RE: Meeting to discuss RAPR #7979 Condition & Impact Assessment for Cove Bay Developments

From: Julie Clark <Julie.Clark@scrd.ca>
To: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Cc: Chris Humphries <Chris.Humphries@scrd.ca>
Sent: February 8, 2023 12:32:06 PM PST

Angela,

Fabulous - Many thanks for your flexibility. A 9am start would work well for Chris and I, if that suits you.

A couple of further questions have come up in last few days as we navigate quite a few RAPR infraction related files, with CIAs finally coming in etc. We've added a couple of items for discussion, if the agenda allows:

File Specific
- Status of Priestland CIA, PID 015-931-901 (comparing notes)
- Status of Irvines Landing CIA (PID 010-812-229)

CIA / RAPR Process, Not File Specific
- Will the CIA process (process flow and requirements) be added to Provincial website? It would be helpful to point QEPs/developers to something specific
- Clarification on CIA and RAPR order of operations: written/submitted independently, combined? Flexible?
- 5 year QEP report expiration: the reason, and how it should be used
- What is the criteria your team uses to determine whether a RAPR can be fast-tracked

See you Friday!
julie

Julie Clark, MA (she/her)
Senior Planner, Planning and Development

Sunshine Coast Regional District
1975 Field Road, Sechelt, BC V0N 3A1
Tel: 604 885 6800 ext 6475
Visit us: www.scrd.ca
Follow us on Twitter at sunshinecoastrd
Like us on Facebook

****Working Remote****
The Sunshine Coast Regional District is located on the territories of the shíshálh and Sḵwx̱wú7mesh Nations

---

From: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Wednesday, February 8, 2023 10:18 AM
To: Julie Clark <Julie.Clark@scrd.ca>
Cc: Chris Humphries <Chris.Humphries@scrd.ca>
Subject: RE: Meeting to discuss RAPR #7979 Condition & Impact Assessment for Cove Bay Developments

No worries Julie – this is reasonable and I had blocked this time off to answer inquiries in any case

Friday I am available from 8:30AM onwards if you would like to request a time change that would work for you.

Angela Cameron, R.P.Bio. (she/her)
Riparian Management Coordinator

From: Julie Clark <Julie.Clark@scrd.ca>
Sent: February 8, 2023 9:55 AM
To: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Cc: Chris Humphries <Chris.Humphries@scrd.ca>
Subject: RE: Meeting to discuss RAPR #7979 Condition & Impact Assessment for Cove Bay Developments
Importance: High

Good morning Angela,

We are looking forward to our conversation on Friday. Wondering if your team has any flexibility to have our Friday meeting in the morning on the same day? If so, we are flexible to suit your schedule.

If not possible, we'll keep the scheduled meeting as is. Apologies for the last-minute request to manage some team needs on our end.

julie

Julie Clark, MA (she/her)
Senior Planner, Planning and Development

Sunshine Coast Regional District
1975 Field Road, Sechelt, BC V0N 3A1
Tel: 604 885 6800 ext 6475
Visit us: www.scrd.ca
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-----Original Appointment-----
From: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Tuesday, February 7, 2023 6:19 PM
To: Cameron, Angela M LWRS:EX; Julie Clark; Chris Humphries
Subject: FW: Meeting to discuss RAPR #7979 Condition & Impact Assessment for Cove Bay Developments
When: February 10, 2023 2:30 PM-3:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Sorry Julie, here is the updated info for our RAPR meeting.

- Priestland CIA
- CIA and RAPR order of operations
- 5 year expiration: the reason, and how it should be used

-----Original Appointment-----
From: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Thursday, February 2, 2023 10:25 AM

To: Cameron, Angela M LWRS:EX; Chris Humphries
Subject: Meeting to discuss RAPR #7979 Condition & Impact Assessment for Cove Bay Developments
When: Friday, February 10, 2023 2:30 PM-3:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

External Message

Good morning Chris,

Here is a meeting invite. Please use this MS Teams meeting below.

Feel free to forward this invite along if you'd like to include others

---

Microsoft Teams meeting

Join on your computer, mobile app or room device
Click here to join the meeting

Meeting ID: s.15; s.17
Passcode: s.15;
Download Teams | Join on the web

Or call in (audio only)
s.15; s.17 Canada, Victoria
Phone Conference ID: s.15; s.17
Find a local number | Reset PIN

Toll-free (audio only): s.15; s.17

Learn More | Meeting options

This message originated outside the SCRD. Please be cautious before opening attachments or following links.

From: Cameron, Angela M WLRS:EX
Sent: February 27, 2023 8:37 AM
To: Snook, Roxanne FOR:EX
Subject: RE: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)
Attachments: Assesment 7979 has been created

Hey there! Oh absolutely no problem – see attached (has developer details and QEP details as well)

The PID is 015-931-901 (QEP has indicated that the creek name is Kitchen Creek in the SCRD)

Angela Cameron, R.P.Bio. (she/her)
Riparian Management Coordinator

From: Snook, Roxanne FOR:EX <Roxanne.Snook@gov.bc.ca>
Sent: Thursday, February 23, 2023 1:12 PM
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Subject: RE: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)

Hi again Angela,

We're having a bit of a tough time figuring out which applications these are under. Before I reach out to SCRD, I thought I'd ask you if you know the PID or civic address for the subject properties?

Thank you!
Roxanne

From: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Tuesday, February 21, 2023 4:27 PM
To: Snook, Roxanne FOR:EX <Roxanne.Snook@gov.bc.ca>
Subject: RE: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)

No sadly!

Angela Cameron, R.P.Bio. (she/her)
Riparian Management Coordinator

From: Snook, Roxanne FOR:EX <Roxanne.Snook@gov.bc.ca>
Sent: Tuesday, February 21, 2023 2:31 PM
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Subject: RE: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)

Hi Angela,

Any chance you have the tracking number or Notification number for these works? That will make it a lot easier for me to look into who reviewed these 😊
Thanks!
Roxanne

From: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Friday, February 10, 2023 10:48 AM
To: Mackowiak, Emilia LWRS:EX <Emilia.Mackowiak@gov.bc.ca>; Snook, Roxanne FOR:EX <Roxanne.Snook@gov.bc.ca>
Subject: FW: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)

Good morning and Happy Friday Mila & Roxanne!

The SCRD was able to get in touch with me today regarding this file. They confirmed a few things that we were concerned about (re: road alignment / lot layout) which I am just waiting for them to confirm via e-mail before I contact Mila so she can complete her CIA review.

In the meantime though, Roxanne I'm looping you in because the SCRD (Julie Clark and Chris Humphries) have indicated to me that this property had a few WSA Notifications / Change Approvals in with FOR. The Notification was given (45 days) but the change approval has not yet. In reviewing the contours for this site I'm concerned that the proposed road crossing does not meet our environmental mitigation standards (encroaches on the SPEA significantly), that the lots are being subdivided into RAPR hardship (so the road layout will likely need to be changed). I also note that the road appears to go through a wide, flat portion of the creek that appears to be a potential swamp area.. It might be worth checking the notification for the culvert crossing on this one to see if it should have been processed as a Change Approval.

Just raising the red flag as we will be requiring additional work for this environmental review! 😊

Angela Cameron, R.P.Bio. (she/her)
Riparian Management Coordinator

From: Chris Humphries via RT <planning@contact.scrd.ca>
Sent: January 23, 2023 9:02 AM
Cc: Cameron, Angela M LWRS:EX <Angela.M.Cameron@gov.bc.ca>; Billingham, Charlotte LWRS:EX <Charlotte.Billingham@gov.bc.ca>
Subject: [Planning #213340] FW: RAPR #7979 Condition & Impact Assessment for Cove Bay Developments - Priestland Road Subdivision (SCRD)

Hi Angela,

I hope all is well. I apologize for the extremely slow response times. We have been swamped over here and some of these files are not getting enough attention. I am going to review the CIA Report for this file in more detail this week. If you would like to have a phone call/teams meeting to discuss, please let me know.

You will find attached details on the planned roads and culverts into and through the RAPRs of Kitchen Creek. SCRD is limited in their control over these elements as MoTI is the approving officer for subdivision and overlord of roads and highways here. I actually had to ask the QEP for these as we don't normally see this level of detail. I marked up the documents with distance measurements to help make sense of things. It's worth pointing out that South Priestland Rd already exists (getting widened in this project I think), but Priestland Rd. (north) does not exist at all so is a new road crossing the creek.

I hope this helps.

