



**REGIONAL DISTRICT OF CENTRAL KOOTENAY**  
**BOX 590, 202 Lakeside Drive, NELSON, BC V1L 5R4**  
 ph: 250-352-8165 fax: 250-352-9300  
 email: [plandept@rdck.bc.ca](mailto:plandept@rdck.bc.ca)

**REFERRAL FORM**  
**FLOODPLAIN EXEMPTION APPLICATION**  
**RDCK Planning File: F2105E**  
**Date: August 16, 2021**

**You are requested to comment on the attached FLOODPLAIN EXEMPTION for potential effect on your agency's interests. We would appreciate your response WITHIN 30 DAYS (PRIOR TO September 16, 2021). If no response is received within that time, it will be assumed that your agency's interests are unaffected.**

**LEGAL DESCRIPTION & GENERAL LOCATION:**

365, 373, 377 and 381 Park Avenue, PROCTOR, ELECTORAL AREA 'E'  
 STRATA LOTS 33, 34, 35 & 36 PLAN NES3286, DISTRICT LOT 873, KOOTENAY LAND DISTRICT, TOGETHER WITH AN INTEREST IN THE COMMON PROPERTY IN PROPORTION TO THE UNIT ENTITLEMENT OF THE STRATA LOT AS SHOWN ON FORM V (PIDs: 027-785-084, 027-785-092, 027-785-106)

**PRESENT USE AND PURPOSE OF PERMIT REQUESTED:** Combined the subject properties total approximately 0.6 hectares and are located near the end of Park Avenue in Proctor, Electoral Area 'E', which is known as "Kootenay Lake Village". The properties are designated Suburban Residential (RS) under *Electoral Area 'E' Official Community Plan Bylaw (OCP) No. 2260, 2013*. Prior to adoption of the OCP previous development included the construction of a main house (365 Park Avenue), guest house (363 Park Avenue) yurt (381 Park Avenue) and landscaped. The lots are adjacent to Park Avenue and the CP rail line to the south, and Kootenay Lake to the northeast.

This current proposal is to develop the foreshore, including a construction of a boat house and marine rail, re-construction of rock landscaping and restoration of impacted beach areas. This application seeks to reduce the floodplain setback from Kootenay Lake from 15 metres to 12 metres under the *RDCK's Floodplain Management Bylaw No. 2080, 2009* to allow for the boathouse, which would be connected to a habitable building.

AREA OF PROPERTY AFFECTED	ALR STATUS	ZONING	OCP
0.6 hectares (combined)	No	N/A	Suburban Residential (SR)

**APPLICANT:** Charles and Sandra Leatherman c/o Masse Environmental Consultants Ltd.

**OTHER INFORMATION: ADVISORY PLANNING COMMISSION PLEASE NOTE:** The subject lands lie within a Watercourse Development Permit (WDP) area for the protection of the natural environment, its ecosystems and biological diversity. A concurrent WDP (RDCK file#DP2106E) application to regulate the above proposed development activities adjacent to watercourses and their riparian areas to protect aquatic habitat; and to conserve, enhance and, where necessary, restore watercourses and their riparian areas has also been submitted.

If your Advisory Planning Commission plans to hold a meeting to discuss this Floodplain Exemption application, please note that the applicants must be provided with an opportunity to attend such meeting, in accordance with Section 461, subsection (8) of the *Local Government Act*, which reads as follows: "If the commission is considering an amendment to a plan or bylaw, or the issue of a permit, the applicant for the amendment or permit is entitled to attend meetings of the commission and be heard."

**Please fill out the Response Summary on the back of this form. If your agency's interests are 'Unaffected' no further information is necessary. In all other cases, we would appreciate receiving additional information to substantiate your position and, if necessary, outline any conditions related to your position. Please note any legislation or official government policy which would affect our consideration of this permit.**

**Stephanie Johnson, PLANNER**  
**REGIONAL DISTRICT OF CENTRAL KOOTENAY**

TRANSPORTATION <input checked="" type="checkbox"/> West Kootenay District Office, Nelson <input checked="" type="checkbox"/> HABITAT BRANCH FRONT COUNTER BC (FLNRORD)	REGIONAL DISTRICT OF CENTRAL KOOTENAY DIRECTORS FOR: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input checked="" type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> I <input type="checkbox"/> J <input type="checkbox"/> K ALTERNATIVE DIRECTORS FOR:
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- Nelson
- Cranbrook
- AGRICULTURAL LAND COMMISSION
- REGIONAL AGROLOGIST
- DEPT. of FISHERIES & OCEANS
- MUNICIPAL AFFAIRS & HOUSING
- INTERIOR HEALTH
- HBE Team, Nelson
- KOOTENAY LAKES PARTNERSHIP (FORESHORE DEVELOPMENT PERMITS)
- SCHOOL DISTRICT NO.
- WATER SYSTEM OR IRRIGATION DISTRICT
- UTILITIES (FORTIS, BC HYDRO, NELSON HYDRO, COLUMBIA POWER)

- A  B  C  D  E  F  G  H  I  J  K
- APC AREA E
- RDCK FIRE SERVICES
- District Chief Nora Hannon – Kaslo, Balfour, Harrop, North Shore & Ymir
- District Chief George Hamm – Pass Creek, Ootischenia, Robson, Tarry’s & Beasley
- District Chief Gord Ihlen – Crescent Valley, Passmore, Winlaw, Slocan & Blewett
- RDCK EMERGENCY SERVICES
- RDCK BUILDING SERVICES
- RDCK UTILITY SERVICES
- RDCK RESOURCE RECOVERY
- RDCK REGIONAL PARKS
- INSERT COMMENTS ON REVERSE . . .

The personal information on this form is being collected pursuant to *Regional District of Central Kootenay Planning Procedures and Fees Bylaw No. 2457, 2015* for the purpose of determining whether the application will affect the interests of other agencies or adjacent property owners. The collection, use and disclosure of personal information are subject to the provisions of FIPPA. Any submissions made are considered a public record for the purposes of this application. Only personal contact information will be removed. If you have any questions about the collection of your personal information, contact the Regional District Privacy Officer at 250.352.6665 (toll free 1.800.268.7325), [info@rdck.bc.ca](mailto:info@rdck.bc.ca), or RDCK Privacy Officer, Box 590, 202 Lakeside Drive, Nelson, BC V1L 5R4.

