</i>     | blue elderberry    |
| <i>Sambucus racemosa</i> var. <i>arborescens</i> | red elderberry     |
| <i>Sorbus sitchensis</i>                         | Sitka mountain ash |
| <i>Symphoricarpos albus</i>                      | snowberry          |
| <i>Vaccinium parvifolium</i>                     | red huckleberry    |

## Grasses

| <b>Botanical Name</b>           | <b>Common Name</b>      |
|---------------------------------|-------------------------|
| <i>Achnatherum hymenoides</i>   | great basin wild rye    |
| <i>Festuca idahoensis</i>       | Idaho fescue            |
| <i>Festuca campestris</i>       | rough fescue            |
| <i>Hesperostipa comata</i>      | needle and thread grass |
| <i>Koeleria macrantha</i>       | junegrass               |
| <i>Pseudoroegneria spicatum</i> | bluebunch wheatgrass    |
| <i>Achnatherum hymenoides</i>   | sand ricegrass          |
| <i>Poa secunda</i>              | sandberg's bluegrass    |