--
Chris Humphries, MScPl
Planner II
Sunshine Coast Regional District
1975 Field Road, Sechelt, BC V7Z 0A8
Phone: 604-885-6800

Follow us on Twitter at sunshinecoastrd
Like us on Facebook
Visit us: www.scrd.ca
Stay informed and get involved at www.scrd.ca/letstalk

Assesment 7979 has been created

From: RiparianAreas@Victoria1.gov.bc.ca
To: steve@sartorienv.com, Riparian Areas, Region 2 WLRS:EX <RARReg2@gov.bc.ca>, Riparian Areas WLRS:EX <RiparianAreas@Victoria1.gov.bc.ca>, DFO_EPMP@PAC.DFO-MPO.GC.CA
Sent: November 10, 2022 2:26:20 PM PST

This assessment has been created. This notification is sent to you, Fisheries and Oceans Canada (DFO)and the BC Ministry of Environment.
Details of this assessment are included in this notification.

Assessment Details

Assessment ID:: 7979 **Creation Date:** 2022-11-10
Status: created **Last Modified:** 2022-11-10

Development Details

Development Type:	Subdivision - > 6 lot Single Family	**Proposed Start Date:**	2023-03-01
Area of Development (hectares):	2.076	**Proposed End Date:**	2023-12-31
Lot Area (hectares):	10.900	**Nature of Development:**	New
Riparian Length:	220.00	**Section 9 Part 7 Activities:**	N

Location Details

Local Government:	Sunshine Coast Regional District	**DFO Area:**	South Coast Area
Region:	Lower Mainland	**Stream/River Type:**	Watercourse
Parcel Identification (PID)/ Parcel Identification Number (PIN):	015-931-901	**Stream/River Name:**	Kitchen Creek
Address Line 1:		**Watershed Code:**	Not available, confluences with Halfmoon Bay approximate
Address Line 2:		**Postal Code:**	
Latitude:	49°30'6"	**Longitude:**	123°54'14"

Developer Details

Contact First Name:	Alister	**Address Line 1:**	939 Homer Street
Contact Middle Name:		**Address Line 2:**	Suite 710
Contact Last Name:	Toma	**City:**	Vancouver
Province/State:	British Columbia	**Postal/Zip Code:**	V6B 2W6
Email Address:	s.22	**Country:**	Canada
Company Name:	Cove Bay Developments Inc.	**Phone #:**	s.22

Primary QEP Details

Contact First Name:	J.	**Address Line 1:**	185 Forester Street, Unit 106
Contact Middle Name:		**Address Line 2:**	Unit 106
Contact Last Name:	Sims	**City:**	North Vancouver
Designation:	Biologist	**Province/State:**	BC
Registration #:	2374	**Postal/Zip Code:**	V7H 0A6
Email Address:	steve@sartorienv.com	**Country:**	Canada
Company Name:	Sartori Environmental Inc.	**Phone #:**	6049875588

Secondary QEP Details

Name:	Company	Address	Email	Phone

URGENT: Call For Records WLR-2023-30368

From: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
To: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>
Cc: Davis, Jennifer WLRS:EX <Jennifer.Davis@gov.bc.ca>, Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>, Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: March 20, 2023 3:00:55 PM PDT
Attachments: image001.jpg, G - Call for Records form.docx

Hello Lora… Please see the FOI for RAPR and provide records.

Thank you.

Ki-Som Dempster (pronouns She/Her)
Branch Coordinator
Aquatic Ecosystems Branch
Ministry of Water, Land and Resource Stewardship
3rd Floor, 2975 Jutland Road, Victoria, BC
778-698-9684

Em Hotep

From: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Sent: March 20, 2023 2:34 PM
To: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>; Conder, Geoffrey WLRS:EX <Geoffrey.Conder@gov.bc.ca>; Randle, Sierrah WLRS:EX <Sierrah.Randle@gov.bc.ca>; Llewellyn-Thomas, Marnie WLRS:EX <Marnie.LlewellynThomas@gov.bc.ca>
Cc: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>; Scott, Melissa WLRS:EX <Melissa.Scott@gov.bc.ca>
Subject: Call For Records WLR-2023-30368

Good Afternoon,

The below request was originally sent to LUPPE, but after gathering more information from IAO I have determined that WFCPP should also be canvassed.

FOR requested this be transferred to us and they suggested that RAPR (Riparian Areas Protection Regulation) and/or WSA (Water Sustainability Act) may be a good place to search.

In light of this new information, IAO has requested an extension for this request. The deadlines listed here are correct for now, and the current legislated due date is March 23, 2023. However, I expect that these deadlines will be pushed back in the coming days. If your branch holds records, please send them my way as soon as you are able.

Thank you!

The following FOI request has come in from IAO. Please see the request details section in the CFR.

Description: *Subdivision Application and status of, including responses, including planned roadways and Storm Water Management Plans. Including Protective requirements and Corrective action regarding development over and around Kitchin Creek. SCRD: PID: 015-931-901; Folio: 746.03948.000; District Lot: 1427 (Date Range for Record Search: From 6/1/2022 To 2/7/2023)* Date Format is MM/DD/YYYY

If a fee estimate is required, please complete the fee request section of the form, and upload the form to the GeoDrive Folder. The deadline for fee submission is: February 16, 2023

If a fee estimate is not required and you hold responsive records, please upload a clean pdf copy of the records, as well as a completed CFR, to the GeoDrive Folder.

If you do not have responsive records, please provide ED approval in Section 3 of the CFR. Please provide the reason for your NRR, as this language will be added to the letter to the applicant. Please upload the NRR to the GeoDrive Folder.

Please use the table below when responding to this email.

Estimate Due:	February 16, 2023	
Records Due:	February 24, 2023	
GeoDrive:	s.15	
Actions	Please indicate with X and explain reasoning:	
Fee Estimate[1] (uploaded to GeoDrive)		Fee Estimate Guidelines – See "Fee Estimate Guideline" and pages 17-19 of "FOI Request Processing Guidelines"
NRR[2] (uploaded to GeoDrive with ADM sign off)		
CFR[3] (uploaded to GeoDrive with all sections complete**)		
Records[3] (uploaded to GeoDrive)		
Deduplication Required[3]		
Harms[3] (uploaded to GeoDrive – marked HARMS)		
No Harms[3] (uploaded to GeoDrive – marked CLEAN)		
Other		
Incl Other Areas	Please indicate with X and explain reasoning:	
Include another Division in CFR		
External Harms Review Required by: Details of Review needed (Ie who/pages):		
Internal Harms Review Required by: Details of Review needed (Ie who/pages):		
Other		

LWRS.FOI@gov.bc.ca **MUST** be notified when documents uploaded to LAN

Detailed Instructions

1. **Fee Estimate**
   - Complete CFR – Sections 2, 4, 5 & 7 – IN FULL – **ensure Sec. 5 provides rationale for fee**
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2022-#####-(Div) – FEE ESTIMATE

2. **No Responsive Records (NRR)**
   - Complete CFR – Sections 2, 3 & 7 – IN FULL
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2021-#####-(DIV) – NRR

3. **Responsive Records**
   - Complete CFR – Sections 2, 5, 6 & 7 – IN FULL
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2021-#####-(Div) – CFR
   - If records are submissible as-is – upload to folder in PDF as 'Records'
   - If records require **deduplication –** upload to folder as 'Records for Dedup'
   - If records contain **harms** – upload to folder as two PDF files
     - 'Records – CLEAN'
     - 'Records – HARMS'
   - If records require **internal or external harms review**– indicate on CFR (Sec. 6a) **and** in email to LWRS FOI

Thank you,

Kaz Sakakibara (he/him)
FOI Analyst
DMO | Ministry of Water, Land and Resource Stewardship

I acknowledge with respect that I live and work on the ancestral Coast Salish Territory of the Lək^{w}əŋən and W̱SÁNEĆ nations, whose historical relationship to the land and territories continue to this day.