**RESPONSE SUMMARY**  
**FILE: F2105E APPLICANT: LEATHERMAN**

Name:

Date:

Agency :

Title:

RETURN TO:   STEPHANIE JOHNSON, PLANNER  
                  DEVELOPMENT SERVICES  
                  REGIONAL DISTRICT OF CENTRAL KOOTENAY  
                  BOX 590, 202 LAKESIDE DRIVE  
                  NELSON, BC V1L 5R4  
                  Ph. 250-352-8190  
                  Email: [plandept@rdck.bc.ca](mailto:plandept@rdck.bc.ca)

# RDCK Map



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen,



REGIONAL DISTRICT OF CENTRAL KOOTENAY  
 Box 590, 202 Lakeside Drive,  
 Nelson, BC V1L 5R4  
 Phone: 1-800-268-7325 www.rdck.bc.ca  
 maps@rdck.bc.ca

### Legend

- Official Community Plan
- Electoral Areas
- RDCK Roads
- Cadastre
- Civic Address

### Map Scale:

1:2,257

Date: May 11, 2021







The mapping information shown are approximate representations and should only be used for reference purposes. The Regional District of Central Kootenay is not responsible for any errors or omissions on this map.

# RDCK Map



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Box 590, 202 Lakeside Drive,  
Nelson, BC V1L 5R4  
Phone: 1-800-268-7325 www.rdck.bc.ca  
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## Legend

-  Electoral Areas
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# REGIONAL DISTRICT OF CENTRAL KOOTENAY FLOODPLAIN MANAGEMENT BYLAW NO. 2080, 2009

## 7.2 Floodplain Setbacks

The following distances are specified as Floodplain Setbacks, except where more than one Floodplain Setback is applicable, the greater distance shall be applied:

- a. Floodplain Setbacks for the Arrow Reservoir shall be above the safe line for properties with a covenant and reference plan. For properties without a covenant or reference plan, the Floodplain Setback shall be 30 metres from the 440.7 metre contour interval;
- b. Floodplain Setbacks for the Kootenay River between the South Slocan Dam and Brilliant Dam shall be the safe line for properties with a covenant and reference plan. For properties without a covenant and reference plan the Floodplain Setback shall be 15.0 metres from the natural boundary;
- c. Floodplain Setbacks for the Duncan River shall be the setback as defined for properties with a covenant. For properties without a covenant the Floodplain Setback shall be as determined by Schedule B or 30.0 metres from the natural boundary.
- d. 90.0 metres from Bernard Creek;
- e. 50.0 metres from the natural boundary of the west bank of Preacher Creek and 20.0 metres from the natural boundary of the east bank of Preacher Creek;
- f. 45.0 metres from the natural boundary of the east bank of Grohman Creek and 30.0 metres from the natural boundary for the west bank of Grohman Creek;

- g. 30.0 metres from the natural boundary of the Columbia, Goat, Halfway (Arrow Reservoir), Kaslo, Kootenay (excluding that portion from the South Slovan Dam to Brilliant Dam), Lardeau, Little Slovan, Moyie, Pend D'orelle, Salmo, Slovan, South Salmo, Westfall and Whatshan Rivers;
- h. 30.0 metres from the natural boundary for Barnes, Burton, Caribou, Carpenter, Cooper, Corn, Crawford, Cultus, Dog (Arrow Lake north of Castlegar), Duhamel, Eagle (Arrow Reservoir), East, Erie, Forty-nine, Fosthall, Fry, Hall, Hamill, Hawkins, Howser, Inonoaklin, Keen, Koch, Kokanee, Kuskanax, Lemon, Midge, Mosquito, Pingston, Poplar, Stagleap, Summit and Wilson Creek (Slovan Lake Drainage);
- i. 30.0 metres from the natural boundary of Duncan Lake;
- j. 15.0 metres from the natural boundary of Wilson Creek (Kootenay Lake and South Salmo River Drainages);
- k. 15.0 metres from the natural boundary for all other lakes and small watercourses; and
- l. 7.5 metres from the natural boundary for all small lakes, ponds and marshes.

A 7.5 metre setback is required for any standard dike or structure used for flood protection or any easement or right of way for a standard dike or structure used for flood protection.

## 11.0 SITE SPECIFIC EXEMPTIONS

- 11.1 An application by a property owner to the Regional District for a site specific exemption of Floodplain Specifications shall be completed in the

form provided by the Regional District and submitted in accordance with the instructions on the application. This provision is not a substitute for any requirements under Section 56 of the *Community Charter*.

- 11.2 As a condition of a site specific exemption, the property owner will be required at his/her own expense to commission a Professional Engineer’s Report that addresses exemption precedents in the surrounding area and provide a summary report containing a description of the proposed development, and recommendations for conditions, as applicable.
- 11.3 As a condition of a site specific exemption, the property owner will be required at his/her expense to prepare and register a restrictive covenant under Section 219 of the *Land Title Act* and Section 56 of the *Community Charter* in favor of the Regional District specifying conditions that would enable the land to be safely used for the use intended according to the terms of the Professional Engineer’s report which will form part of the restrictive covenant.

**Regional District of Central Kootenay  
Bylaw No. 2080, 2009  
SCHEDULE “C” FLOODPLAIN TABLE**

Watercourse	Receiving Watercourse	Flood Construction Level (FCL)	Floodplain Setback
Kootenay Lake		536.5 G.S.C.	15.0 metres





Ms. Sandy Leatherman and Mr. Brooke Leatherman  
c/o Masse Environmental Consultants Ltd.  
812 Vernon Street, Nelson, BC  
V1L 4G4

Date: March 19, 2021  
File: DE09-0833B

Re: Site Specific Exemption from Floodplain Bylaw,  
Leatherman Boathouse, 373 Park Avenue, Procter, BC

Dear Sir and Madam,

This letter-report presents a summary of findings of a Flood Hazard assessment of the site of a proposed Boathouse to be constructed at 373 Park Avenue, Procter, BC.

Legal description is: **Strata Lot 34, DL 873, Kootenay District Plan NES3286.**

Figure 1 is a site plan map of the subject property showing the proposed boathouse structure in relation to existing buildings and property boundaries, including the Natural Boundary.

Figure 2 is a Section drawing showing the boathouse and associated marine railway.

## **1.0 BYLAWS AND REGULATION**

### **1.1 RDCK Bylaw No. 2080.**

This report is prepared in accordance with requirements of **Section 11, Site Specific Exemptions** of the Regional District of Central Kootenay Floodplain Management Bylaw No. 2080, 2009, pursuant to Section 910 of the Local Government Act.

#### ***11.0 Site-Specific Exemptions***

***11.1 An application by a property owner to the Regional District for a site specific exemption of Floodplain Specifications shall be completed in the form provided by the Regional District and submitted in accordance with the instructions on the application. This provision is not a substitute for any requirements under Section 56 of the Community Charter.***

***11.2 As a condition of a site specific exemption, the property owner will be required at his/her own expense to commission a Professional Engineer's report that addresses exemption precedents in the surrounding area and provide a summary report containing a description of the proposed development, and recommendations for conditions, as applicable.***

## 1.2 Local Government Act (Section 524) – Flood Plain Bylaw Exemption

Requirements for a site-specific exemption are described in the Local Government Act (Section 524) – Flood Plain Bylaw Exemption as follows:

***With reference to subsection (7) Subject to the Provincial regulations and a plan or program as local government has developed under those regulations, the local government may exempt a person from the application of subsection (6), or a bylaw under subsection (3), in relation to a specific parcel of land or a use, building, or other structure on the parcel of land, if the government considers it advisable and either***

- (a) considers that the exemption is consistent with the Provincial guidelines, or***
- (b) has received a report that the land may be safely used for the use intended, which report is certified by a person who is***
  - (i) a professional engineer or geoscientist and experienced in geotechnical engineering, or***
  - (ii) a person in a class prescribed by the environment minister under subsection (9)***

Such a report may recommend requirements for measures, that may include, but is not limited to items such as erosion / scour protection, special foundation design to address reduced soil bearing capacity under flooding conditions, and limits to use of portions of the building for electrical and mechanical installations.

Under the Local Government Act, a covenant may be placed on the property title that limits the Owner's eligibility for Provincial Floodplain relief.

## 1.3 Professional Practice Guidelines

Reference has been made to Engineers and Geoscientists BC, Professional Practice Guidelines for Legislated Flood Assessments in a Changing Climate in BC, V 2.1 – August 28, 2018.

## 2.0 LIMITATIONS OF REPORT

Deverney Engineering Services Ltd. (DESL) has prepared this report for and at the expense of the property owners. The material in it reflects the judgement of DESL in light of the information available to DESL at the time of report preparation.

Findings and recommendations presented in this report are intended to support application for a Site Specific Exemption from the Floodplain Bylaw No. 677, and can be used by the Owner and the Development Approval agencies to adjudicate the proposed development.

Any use that other third parties make of this report, or any reliance on decisions to be based on it is the responsibility of such third parties. DESL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

### 3.0 CONFIDENTIALITY AND DISCLOSURE

With reference to Professional Practice Guidelines for Legislated Flood Assessments in a Changing Climate in BC (V 2.1 – August 28, 2018):

***“Subject to the following, the Qualified Professional (QP) will keep confidential all information, including documents, correspondence, reports and opinions, unless disclosure is authorized in writing by the client. However, in keeping with Engineers and Geoscientists BC’s Code of Ethics, if the QP discovers or determines that there is a material risk to the environment or the safety, health, and welfare of the public or worker safety, the QP shall notify the client as soon as practicable of this information and the need that it be disclosed to the appropriate parties. If the client does not take the necessary steps to notify the appropriate parties in a reasonable amount of time, the QP shall have the right to disclose that information to fulfill his/her ethical duties, and the client hereby agrees to that disclosure.”***

### 4.0 SITE INVESTIGATION

The site field investigation was conducted by the writer on November 10, 2020 with a follow-up visit on March 11, 2021. The investigation included a reconnaissance assessment of the prospective building site on the subject property as well as nearby areas including lake shoreline conditions. No sub-surface investigation of the subject property was conducted.

Reference was made to observations of soil and shoreline conditions at adjacent properties, to regional soils reports, historic lake water levels (FortisBC), aerial images, and topographic maps. A list of References follows the signature page.

### 5.0 SITE DESCRIPTION

The subject property is situated on a sloping, north to north-east facing property on the west shore of Kootenay Lake within the Community of Procter. The subject property is bounded on the west by Park Avenue and the CP Railway.

The owners are proposing to construct a boathouse and marine railway between the existing cabin and the shoreline of Kootenay Lake. To function as a boathouse, the building footings are necessarily planned to be constructed below the visible High Water Mark (shown at elevation 533.75m), and below the Designated Flood Construction Level.

The Designated Flood Construction Level (FCL) for Kootenay Lake is the projected 200 - Year Return Period flood water level of **536.5 metres** (1,760.17') - GSC Datum). The FCL includes a Freeboard Allowance of 0.76 metres (2.5').

The Variance request is to allow the encroachment of a portion of the boathouse structure approximately 3 metres into the 15 metre Setback Distance from the Natural Boundary for a **Reduced Setback Distance of 12 metres from the Natural Boundary.**

The owners propose to otherwise conform to the elevation requirements of the Floodplain Bylaw with respect to subsection 6 (a)

***(i) the underside of any floor system, or the top of any pad supporting any space or room, including a manufactured home, that is used for dwelling purposes, business or the storage of goods which are susceptible to damage by floodwater shall be above the specified level***

## **6.0 SHORELINE CONDITIONS AND STRUCTURES**

### **6.1 Lake Characteristics**

Kootenay Lake is a narrow and relatively deep lake situated between the Selkirk and Purcell Ranges. The lake is situated in a north / south orientation, encompassing a length of approximately 105 km, with width ranging from 3 to 5 km.