INFORMATION
ACCESS OPERATIONS
Ministry of Citizens' Services

Call For Records Form
FOI Request: 292-30/WLR-2023-30368

Section 1: FOI Request Details

General Request ☒ **Personal Request** ☐ **Authorization Received:** N/A

Applicant Type: Business **Request Received:** February 8, 2023 **FOI Analyst:** Kaitlin Der

Legislated Due Date: March 23, 2023 **Fee Estimate Due:** February 16, 2023 **Records Due:** February 24, 2023

Description: *Subdivision Application and status of, including responses, including planned roadways and Storm Water Management Plans. Including Protective requirements and Corrective action regarding development over and around Kitchin Creek. SCRD: PID: 015-931-901; Folio: 746.03948.000; District Lot: 1427 (Date Range for Record Search: From 6/1/2022 To 2/7/2023)*

Section 2: Initial Records Assessment

Do you hold responsive records? YES ☐ NO ☐

If no, please provide an explanation that can be given to the applicant (if applicable):

Are you aware of other records that may be responsive to this request within your public body? YES ☐ NO ☐

Are you aware of other records that may be responsive to this request held by another public body? YES ☐ NO ☐

If yes, specify:

Section 3: No Records Response Approval

Please forward to public body FOI contact (if applicable) for delegated head's final public body approval if no records have been located

Final public body approval (full name and title):	**Signature:**	**Date**: Date

Section 4: Fee Estimate – General request only (if this is a personal request skip to section 5)

Please ensure that all reasonable efforts are made to generate as accurate an estimate as possible	**Estimated Hours**	**Actual Hours**
Locating/Retrieving – this includes searching all relevant sources. Areas to consider searching include:		
• Outlook (including 'deleted' and 'sent' folders) • Records management systems (ex. EDRMS) • LAN, shared drives, SharePoint, databases • Offsite records		
Producing – this only applies where you are creating records from other sources* (e.g. developing a program to create new records from a database) and tasks include		
• Identifying relevant sources of data/information • Manual time spent creating and producing records • Ex: generating a custom report from a database using existing data		

Preparing – this may include time spent by IAO (for electronic records) or the Ministry (for hardcopy records) and tasks include • Converting records to PDF • Consolidating records into a single PDF document • Organizing records packages (e.g. by date department, staff, records type, etc.) • Photocopying or scanning records into electronic format • Ensuring completeness of responsive records • Copying other types of media (audio and/or video) **For electronic records, you do not need to provide a time estimate, please provide the number of files where requested below and IAO will be in a position to calculate the time required and to consider charging a fee.**		
Volume – for electronic records please provide the estimated number of files and for hardcopy records please continue to provide the number of pages		
• **Electronic records** ○ Files (e.g. emails, Word Docs, Excel sheets, PDFs, photos, etc.)		

• **Hardcopy records**
  ○ Average file folder = 1" and holds approx. 200 pages (single-sided)
  ○ 1 standard Records Centre Services box:
  ▪ Legal sized folders = 1800 pages
  ▪ Letter sized folders = 2200 pages		

Suggestions for possible narrowing:		

Section 5: Search Summary

Please describe the search for records including what records were searched, (e.g., files, email, databases, EDRMS, offsite records, etc.) duration of search time, and who conducted the search for records:

Section 6a: Program Area Harms Assessment

Harm – **disclosure of the records would significantly harm the public body's position, or a third party's interests on a given topic**. The harms assessment allows FOI staff to better understand the context of the records and make informed severing recommendations based on potential harms. Issues associated with possible disclosure through the FOI process that are unrelated to the harms assessment should be communicated to your public body executive and/or Government Communications and Public Engagement office.

- Please reference the applicable records and information of concern, the harms, and associated page numbers below.
- If any of these records have been prepared for, or created to inform a decision of Cabinet or any of its committees, section 12 (Cabinet confidences) may apply. Please identify the applicable records and advise (1) what is the status of the issue? And (2) has the decision been made public or implemented?

Could the release of any/all of the responsive records potentially cause harm? YES ☐ NO ☐

If yes, which information, if released, may cause harm?

Section 6b: Publication on Open Information (if this is a personal request skip to section 7)

General requests only - Unless specific exemption criteria apply, records provided to the applicant in response to this request will be published on the Government's Open Information website**. If you have any concerns about the publication of the responsive records please indicate here or discuss with your FOI Analyst:**

Section 7: Contact Information

Who completed this form (full name and title):	**Phone Number:**	**Date**: Date
Harms Assessment completed by (full name and title):	**Program Area:**	
Harms Assessment approved by (full name and title):		

RE: URGENT: Call For Records WLR-2023-30368

From: Cameron, Angela M WLRS:EX
To: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Cc: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Sent: March 22, 2023 2:13:51 PM PDT
Attachments: image001.jpg

Yes that's all thank you for double-checking!

Angela Cameron, R.P.Bio.
Senior Aquatic Habitat Biologist

From: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Sent: Wednesday, March 22, 2023 2:12 PM
To: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>; Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Cc: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>; WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Subject: RE: URGENT: Call For Records WLR-2023-30368

Hello,

I see some records have been uploaded to the GeoDrive – thank you for being so speedy!

Are there still more records coming or is that everything?

Thank you,

Kaz Sakakibara (he/him)
FOI Analyst
DMO | Ministry of Water, Land and Resource Stewardship

I acknowledge with respect that I live and work on the ancestral Coast Salish Territory of the Lək^{w}əŋən and W̱SÁNEĆ nations, whose historical relationship to the land and territories continue to this day.

From: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Sent: March 22, 2023 1:02 PM
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Cc: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>; WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Subject: RE: URGENT: Call For Records WLR-2023-30368

That's correct, thank you!!

Ki-Som Dempster (pronouns She/Her)
Branch Coordinator
Aquatic Ecosystems Branch
Ministry of Water, Land and Resource Stewardship
3rd Floor, 2975 Jutland Road, Victoria, BC
778-698-9684

Em Hotep

From: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: March 22, 2023 1:02 PM
To: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Cc: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>
Subject: RE: URGENT: Call For Records WLR-2023-30368

Yes – that's the 'GeoDrive' link that they give us, yes? Happy to do that now

Angela Cameron, R.P.Bio.
Senior Aquatic Habitat Biologist

From: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Sent: Wednesday, March 22, 2023 12:20 PM
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Cc: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>
Subject: RE: URGENT: Call For Records WLR-2023-30368

Thank you, Angela, could you or Mya make sure it gets uploaded to the FOI drive as well?

Thanks again.

Ki-Som Dempster (pronouns She/Her)
Branch Coordinator
Aquatic Ecosystems Branch
Ministry of Water, Land and Resource Stewardship
3rd Floor, 2975 Jutland Road, Victoria, BC
778-698-9684

Em Hotep

From: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: March 22, 2023 12:18 PM
To: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Cc: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>
Subject: RE: URGENT: Call For Records WLR-2023-30368
Importance: High

Good afternoon!

Please see attached. I will file this on the LAN

Angela Cameron, R.P.Bio.
Senior Aquatic Habitat Biologist

From: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>
Sent: Monday, March 20, 2023 4:08 PM
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>
Subject: FW: URGENT: Call For Records WLR-2023-30368

Angela,

Can you fill out this call for records for us please. Remember to cc Mya and I and save on drive.
Lora

From: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>
Sent: March 20, 2023 3:01 PM
To: Nield, Lora M WLRS:EX <Lora.Nield@gov.bc.ca>
Cc: Davis, Jennifer WLRS:EX <Jennifer.Davis@gov.bc.ca>; Eastmure, Mya WLRS:EX <Mya.Eastmure@gov.bc.ca>; Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Subject: URGENT: Call For Records WLR-2023-30368

Hello Lora… Please see the FOI for RAPR and provide records.

Thank you.

Ki-Som Dempster (pronouns She/Her)
Branch Coordinator
Aquatic Ecosystems Branch
Ministry of Water, Land and Resource Stewardship
3rd Floor, 2975 Jutland Road, Victoria, BC
778-698-9684

Em Hotep

From: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>
Sent: March 20, 2023 2:34 PM
To: Dempster, Ki-Som WLRS:EX <KiSom.Dempster@gov.bc.ca>; Conder, Geoffrey WLRS:EX <Geoffrey.Conder@gov.bc.ca>; Randle, Sierrah WLRS:EX <Sierrah.Randle@gov.bc.ca>; Llewellyn-Thomas, Marnie WLRS:EX <Marnie.LlewellynThomas@gov.bc.ca>
Cc: WLRS FOI WLRS:EX <lwrs.foi@gov.bc.ca>; Scott, Melissa WLRS:EX <Melissa.Scott@gov.bc.ca>
Subject: Call For Records WLR-2023-30368

Good Afternoon,

The below request was originally sent to LUPPE, but after gathering more information from IAO I have determined that WFCPP should also be canvassed.

FOR requested this be transferred to us and they suggested that RAPR (Riparian Areas Protection Regulation) and/or WSA (Water Sustainability Act) may be a good place to search.

In light of this new information, IAO has requested an extension for this request. The deadlines listed here are correct for now, and the current legislated due date is March 23, 2023. However, I expect that these deadlines will be pushed back in the coming days. If your branch holds records, please send them my way as soon as you are able.

Thank you!

The following FOI request has come in from IAO. Please see the request details section in the CFR.

Description: *Subdivision Application and status of, including responses, including planned roadways and Storm Water Management Plans. Including Protective requirements and Corrective action regarding development over and around Kitchin Creek. SCRD: PID: 015-931-901; Folio: 746.03948.000; District Lot: 1427 (Date Range for Record Search: From 6/1/2022 To 2/7/2023)* Date Format is MM/DD/YYYY

If a fee estimate is required, please complete the fee request section of the form, and upload the form to the GeoDrive Folder. The deadline for fee submission is: February 16, 2023

If a fee estimate is not required and you hold responsive records, please upload a clean pdf copy of the records, as well as a completed CFR, to the GeoDrive Folder.

If you do not have responsive records, please provide ED approval in Section 3 of the CFR. Please provide the reason for your NRR, as this language will be added to the letter to the applicant. Please upload the NRR to the GeoDrive Folder.

Please use the table below when responding to this email.

Estimate Due:	February 16, 2023	
Records Due:	February 24, 2023	
GeoDrive:	s.15	
Actions	Please indicate with X and explain reasoning:	
Fee Estimate[1] (uploaded to GeoDrive)		Fee Estimate Guidelines – See "Fee Estimate Guideline" and pages 17-19 of "FOI Request Processing Guidelines"
NRR[2] (uploaded to GeoDrive with ADM sign off)		
CFR[3] (uploaded to GeoDrive with all sections complete**)		
Records[3] (uploaded to GeoDrive)		
Deduplication Required[3]		
Harms[3] (uploaded to GeoDrive – marked HARMS)		
No Harms[3] (uploaded to GeoDrive – marked CLEAN)		
Other		
Incl Other Areas	Please indicate with X and explain reasoning:	
Include another Division in CFR		
External Harms Review Required by: Details of Review needed (Ie who/pages):		
Internal Harms Review Required by: Details of Review needed (Ie who/pages):		
Other		

LWRS.FOI@gov.bc.ca **MUST** be notified when documents uploaded to LAN

Detailed Instructions

1. **Fee Estimate**
   - Complete CFR – Sections 2, 4, 5 & 7 – IN FULL – **ensure Sec. 5 provides rationale for fee**
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2022-#####-(Div) – FEE ESTIMATE

2. **No Responsive Records (NRR)**
   - Complete CFR – Sections 2, 3 & 7 – IN FULL
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2021-#####-(DIV) – NRR

3. **Responsive Records**
   - Complete CFR – Sections 2, 5, 6 & 7 – IN FULL
   - Go to LWRS-FOI GeoDrive link provided above
   - Upload CFR in PDF as 'LWRS-2021-#####-(Div) – CFR
   - If records are submissible as-is – upload to folder in PDF as 'Records'
   - If records require **deduplication –** upload to folder as 'Records for Dedup'
   - If records contain **harms** – upload to folder as two PDF files
     - 'Records – CLEAN'
     - 'Records – HARMS'
   - If records require **internal or external harms review**– indicate on CFR (Sec. 6a) **and** in email to LWRS FOI

Thank you,

Kaz Sakakibara (he/him)
FOI Analyst
DMO | Ministry of Water, Land and Resource Stewardship

I acknowledge with respect that I live and work on the ancestral Coast Salish Territory of the Lək^{w}əŋən and W̱SÁNEĆ nations, whose historical relationship to the land and territories continue to this day.

RE: RAPR Assessment # 7979 -- can't download PDF

From: Pardo-Figueroa, Richard WLRS:EX <Richard.Pardo-Figueroa@gov.bc.ca>
To: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: March 22, 2023 3:06:46 PM PDT
Attachments: Assess7979.pdf

Hi Angela:

I can just assume there is a problem with the system or your laptop needs to be restarted.

I hope this is the right document, it was difficult for me to extract it from the DB, but it is the only attachment that I see for that application.

Regards,

Richard Pardo-Figueroa
Lead Data Solutions Architect
Natural Resource Information & Digital Services
Serving the Natural Resource Ministries
587.893.2414
Our Motto: "Data before Tools"

From: Cameron, Angela M WLRS:EX <Angela.M.Cameron@gov.bc.ca>
Sent: Wednesday, March 22, 2023 1:20 PM
To: Pardo-Figueroa, Richard WLRS:EX <Richard.Pardo-Figueroa@gov.bc.ca>
Subject: RAPR Assessment # 7979 -- can't download PDF

Hello Richard!

I'm having troubles downloading this PDF from RARNS… but I have opened it before which is funny. It seems like the file type is weird now.. I'm wondering if it's just my computer acting up or perhaps an issue with the file itself?

Angela Cameron, R.P.Bio. (she/her)
Senior Aquatic Habitat Biologist
Aquatic Ecosystems Branch
Ministry of Water, Land and Resource Stewardship
Office: 250-739-8553

Find out more about the RAPR

I am grateful to live and work on the territorial and ancestral lands of the Snuneymuxw First Nation and Coast Salish Peoples.

Condition & Impact Assessment and Riparian Areas Protection Regulation: Detailed Assessment Report

Address: Lot PID 0105-931-901 (Priestland Road), Sunshine Coast Regional District

Date	November 7, 2022

I. PRIMARY QEP INFORMATION

First Name	John	Middle Name	Stephen (Preferred)		
Last Name	Sims				
Designation	R.P. Bio.	Company	Sartori Environmental Inc.		
Registration #	2374	Email	steve@sartorienv.com		
Address	106 – 185 Forester St.				
City	North Vancouver	**Postal**	V7H 0A6	**Phone #:**	604 987-5588
Prov/state	BC	**Country**	Canada		

II. SECONDARY QEP INFORMATION (USE FORM 2 FOR OTHER QEPS)

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

III. DEVELOPER INFORMATION

First Name	Alister	**Middle Name**	
Last Name	Toma		
Company	Cove Bay Developments Inc.		
Phone #	s.22	**Email**	s.22
Address	Suite 710, 939 Homer Street		
City	Vancouver	**Postal/Zip**	V6B 2W6
Prov/state	British Columbia	**Country**	Canada

IV. REDEVELOPMENT INFORMATION

Development Type	Subdivision		
Area of Development (ha)	2.076	**Riparian Length (m)**	220
Lot Area (ha)	10.9	**Nature of Development**	Clearing, servicing and rough grading
Proposed Start Date[1]	Retroactive	**Proposed End Date**	2023-12-31

V. LOCATION OF PROPOSED REDEVELOPMENT

Street Address (or nearest town)	Priestland Road, Halfmoon Bay					
Local Government	Sunshine Coast Regional District			**City**	Halfmoon Bay	
Stream Name	Kitchen (or Kitchin) Creek					
Legal Description (PID)	015-931-901			**Region**	Lower Mainland	
Stream/River Type	Watercourse			**DFO Area**	16	
Watershed Code	Not available, confluences with Halfmoon Bay approximately 500m south of 900-126800					
Latitude	49° 30’ 05.6”	N	**Longitude**	123 ° 54’ 13.5”	W	
	49.501557			-123.903755		

[1] Development has occurred within the Riparian Assessment Area. This RAPR includes a Condition and Impact Assessment & RAPR detailed assessment.

CONTENTS

SECTION 1: DESCRIPTION OF FISHERIES RESOURCES VALUES AND A DESCRIPTION OF THE REDEVELOPMENT PROPOSAL

Introduction

Sartori Environmental Inc. (SEI) has been retained by the Developer of the property legally described as Block 'A' (Reference Plan 1657), Gp 1 NWD except portions in plans 7134, 7360, 7481 AND 7697 DL 1427 and having a PID of 015-931-901 (herein referred to as the "Subject Property"), to assess the environmental implications of development activities which fall within a Sunshine Coast Regional District (SCRD) Development Permit Area (DPA 4: Riparian Assessment Areas). Development within the *Riparian Assessment Area* (RAA) must meet the obligations of the provincial *Riparian Areas Protection Regulation* (RAPR). The RAA is defined in both RAPR and the Halfmoon Bay Official Community Plan Consolidated Bylaw No. 657 (Bylaw No. 657) as the area within 30 m of the stream boundary of a watercourse.

In a letter prepared by SCRD on 6 May 2022, SCRD identified unlawful development on the Subject Property within the RAA of Kitchen Creek (or Kitchin Creek), including tree cutting and upgrades to existing roads. In a follow-up letter on 13 June 2022, SCRD indicated that a Condition and Impact Assessment (C&I) Report and "Riparian Assessment" be submitted to and accepted by the Province prior to processing of the Development Permit (DP) application for subdivision.