Major inflows are from the Kootenay River in the south and the Duncan River in the north. Both rivers are controlled by dams; the Duncan Dam operated by BC Hydro and the Libby Dam operated by the US Army Corps of Engineers.

Outflows from the lake are through the West Arm of Kootenay Lake, with discharge controlled by a constriction point at Grohman Narrows. Lake water levels throughout the year are governed by the 1938 International Joint Commission (IJC) order on Kootenay Lake. The IJC administers the Boundary Water Treaty of 1909 between Canada and the United States.

Specific control of lake level is undertaken between September 1 and March 31. After March 31, efforts are made to keep the lake elevation below 530.145 m (1,739.23'). There is limited control for extreme lake elevations.

Maximum lake water levels occur in the period from late April to June, associated with snowmelt conditions.

The flood of record occurred in 1932 when peak level was 537.18 m (1,762.4'). More recent records of lake levels are summarized by FortisBC over the period 1973 to 2020, covering a 48 year period of record. Those records are summarized in **Appendix 1**.

Annual peak lake levels over the period of record from 1973 to 2020 ranged from a Low of 531.48m (1977) to a High of 534.69m (1974).

Recent high lake levels of interest occurred in 2012; 534.55 m and 2018; 534.07m. Annual minimum lake levels cover a lesser range, from 529.71m (2001) to 530.05m (2011). Average minimum lake level is 530.04m.

A 1:200 year flood level (including freeboard) of 536.5m was adopted in 1979 with floodplain maps issued in August 1981. A freeboard allowance of 0.76m was added to the estimated maximum static water level to include wave action and wind set up.

Predominant wave direction in Kootenay Lake is in the north / south direction, following the general alignment of the valley.

The maximum fetch distance at the subject property is more than 20 km from the north, and approximately 5 km from the east. The property shoreline is sheltered from wind and waves approaching from the south.

The shoreline at the subject property is directly exposed to the predominant wind and waves from the north, so the generalized lake-wide maximum wave setup and wave height allowance of 0.76m is appropriate for this site.

### **6.1 Beach**

The shoreline of Kootenay Lake at the subject property is a sloping area overlain by naturally occurring angular rock fragments of cobble to boulder sizes. Photo 1 shows the existing shoreline from the boathouse location looking northwest. Photo 2 shows the shoreline at the looking southeast through the boathouse site. At this time of year, the rock fragments show a whitish cast coating.

There are bedrock outcroppings visible at boathouse location as the existing house on this site is founded on bedrock. There is a small rocky headland immediately to the northwest of the site that extends approximately 10 – 15 metres lakeward from the shoreline (Photo 1). A smaller rocky point shelters the beach from the southeast (Photo 2)

The dark grey angular rock fragments on the shore are inferred as the product of local bedrock weathering, being of the same lithology as the nearby bedrock outcroppings.

Infill materials between angular rocks are coarse sand and sub-angular gravel to small cobble sizes. These infill materials are lighter brown in colour. These materials are inferred as re-worked beach deposits, and scattered remnant materials from previous shoreline “dressing” conducted during original development of this subdivision.

### **6.3 Vegetation**

There are scattered shrubs, perennial plants and some deciduous trees present on the beach area above the Natural Boundary.

Details and distribution of existing and proposed shoreline restoration plantings are shown on a Re-Vegetation Plan (Revision 1.1) attached in **Appendix 2**.

## **7.0 EROSION HAZARDS**

### **7.1 Beaches**

The whitish angular rock fragments and underlying bedrock are non-erodible. This is a mature and stable shoreline having been exposed to high lake water levels and storm waves for hundreds of years.

Some seasonal removal and re-cycling of the sand and gravel infill materials is expected due to wave action. Such erosion impacts would be limited to the loss of those surface materials, resulting in the re-exposure of the underlying coarser materials.

There is no expectation of shoreline regression affecting the existing cabin structure and the proposed boathouse building.

### **7.2 Climate Change Considerations**

Effects of climate change on erosion hazards are associated with possible occurrence of high lake water levels at a higher frequency compared to the probability model employed during the floodplain mapping.

This can occur as increased frequency of occurrence of water levels at the magnitude of the 200 year return period, and possible occurrence of water levels that exceed the 200 year return period.

Higher frequency of occurrence may be expressed as increased requirements for remedial repairs or maintenance.

Increased event magnitude, i.e. flood levels that exceed the estimated 200-year return period elevations are addressed in part by the 0.76m (2.5') freeboard allowance.

### **7.3 Other Hazards**

Based on the site field assessment and review of existing hazard mapping and aerial images, no other natural hazards were identified at the subject property.

The subject property is separated from upland areas of Procter Point by intervening broken terrain.

There are no up-land sourced watercourses that present overland flooding or debris flood / debris flow hazards to the subject property.

## 8.0 CONCLUSIONS

Landward regression of shoreline at the subject property is prevented by the presence of existing stable and non-erodible shoreline substrate materials. There is no expectation of landward regression of the lake shoreline under lake water level conditions up to and including the 200 year return period maximum lake level.

Where the 200 year return period is generally accepted as a tolerable level of risk, then the proposed site-specific exemption is consistent with that accepted risk level.

Reduction of the setback distance to approximately 12 metres, as proposed will not increase the likelihood of damage due to flooding in Kootenay Lake above that frequency of occurrence.

Building foundations constructed as proposed are below the FCL. Soil bearing resistance will be reduced by the reduction of soil internal friction and the reduced soil weight under high lake water levels.

Boathouse footings and piers will require Engineered measures to provide adequate soil bearing resistance under all conditions including inundation. In addition, footings and pier bases will require Engineered design for scour and erosion protection due to wave erosion that could expose, degrade, or otherwise damage building foundations under lake water level conditions up to and including the 200 year return period maximum lake level.

## 9.0 RECOMMENDATIONS – EXEMPTION APPROVAL

It is recommended that consideration be given to approval of the requested Exemption from the Floodplain Bylaw for the proposed building construction on the subject property as follows:

### 9.1 Floodplain Setback

The proposed relaxed setback distance is **12 metres** from the Natural Boundary.