This report intends to satisfy SCRD requirements for the C&I Assessment for the identified unlawful development and the Riparian Assessment for proposed subdivision. As part of these assessments, SEI has undertaken a Detailed Riparian Assessment as per RAPR guidelines to establish a Streamside Protection and Enhancement Area (SPEA). Except in situations of undue hardship, residential, commercial, and industrial development is generally restricted within an established SPEA. Unauthorized development that has occurred within the ultimate SPEA has been prescribed restorative prescriptions which are outlined within this report. Collectively, municipal and provincial regulatory reviews are intended to confirm that the development, as undertaken and proposed, meets the "Riparian Protection Standard", and the Qualified Environmental Professional (QEP) has followed the appropriate RAPR assessment methodology.

Assessed Site Characteristics

SEI conducted an assessment of the RAA of Kitchen Creek on the Subject Property on September 12, 2022. The Subject Property is approximately 27 acres in size and is shaped like one half of a vertically-split hourglass. The east, north and south property line are generally straight and aligned directly with north-south and east-west. The west property line undulates adjacent with the alignment of Priestland Road. To the north of the property is a residential property (8826 Redroofs Road) and to the south and east of the property is undeveloped land. West of Priestland Road is Coopers Green Park and multiple residential lots. Kitchen Creek transects through the property in a northwest direction near the properties vertical center and flows under Priestland Road into Coopers Green Park. From Coopers Green Park, Kitchen Creek empties into a lagoon (the "Lagoon") tidally connected to Halfmoon Bay.

The Subject Property has not been previously developed, although has been significantly logged with the initial road building prior to current ownership and subdivision proposal. In 2017, satellite imagery courtesy of Google Earth reveals that the entire property was forested. Satellite imagery shows between 2017 and 2019, large areas of the north half of the property and some areas of the south half were logged. In 2022, further trees were removed on site, some of which were in the RAA of Kitchen Creek as identified by SCRD. Currently, access roads exist on the property connecting to Priestland Road, one of which leads to a planned subdivision crossing of Kitchen Creek (herein referred to as "Upper Priestland Road").

Kitchen Creek is mapped on SCRD's GIS System SCRD Maps[2], but is not identified on the provincial Habitat Wizard database[3]. Habitat Wizard indicates watershed codes for identified nearby streams as 900-126800, 900-124100, and 900-12440. SCRD Maps identifies Kitchen Creek as having a total stream length of 1.4 km with a generally northwest flow direction.

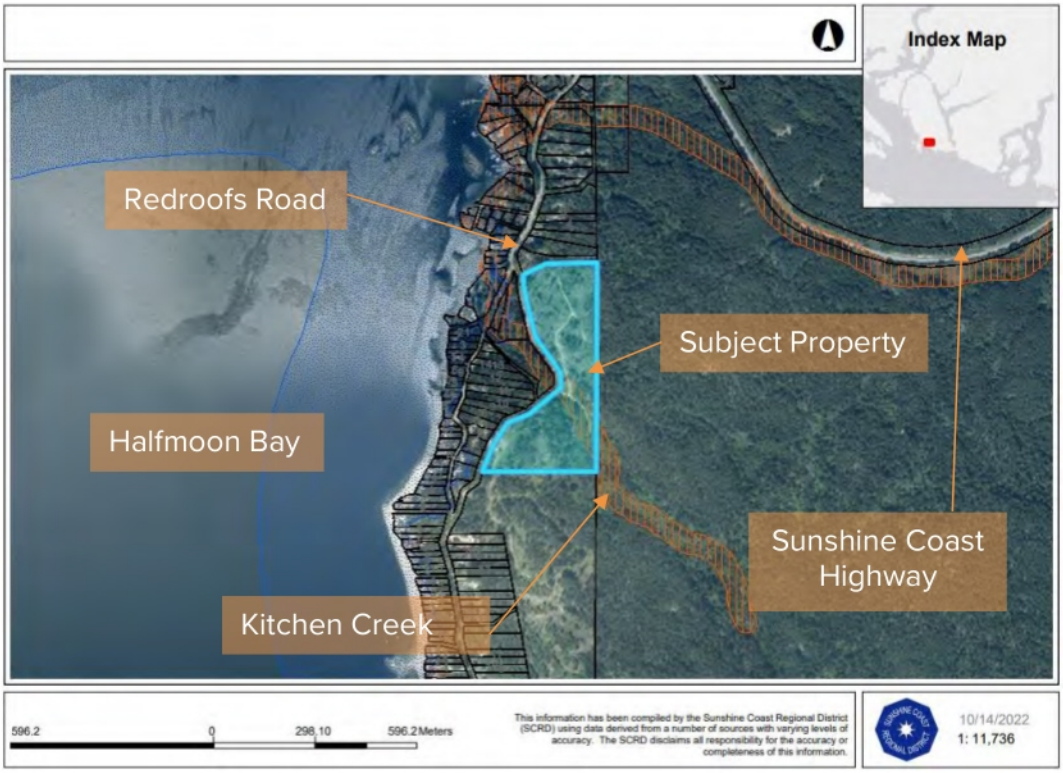

Figure 1: Subject Property courtesy of SCRD Maps (accessed 14 October, 2022).

SEI observed three culverted crossings between Halfmoon Bay and Priestland Road; it is assumed that there are no further crossings upstream of the Subject Property. The furthest downstream culvert is under Fishermans Road and empties the Lagoon directly into Halfmoon Bay. The second culvert crosses under Redroofs Road, where the Lagoon was observed on both sides of the crossing. The Lagoon was observed to contain brackish water (tidally influenced) during the SEI field assessment. Upon reviewing Habitat Wizard at the location aligned with the Lagoon, an occurrence of three-spined stickleback (*Gasterosteus aculeatus*) was identified.

SEI identified the confluence of Kitchen Creek and the Lagoon in field and observed no flows within Kitchen Creek upstream of the confluence. SEI assessed the upstream extents of the tidally influenced lagoon at the interface with the freshwater environment and determined that the potential for fish exist seasonally upstream of tidal influences and therefore Kitchen Creek, and the development on the Subject Property is subject to RAPR. Kitchen Creek is defined as a "stream" under RAPR as it is a watercourse that provides fish habitat. Approximately 200 m upstream of the confluence the lagoon, Priestland Road crosses over a culverted section of Kitchen Creek (the third existing crossing). Upstream of this crossing is where the assessed section of Kitchen Creek begins.

[2] SCRD Maps (https://maps.scrd.ca/); Accessed 12 October, 2022

[3] Habitat Wizard (http://maps.gov.bc.ca/ess/hm/habwiz/); Accessed 12 October, 2022

The section of Kitchen Creek assessed using RAPR Detailed Methodology extends from the crossing under Priestland Road at the west property line to approximately 30 m southeast of the east property line. Transects were taken every 10 m over a total of 220 m of channel. SEI considers the assessed channel to be one reach. The assessed reach is open channel, having an average bankfull width of 3.7 m, average gradient of 11%, and bed materials dominated by organic material, with gravels and cobble scattered throughout and becoming more prevalent in the lower portions of the reach. The assessed reach is characterized as cascade-pool type habitat. The upper 40 m of the assessed reach consists of one well-defined channel, which splits into one to four channels through the remainder of the reach. Most of these channels were not well defined, though some were more incised than others, dominated by gravel and cobble indicating that they convey the majority of the flows.

At the planned subdivision crossing of Kitchen Creek, the surveyed watercourse becomes uncharacteristically wide and the channels become undefined. It is apparent that this section of Kitchen Creek has been used previously as a crossing, likely during previous logging activities on the property. At this planned crossing, trees are absent, and the vegetation is dominated almost entirely by grass species at the approaches, and native shrubs adjacent to the stream channel. Immediately upstream of the existing crossing alignment, the surveyed stream boundary significantly widens and moves back in an upstream direction indicating that a backwater effect may have been created by the original crossing. Upper Priestland Road is proposed to cross over the existing disturbed area and is approved under the *Water Sustainability Act* as a Notification for an Authorized Change (Tracking Number: 100393441).

Forested areas within the RAA had well-developed low, middle and upper canopies. Shrubs within the RAA consisted mostly of native species dominated by deer fern (*Struthiopteris spicant*), sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), and salmonberry (*Rubus spectabilis*). Trees within the RAA consisted of red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), Douglas fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*).

In the disturbed areas of the RAA, trees that had been cleared included red alder, western red cedar, Douglas fir, and western hemlock. Disturbed areas contained mostly lower canopy vegetation including the above-mentioned native shrub species, immature western red cedars and red alders, grass species, and small patches of invasive Himalayan blackberry (*Rubus armeniacus*).

Findings

Kitchen Creek is considered a creek under RAPR and is subject to SCRD requirements for development in a Riparian Assessment Area (RAA) under Bylaw No. 657. Development activities, specifically land disturbance and tree clearing occurred within the RAA and were subject to approval by SCRD. Prior to the SEI field assessment, the stream boundary had been flagged by a different QEP (Cam Forrester, R.P.F. of Cam Forrester & Associates). SEI confirmed that the flagged and surveyed stream boundary aligns with RAPR definition, extending to the active flood plain of Kitchen Creek.

Assessment of the Streamside Protection and Enhancement Area (SPEA) under RAPR was conducted by SEI following the Detailed Assessment methodology. SEI conducted a field assessment to determine average bankfull width of the assessed reach and the resultant RAPR minimum SPEA. This minimum SPEA has been calculated as **11.1m** from stream boundary based on results shown in **Section 2: Results of Detailed Riparian Assessment. Figure 2** in **Section 3: Site Plan** depicts this SPEA in relation to the proposed subdivision plan. This SPEA was calculated by measuring the bankfull width of Kitchen Creek at 23 transects 10 m apart. Due to the large number of transects (23 instead of 11), the longest two and the shortest two measurements were dropped from the average calculation, rather than the standard singular longest and shortest under the standard detailed assessment methodology.

SEI identified in field that development activities (specifically tree clearing) has taken place within this minimum SPEA as discussed below in **Conditions and Impact of Development**. As such, restorative prescriptions are included within this report under **Riparian Restoration Plan.**

Further protections of the minimum SPEA (*i.e.,* consideration of a "SPEA Protection Zone") is proposed for subdivision. The SPEA Protection Zone has been identified and discussed in **Section 4: Measures to Protect and Maintain the SPEA**. Ultimately, the proposed SPEA "Protection Zone" includes an additional two metres of protection off set from the minimum SPEA to provide a protected area for root growth of immature trees and new trees planted near the edge of the minimum SPEA. Further tree protection has also been applied to encompass the critical root zone (CRZ) of existing trees within the SPEA, which has been assessed as six times the diameter at breast height (DBH). In addition to the SPEA Protection Zone around existing CRZs, a tree management zone (TMZ) has been applied at ten times DBH in which development can only take place under the direction and/or supervision of a certified arborist. As development is not completely restricted within the TMZ, it is not defined as part of the SPEA Protection Zone; however, it must be included under a covenant on the title of each property affected. These additional measures are shown in **Figure 2**.

Further protection considerations discussed in **Section 4: Measures to Protect and Maintain the SPEA** include:

- assessment and treatment of danger trees,
- windthrow,
- slope stability,
- prevention of encroachment,
- sediment and erosion control,
- floodplain considerations, and
- stormwater.

SEI notes that the SPEA was not applied to the section of Kitchen Creek that has been used as a historic crossing of Kitchen Creek and is proposed for Upper Priestland Road crossing. As per acceptable methods of applying minimum SPEAs, a perpendicular line from the culvert inlet and outlet inverts has been applied. The approaches to the Upper Priestland stream crossing have been designed as to not occur within the Minimum SPEA, while the changes in and about a stream associated with the culvert crossing is approved under the Water Sustainability Regulation as an Authorized Change.

Conditions and Impact of Development

Following field assessment and determination of the minimum SPEA, the 11.1 m setback from Stream Boundary was flagged. A certified arborist (Krista Braathen, ISA Certified Arborist with Heartwood Tree Consulting) quantified and tagged tree removals within the minimum SPEA, which were then located on the site plan. A "Tree Inventory and Protection Report' (Heartwood Tree Consulting; October 11, 2022) is attached as **Appendix A**. Development that has taken place within the minimum SPEA includes ground disturbance and tree clearing. Ground disturbance within the minimum SPEA appeared to be limited to activity associated with tree clearing. In the areas of tree clearing, low canopy native shrubs and immature trees remained in good condition and there were no significant areas of exposed soils observed. It is likely that regeneration of dense shrubs and deciduous trees would take place over time in these areas, with coniferous trees regenerating over a longer time period provided adequate protection.

Tree clearing within the minimum SPEA has been quantified and species and sizes are shown in Figure 2 (top right-hand corner). Trees removed within the SPEA include three red alder and five western red cedar. Tree clearing and ground disturbance that has taken place within the RAA is not anticipated to have an effect on slope stability as disturbed areas are relatively flat. Floodplain concerns are not applicable to the development that has taken place. The current condition of the RAA does not represent risk to the protection of the SPEA with respect to sediment and erosion control or stormwater management. Danger trees had not been assessed at the time of tree removal; however, a danger tree assessment has been conducted since tree removal and proposes the removal of six trees (discussed in **Section 4: Measures to Protect and Maintain the SPEA**).

Tree clearing and ground disturbance in the minimum SPEA represents encroachment. Measures are to be taken to reverse this encroachment and prevent further encroachment from taking place. Measures

are provided below in the **Riparian Restoration Plan**, which include constructing a wooden, split-rail type fence along the SPEA Protection Zone and planting replacement trees within designated restoration areas.

Tree clearing within the RAA outside of the minimum SPEA may cause windthrow concerns as the new forested edge may have lost stability from the removal of trees and may be exposed to changing intensity and direction of wind forces. Trees that have grown on the edge of a forested stand tend to be more acclimated to wind with adaptation strategies which can increase stem strength through development of 'reaction wood', allow more flexibility of branches or stems through development of 'flexure' wood, and/or change the growth strategy of roots for better stability in the face of wind. Trees in the interior of a stand that are now on the forested edge can be less adapted to high wind conditions and be at higher risk of failure. Based on a review of available Google Earth imagery, the Subject Property was initially cleared sometime between October 2017 and July 2019. During field assessments, the current forested edge was observed generally intact, with limited signs of failure due to new wind pressures (*i.e.,* any unexpected degree of fallen or failing trees).

To protect against potential further windthrow risk, focus has been placed on the protection of the critical root zones (CRZs) of existing trees along the edge of the minimum SPEA. An additional two metre buffer to accommodate CRZ protection has been applied to the minimum SPEA throughout the assessed reach, on both sides of the watercourse. Where the CRZ of key trees identified along the minimum SPEA exceeds the two-metre buffer, the SPEA Protection Zone has been increased. This will provide increased protection to existing SPEA trees. Natural succession and planting of young conifers within this buffer and along the minimum SPEA will help provide wind breaks and create a new forested edge of wind-acclimated trees.

SEI recommends (as discussed in **Section 4: Measures to Protect and Maintain the SPEA**) that a Certified Arborist or Registered Professional Forester conduct hazard tree assessments along the forested edge of the SPEA Protection zone once per year for five years after final subdivision clearing is complete.

A Preliminary Geotechnical Assessment report (Kontur Geotechnical Consultants Inc.; November 4, 2022) has been prepared and is attached as **Appendix B**. The recommendations of the report as it pertains to the protection of the minimum SPEA and SPEA Protection Zone are summarized in **Section 4: Measures to Protect and Maintain the SPEA.** Ultimately, from a geotechnical perspective, Kontur opines that the SPEA Protection Zone is acceptable to protect the integrity of the minimum SPEA.

Riparian Restoration Plan

The Riparian Restoration Plan is outlined in **Figure 3** and intends to offset the impacts of clearing works that have taken place within the minimum SPEA. The plan generally follows guidelines outlined in RAR Revegetation Guidelines for Brownfield Sites[4] (the "Revegetation Guidelines"). SEI has prescribed planting of trees specimens only as SEI assessed the SPEA as capable of mid and lower canopy self-regeneration, as long as measures to prevent encroachment of the SPEA are upheld (*e.g.,* installation of the split-rail fence). Impacted trees to be offset with restoration planting include three red alder and five western red cedar. Criteria for the replacement of the impacted trees is adapted from the Tree Replacement Criteria[5] document prepared by Ministry of Environment, Lands and Parks (1996). Following the criteria and considering "like-for-like" replacement (*i.e.,* replacement conifers for removed

[4] https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/rar_reveg_guidebk_sept6_2012_final.pdf

[5] https://www.env.gov.bc.ca/wld/documents/bmp/treereplcrit.pdf

conifers and replacement deciduous for removed deciduous), the three alders require eighteen replacement trees and the five western redcedar require thirty-seven[6] replacement trees, for a total of fifty-five replacement trees. SEI visited the Subject Property to ground-truth the proposed planting polygons shown on the Riparian Restoration Plan.