### 9.2 Flood Construction Level

Proposed building elevations are below the FCL in fitting with the intent of use as a boathouse, and are therefore **Not Compliant**. Utilities, switchgear and other appliances within the building that are damageable by water will be installed above the FCL elevation.

### 9.3 Restrictive Covenant

There are no recommendations for a restrictive Covenant to be registered on the subject property.

Any additional / future residential construction on the Subject Property will be undertaken under the RDCK's Floodplain Management Bylaw No. 2080 (or successive Bylaws) that would require hazard assessment if non-conforming.

## **10.0 RECOMMENDATIONS – SITE WORKS AND CONSTRUCTION**

### **10.1 Erosion Protection**

There are no recommendations for additional (new) erosion protection measures.

### **10.2 Building Design and Construction**

In conformance with the Floodplain Management Bylaw, it is recommended that building design consider measures to mitigate possible damage to buildings and contents, including electrical and mechanical installations during periods of high lake water levels up to and including the designated Flood Construction Level of 536.5 m.

Footings are to be designed in consultation with a Geotechnical Engineer to assure suitable subgrade soil bearing resistance in consideration of inundated or near – inundated conditions.

Footings and foundations are to be designed in consultation with a suitably qualified Professional Engineer and constructed in conformance with that design to assure long term stability under possible scour conditions associated with wave action.

### **10.3 Supervision**

It is recommended that verification of building foundation locations with respect to the Relaxed Setback Distance be conducted by a BCLS or other Qualified Registered Professional (QRP).

## **11.0 SAFE FOR INTENDED PURPOSE**

Reference is to be made to the attached Statement prepared in conformance with EGBC's **Professional Practice Guidelines for Legislated Flood Assessments in a Changing Climate in BC** for statements regarding suitability of the property, as being **safe for the purpose intended**, under conditions where the Site-Specific exemption is granted.




## 12.0 CLOSURE

This report is prepared in accordance with generally accepted engineering practices in this area. No other warranty, express or implied is made.

Variability is inherent in geological features, and actual ground conditions in some parts of the site may differ from those inferred. Subsurface soil conditions have been inferred from the observed exposures. Changes to design details, work procedures and other project considerations may be warranted on the basis of site conditions encountered.

Respectfully submitted

**DEVERNEY ENGINEERING SERVICES LTD.**

A red circular professional engineer stamp for Norman L. Deverney, #21563, dated March 19, 2021. The stamp includes the text "PROFESSIONAL ENGINEER", "BRITISH COLUMBIA", and "N. L. DEVERNEY # 21563". A handwritten signature "Norman L. Deverney" is written across the stamp, and the date "March 19, 2021" is handwritten below it.

Norman L. Deverney, P.Eng., FEC

Cc: Ms. Fiona Lau, ASCT, Masse Environmental Consultants Ltd.

## References

Air Photos      Google Earth Images

**RAB Bulletin 20, Soil Resources of the Nelson Map Area (82F), Report No. 28**, J.R. Jungen, British Columbia Soil Survey, Ministry of Environment, Resource Analysis Branch, 1980.

**Regional District of Central Kootenay Floodplain Management Bylaw No. 2080, 2009.**

Province of BC. **Flood Hazard Area Land Use Management Guidelines, Victoria, BC: Province of BC**, 2004

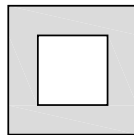
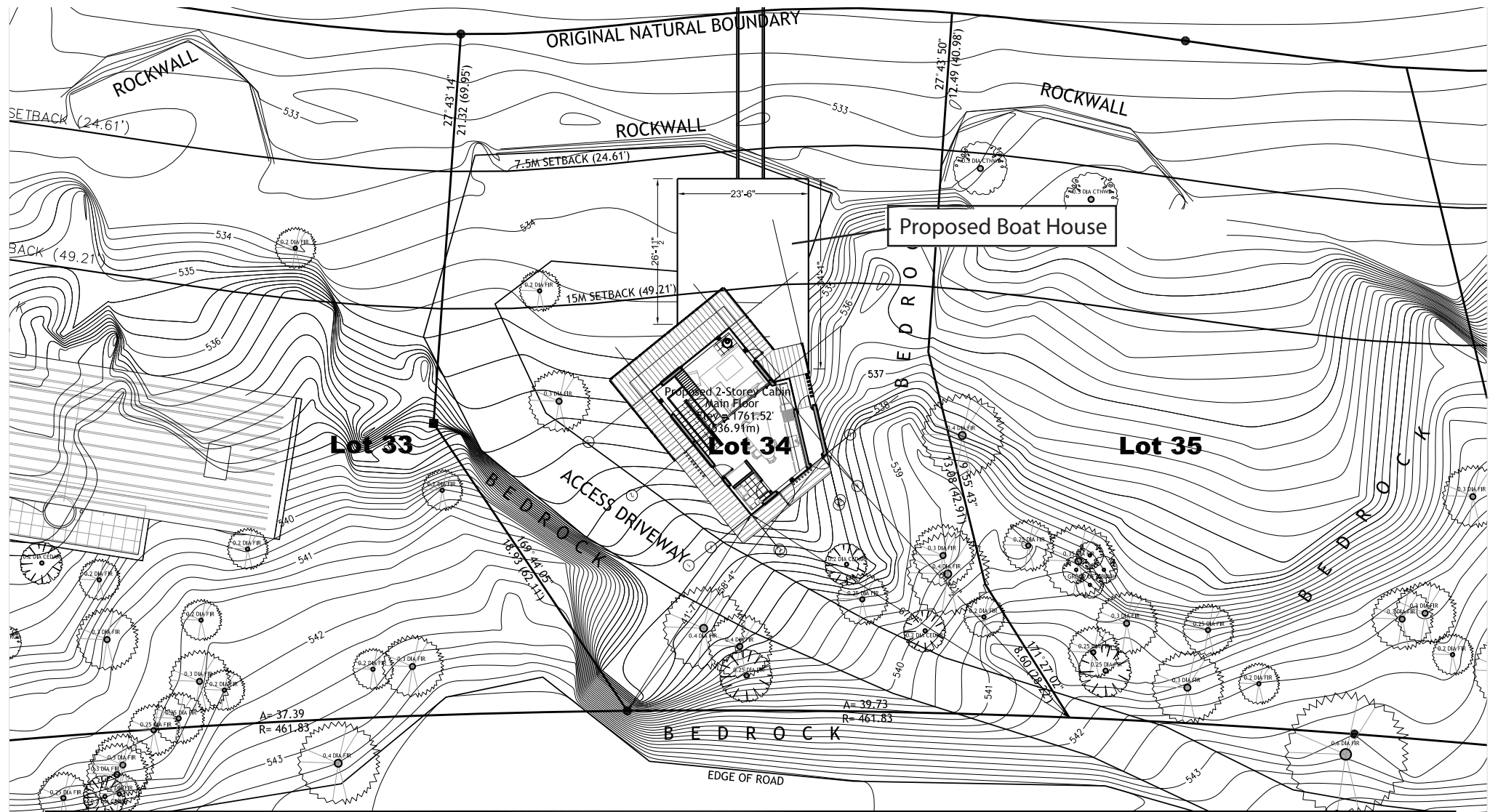
Naval Facilities Engineering Command, **Soil Mechanics Design Manual**, 7.01, 2005

Canadian Geotechnical Society, **Canadian Foundation Engineering Manual, 4th Edition, 2006.**

Engineers and Geoscientists BC, **Professional Practice Guidelines for Legislated Flood Assessments in a Changing Climate in BC**, V 2.1 – August 28, 2018

Province of BC, **Amendment Section 3.5 and 3.6 – Flood Hazard Area Land Use Management Guidelines**, (January 1, 2018)

FortisBC, **Historic Kootenay Lake Water Levels, 1973 – 2020.**



**OPENSOURCE  
ARCHITECTURE**

165 East 1st Street, North Vancouver, BC V7L1B2  
 T: 604 984.7722 F: 604 984.7726  
 www.openspacearchitecture.com

<b>Project:</b>			
<b>KLV LEATHERMAN BOATHOUSE</b>			
<b>Notes:</b>	<b>Sheet Title:</b>		<b>Sheet #:</b>
	Site Plan - Main		
	<b>Project No.:</b>	<b>Date:</b>	<b>Scale:</b>
	20-05		1/16" = 1'-0"

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March 2021

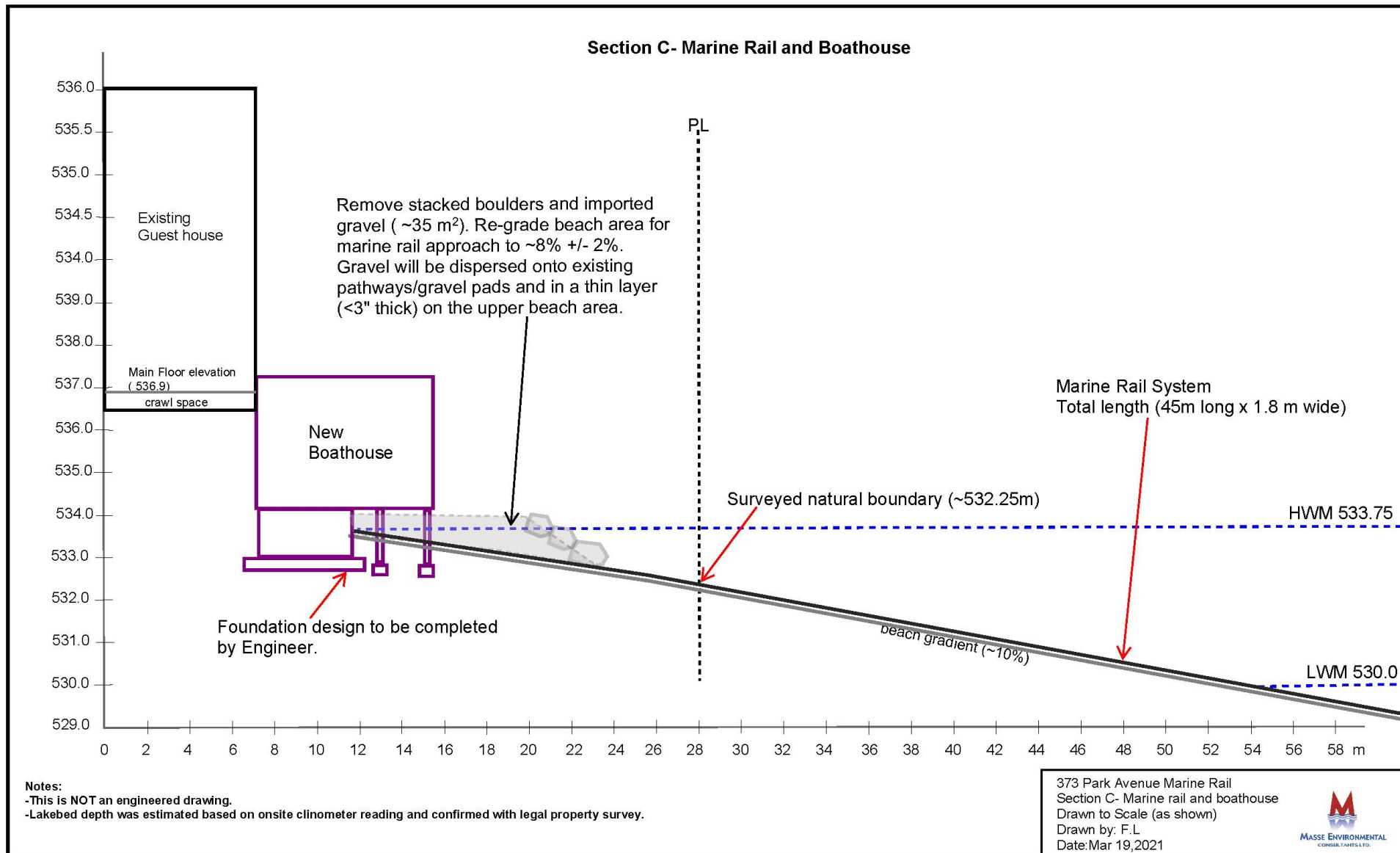
Scale: Reduced From Original

**DEVERNEY ENGINEERING SERVICES LTD.**

**Figure 1 - Site Plan**

Leatherman Boathouse, 373 Park Ave. Procter, BC Strata Lot 34, DL 873, Kootenay District Plan NES3286