Restoration planting should occur according to the below bulleted specifications:

- Tree species to be planted have been determined by following factors outlined in Section 4.0 of the Revegetation Guidelines such as plant associations, site characteristics and understanding the objectives of the restoration plan. Species must be selected from the list provided in Figure 3.
- Tree specimens should be planted in designated polygons as shown in Figure 3.
- All tree species should be of guaranteed nursery stock. The botanical name should be used when ordering stock to ensure that the desired native species is being purchased. Each specimen should be tagged with the botanical name and the tag should be left attached after planting.
- As outlined in Section 6.0 of the Revegetation Guidelines, tree stock should be a minimum of two years in age or, alternatively, 1.5 m in height when purchased. Due to the existing vegetation densities on site, trees should be planted no closer than 2 m from other trees (existing or replacement)
- Stock planted during the fall (September to October) and spring (March to April) has the greatest likelihood of surviving. Regular watering may be required until the plants are established. Additional advice on proper planting procedures should be obtained from the nursery supplying the stock, a certified arborist or a reputable landscape contractor.
- Compacted soil caused by movement of machinery should be decompacted.
- Plant survivability must be 80% after five years. Implementation monitoring by a QEP and maintenance shall occur to ensure 80% survivability after each year following planting, until five years is reached. Replanting of dead stock shall occur, as needed.
- Suitable topsoil, if required, must be certified 100% weed free.
- Retain fallen trees and/or stumps/root wads as large woody debris habitat for amphibians and small mammals, if available.
- Remove invasive species, if present, using best management practices, including those from the Invasive Species Council of BC *TIPS* and *Factsheets*.

It is strongly recommended that a reputable landscape contractor review the SPEA Protection Zone and the proposed Riparian Restoration Plan, and provide a summary work plan and cost estimate.

With respect to hazard trees, removals should be completed in conjunction with restoration. Where feasible and acceptable to the certified arborist, identified hazard trees should be cut to wildlife trees, rather than removed to stump height. Stump removal, and specifically the ground disturbance associated with stump removal, is not acceptable with the SPEA.

[6] Ten replacement trees have been proposed to offset the 102 cm DBH western redcedar.

Species List

Trees planted for the Riparian Restoration Plan must be chosen from the following list:

Common Name	Scientific Name
Deciduous Trees (choose eighteen)	
Big leaf maple	*Acer macrophylla*
Red alder	*Alnus rubra*
Coniferous Trees (Choose thirty-seven)	
Western hemlock	*Tsuga heterophylla*
Western redcedar	*Thuja plicata*
Douglas fir	*Pseudotsuga menziesii*

Routine Recruitment and Invasive Species Management Monitoring

Routine Recruitment and Invasive Species Management Monitoring of the riparian planting area is to be conducted by a Qualified Environmental Professional once after the first growing season at least two months after completed riparian planting and removal of invasive species has taken place (Year 1) and once a year for the remainder of a three-year monitoring period (for a total of three inspections). The inspections will assess health of planted stock, confirm 80% survival of the planted specimens and, if required, recommend additional planting to maintain the 80% survival rate. Invasive species will be monitored during inspections and recommendations for removal will be provided, as required. It is noted that no invasive species were observed within the SPEA, though a low number of invasive species were observed within the RAA. Invasive species management, if determined necessary, should be conducted in spring months, prior to flowering and seeding of observed invasive species. Invasive plant species observed growing in the vicinity of the riparian planting area should be removed along with their root structures. Only mechanical control is recommended for removal of invasives on the Subject Property. Recommended control for invasive species on the Subject Property taken from the *Invasive Species Council of BC Factsheet* (2019) is below.

- Mowing is not recommended after riparian planting has taken place.
- Mechanical cutting should be done when the plants begin to flower.
- Because mechanical control can stimulate strong regrowth, follow-up with hand digging to remove the entire root system is recommended
- Any regrowth observed within a year following removal must be removed with its root system.
- All plant material must be collected and disposed of at appropriate accredited facility. Care should be taken to ensure that plant parts are not distributed during transport.

Proposed Development

Proposed new development consists of the subdivision of the Subject Property. A subdivision Development Plan prepared by Webster Engineering is include as **Appendix C**. Proposed Subdivision Lots 1, 2, 3, 4, 5, 6, 7, 12 and 13 are partially encumbered by the RAA of Kitchen Creek. The proposed individual lots within the RAA of Kitchen Creek are designed to have developable areas greater that the respective allowable footprints. Proposed development includes the construction of subdivision access roads, road approaches and installation of a culvert crossing over Kitchen creek for the Upper Priestland Road crossing, and the clearing, rough grading, and servicing of proposed Subdivision Lots. SEI notes that the proposed road (Priestland Crescent) off Upper Priestland Road is currently designed outside the minimum SPEA and applied SPEA Protection Zone. Following the installation of the Upper Priestland Culvert Crossing and prior to construction of Priestland Crescent, the stream boundary will be resurveyed to ensure that the Priestland Crescent right of way remains outside of the minimum SPEA.

SECTION 2: RESULTS OF DETAILED RIPARIAN ASSESSMENT

Kitchen Creek

Refer to Section 3 of Technical Manual	**Date**	September 12, 2022
Description of Waterbodies involved (number, type)		Stream

Stream	✓
Wetland	x
Lake	x
Ditch	x
Number of reaches	1
Reach #	1

Channel Width, Slope and Channel Type

Channel Widths (m)						**Total**	**Gradient upstream**	**Gradient downstream**
Upstream	~~T-11~~	~~1.85~~	-	-	-	~~1.85~~	25%	25%
	T-10	3.10	-	-	-	3.10		
	T-9	4.60	-	-	-	4.60		
	T-8	2.90	-	-	-	2.90		
	T-7	5.20	-	-	-	5.20	12%	9%
	T-6	0.95	1.20	-	-	2.15	8%	4%
	T-5	0.70	1.50	-	-	2.20		
	T-4	1.40	1.65	1.00	-	4.05		
	T-3	1.30	1.90	-	-	3.20		
	~~T-2~~	~~2.10~~	-	-	-	~~2.10~~		
	~~T-1~~	~~6.45~~	~~2.90~~	-	-	~~9.35~~	4%	4%
	~~T-0~~	~~3.50~~	~~4.70~~	~~3.30~~	-	~~11.50~~		
	T-a	3.00	0.75	1.10	1.55	6.40	4%	10%
	T-b	1.65	1.60	-	-	3.25		
	T-c	0.60	1.00	0.70	0.60	2.90		
	T-d	0.10	0.40	1.20	1.70	3.40	9%	20%
	T-e	0.80	0.75	2.10	1.50	5.15	20%	9%
	T-f	2.35	3.00	-	-	5.35		
	T-g	2.90	0.70	-	-	3.60		
	T-h	1.10	3.50	-	-	4.60	9%	9%
	T-i	0.90	1.35	-	-	2.25		
	T-j	2.70	1.20	-	-	3.90	9%	20%
Downstream	T-k	1.20	0.80	-	-	2.00		
Total *(not including high/low)*						70.2	11%	12%
Channel Type		Cascade Pool						
Mean Channel Width (m) & Gradient (%)		**3.7 m**					**11%**	**12%**

I, Stephen Sims (name of qualified environmental professional), hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection* Regulation made under the *Riparian Areas Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

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 Protection Regulation*.

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		✓	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

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 Protection Regulation*.

Polygon No	1			Method employed if other than TR:
SPVT Type	**LC**	**SH**	**TR**	N/A
			✓	

Zone of Sensitivity (ZOS) and resultant SPEA

Stream Name	Kitchen Creek			Segment No.	1
LWD, Bank and Channel Stability ZOS (m)				7.4	
Litter fall and insect drop ZOS (m)				11.1	
Shade ZOS (m) max				11.1	South
Brief Stream or Ditch Justification	See assessment, the stream is a watercourse.				
Fish Bearing Status	Yes	✓	No		Fish presence is assumed within Kitchen Creek, downstream of the Subject Property. It is not anticipated that fish are present within Kitchen Creek within or upstream of the Subject Property.
SPEA Minimum (m)		11.1			