Ms. Sandy Leatherman and Mr. Brooke Leatherman



## Site Photos (March 11, 2021)

**Photo 1 Shoreline of Subject Property Looking Northwest**



Existing house on left is on bedrock and above the FCL. The large rocks visible are landscape items that will be de-constructed and re-graded to natural beach gradient. The rounded gravel and small cobble sizes are a mix of native and imported materials. The whitish cobble sizes close to the shoreline are native. The Navigation Marker is on bedrock that shelters this shoreline from winds and waves approaching from the west.

**Photo 2 Shoreline of Subject Property at Boathouse Site Looking Southeast**



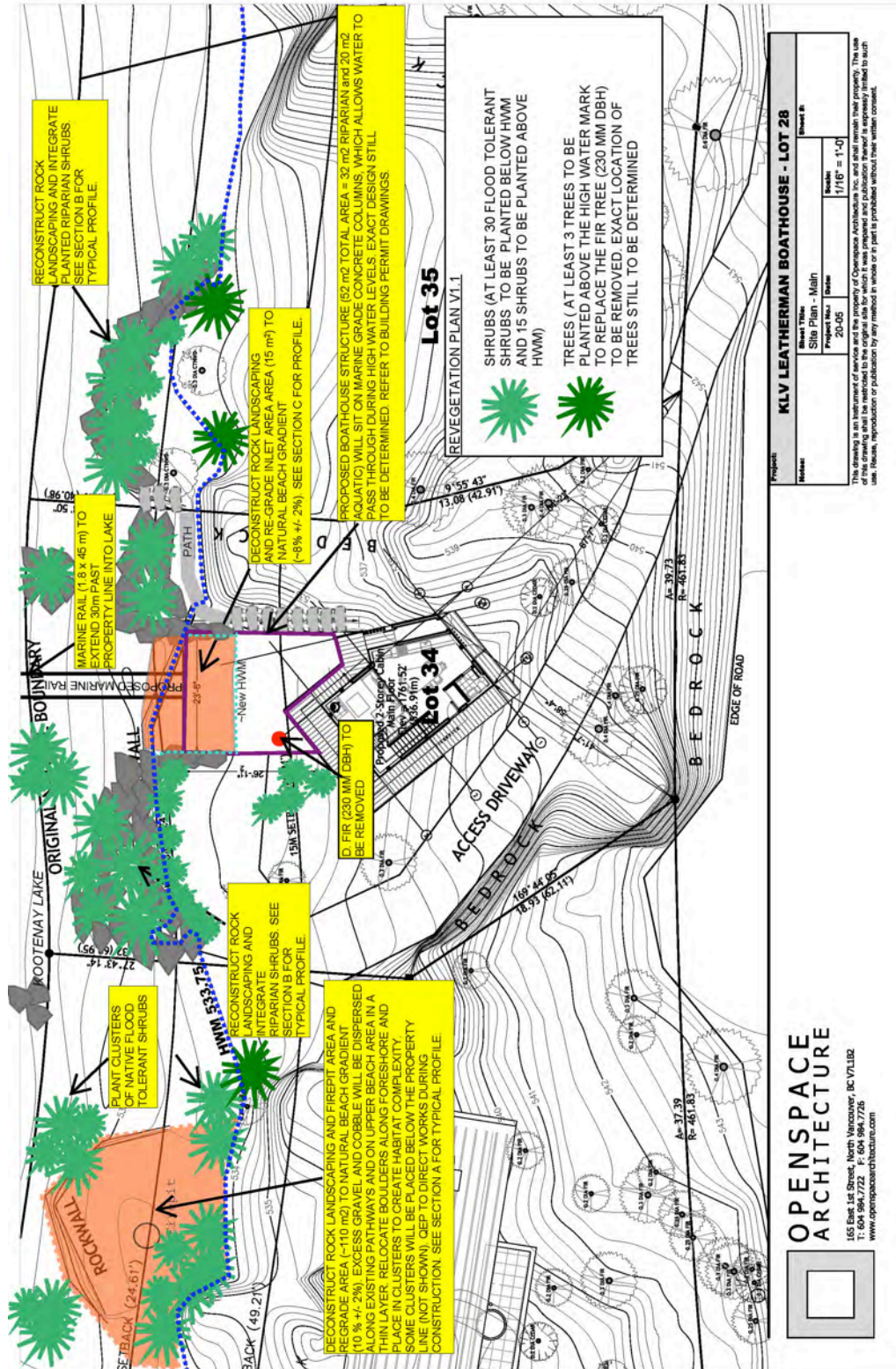
Existing cabin on right is founded on bedrock and is above the FCL (536.9m). Large rock in right foreground is a natural outcropping. Others are placed landscape rocks that will be de-constructed and re-graded to natural beach gradient. The rounded gravel and small cobble sizes are a mix of native and imported materials. The whitish cobble sizes close to the shoreline are native. The Navigation Light is on bedrock that shelters this shoreline from winds and waves approaching from the south.

## Appendix 1 Kootenay Lake Water Levels

Kootenay Lake Water Levels at Queens Bay 1973 - 2020

Year	Minimum		Maximum	
	Feet	Metres	Feet	Metres
1973	1739.01	530.05	1745.03	531.89
1974	1739.50	530.20	<b>1754.24</b>	<b>534.69</b>
1975	1738.52	529.90	1747.52	532.64
1976	1739.18	530.10	1747.25	532.56
1977	1738.73	529.96	1743.70	531.48
1978	1738.97	530.04	1747.57	532.66
1979	1738.42	529.87	1743.80	531.51
1980	1738.11	529.78	1748.34	532.89
1981	1738.00	529.74	1749.58	533.27
1982	1738.97	530.04	1749.03	533.10
1983	1738.78	529.98	1748.58	532.97
1984	1738.72	529.96	1747.54	532.65
1985	1738.92	530.02	1747.32	532.58
1986	1739.53	530.21	1748.74	533.02
1987	1738.73	529.96	1746.34	532.28
1988	1738.89	530.01	1745.57	532.05
1989	1739.00	530.05	1746.78	532.42
1990	1739.40	530.17	1749.50	533.25
1991	1739.13	530.09	1750.15	533.45
1992	1738.96	530.04	1745.12	531.91
1993	1738.95	530.03	1745.91	532.15
1994	1739.12	530.08	1745.62	532.06
1995	1738.63	529.93	1749.78	533.33
1996	1739.05	530.06	1751.88	533.97
1997	1739.72	530.27	1752.88	534.28
1998	1738.47	529.89	1749.13	533.13
1999	1738.35	529.85	1750.14	533.44
2000	1738.47	529.89	1748.27	532.87
2001	1737.90	529.71	1745.00	531.88
2002	1737.97	529.73	1751.30	533.80
2003	1738.83	530.00	1748.96	533.08
2004	1738.85	530.00	1746.08	532.21
2005	1738.55	529.91	1747.27	532.57
2006	1739.34	530.15	1751.57	533.88
2007	1740.34	530.46	1750.30	533.49
2008	1737.88	529.71	1749.59	533.28
2009	1738.40	529.86	1747.80	532.73
2010	1738.61	529.93	1748.68	533.00
2011	1740.49	530.50	1751.71	533.92
2012	1739.62	530.24	1753.78	534.55
2013	1739.18	530.10	1749.40	533.22
2014	1739.59	530.23	1750.37	533.51
2015	1740.11	530.39	1747.14	532.53
2016	1740.31	530.45	1748.08	532.81
2017	1738.88	530.01	1751.13	533.74
2018	1739.16	530.10	1752.19	534.07
2019	1738.58	529.92	1746.35	532.29
2020	1738.78	529.98	1750.09	533.43
Max	<b>1740.49</b>	<b>530.50</b>	<b>1754.24</b>	<b>534.69</b>
Min	<b>1737.88</b>	<b>529.71</b>	<b>1743.70</b>	<b>531.48</b>
Mean	<b>1738.95</b>	<b>530.03</b>	<b>1748.59</b>	<b>532.97</b>

**Appendix 2 Re-Vegetation Plan, Open Space Architecture Rev. 1.1**



## FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* (“the guidelines”) and is to be provided for flood assessments for the purposes of the *Land Title Act*, *Community Charter*, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: March 19, 2021

Regional District of Central Kootenay  
202 Lakeside Drive Nelson, BC V1L 5R4  
Jurisdiction and address

With reference to (CHECK ONE):

- Land Title Act (Section 86) – Subdivision Approval
- Local Government Act (Part 14, Division 7) – Development Permit
- Community Charter (Section 56) – Building Permit
- Local Government Act (Section 524) – Flood Plain Bylaw Variance
- Local Government Act (Section 524) – Flood Plain Bylaw Exemption

For the following property (“the Property”):

**Strata Lot 34, DL 873, Kootenay District Plan NES3286**  
**373 Park Avenue, Procter, BC.**

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a Qualified Professional and is a Professional Engineer or Professional Geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

- 1. Consulted with representatives of the following government organizations:
- 2. Collected and reviewed appropriate background information
- 3. Reviewed the Proposed Development on the Property
- 4. Investigated the presence of Covenants on the Property, and reported any relevant information
- 5. Conducted field work on and, if required, beyond the Property
- 6. Reported on the results of the field work on and, if required, beyond the Property
- 7. Considered any changed conditions on and, if required, beyond the Property
- 8. For a Flood Hazard analysis I have:
  - 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
  - 8.2 Estimated the Flood Hazard on the Property
  - 8.3 Considered (if appropriate) the effects of climate change and land use change
  - 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others
  - 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report



## FLOOD ASSURANCE STATEMENT

9. For a Flood Risk analysis I have:

- 9.1 Estimated the Flood Risk on the Property
- 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
- 9.3 Estimated the Consequences to those Elements at Risk

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:

- 10.1 A standard-based approach
- 10.2 A Risk-based approach
- 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:

- 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:

- 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- 12.3 Made a finding on the level of Flood Hazard or Flood Risk tolerance on the Property
- 12.4 Compared the guidelines with the findings of my flood assessment
- 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties.

14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

## FLOOD ASSURANCE STATEMENT

Based on my comparison between:

[CHECK ONE]

- The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)
- The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood Assessment Report:

[CHECK ONE]

- For subdivision approval, as required by the *Land Title Act* (Section 86), “that the land may be used safely for the use intended”:

[CHECK ONE]

- With one or more recommended registered Covenants.
- Without any registered Covenant.
- For a development permit, as required by the *Local Government Act* (Part 14, Division 7), my Flood Assessment Report will “assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]”.

- For a building permit, as required by the Community Charter (Section 56), “the land may be used safely for the use intended”:

[CHECK ONE]

- With one or more recommended registered Covenants.
- Without any registered Covenant.
- For flood plain bylaw variance, as required by the *Flood Hazard Area Land Use Management Guidelines* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), “the development may occur safely”.
- For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), “the land may be used safely for the use intended”.

## FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

March 19, 2021

*Date*

Prepared by

Norman L. Deverney, P.Eng., FEC

*Name (print)*



*Signature*

Deverney Engineering Services Ltd.

4711 Robertson Road

Nelson, BC, V1L 6N4

*Address*

250-551-0181

*Telephone*

[deverney.engineering@shawcable.com](mailto:deverney.engineering@shawcable.com)

*Email*



(Affix PROFESSIONAL SEAL here)

If the Qualified Professional is a member of a firm, complete the following:

I am a member of the firm  
and I sign this letter on behalf of the firm.

Deverney Engineering Services Ltd.  
(Name of firm)