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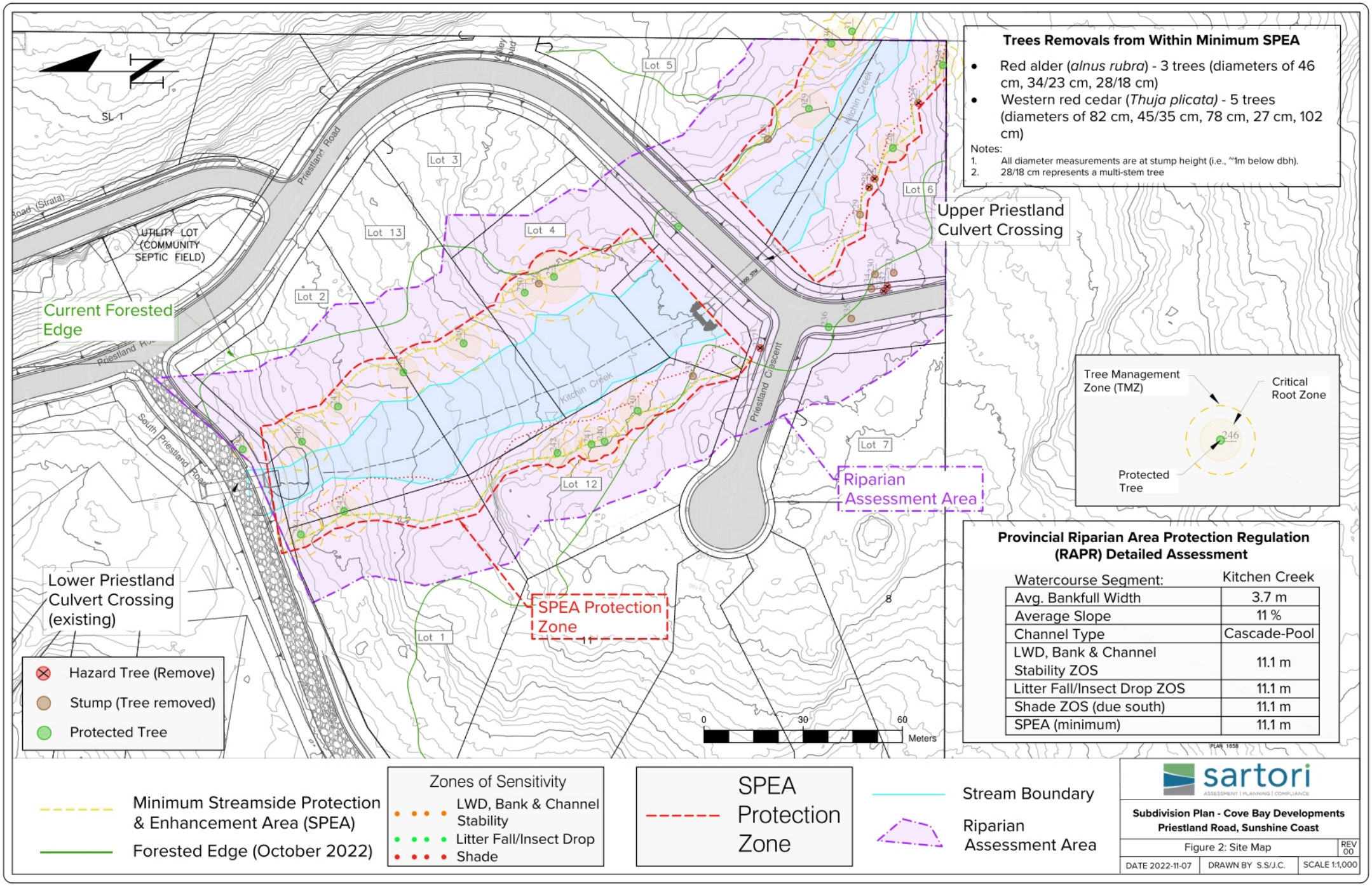
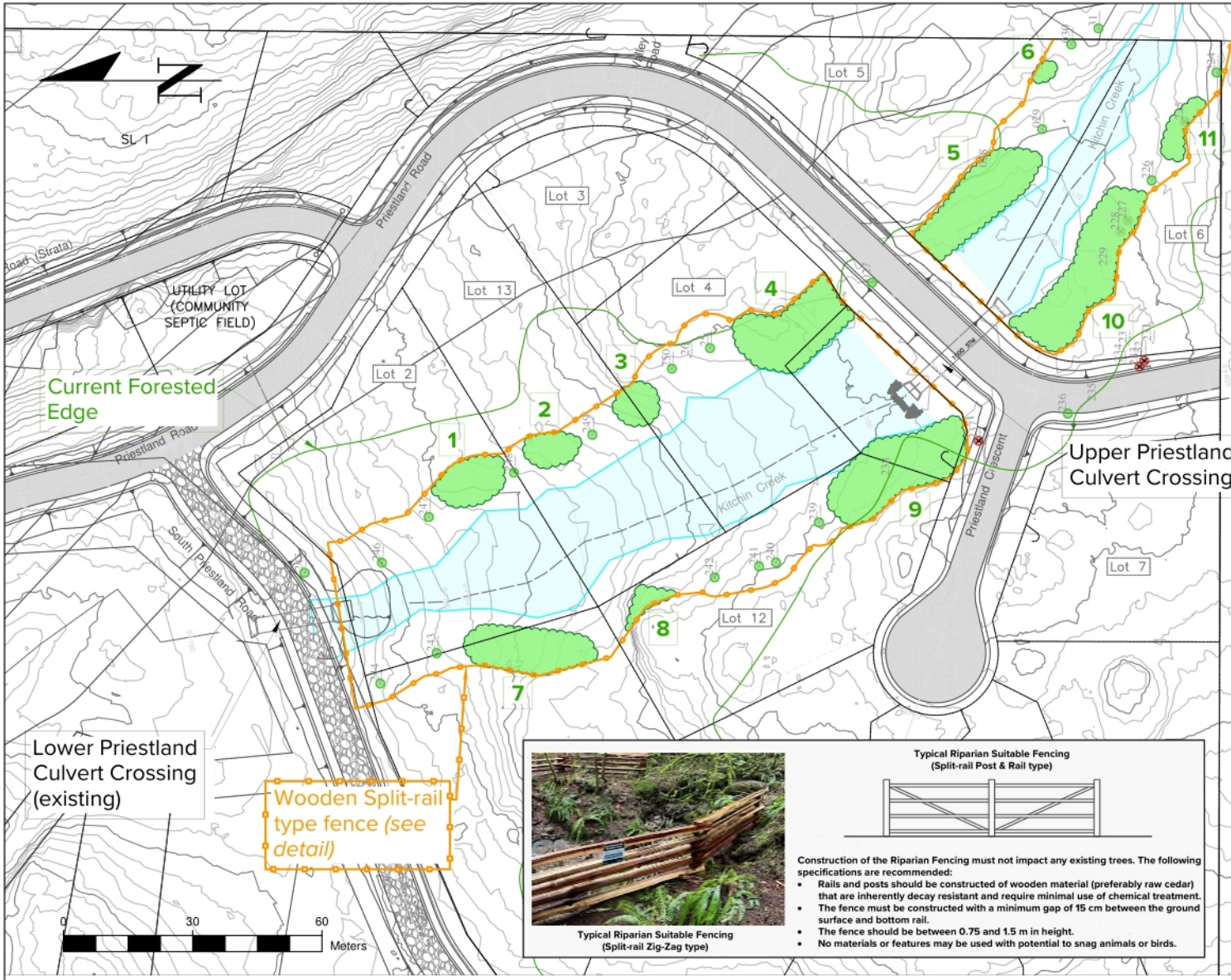
c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

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 Protection Regulation*.

Comments

The prescribed detailed assessment methodology was adhered to as per the Ministry's *RAPR Technical Assessment Manual (2019)* with respect to establishing stream boundary, locating transects and measuring bankfull width. Due to the large number of transects used (roughly double the standard number), the two highest and two lowest width transects were dropped in the mean calculation. SEI opines that this accurately depicts the average bankfull width of the channel.


Trees Removals from Within Minimum SPEA
Red alder (alnus rubra) - 3 trees (diameters of 46 cm, 34/23 cm, 28/18 cm)
Western red cedar (Thuja plicata) - 5 trees (diameters of 82 cm, 45/35 cm, 78 cm, 27 cm, 102 cm)
Notes:
1. All diameter measurements are at stump height (i.e., ~1m below dbh).
2. 28/18 cm represents a multi-stem tree
Upper Priestland Culvert Crossing
Current Forested Edge
Lower Priestland Culvert Crossing (existing)
SPEA Protection Zone
Riparian Assessment Area
Tree Management Zone (TMZ)
Critical Root Zone
Protected Tree
Provincial Riparian Area Protection Regulation (RAPR) Detailed Assessment
Watercourse Segment: Kitchen Creek
Avg. Bankfull Width 3.7 m
Average Slope 11 %
Channel Type Cascade-Pool
LWD, Bank & Channel Stability ZOS 11.1 m
Litter Fall/Insect Drop ZOS 11.1 m
Shade ZOS (due south) 11.1 m
SPEA (minimum) 11.1 m
Hazard Tree (Remove)
Stump (Tree removed)
Protected Tree
Priestland Road
Priestland Crescent
South Priestland Road
Kitchin Creek
Lot 1
Lot 2
Lot 3
Lot 4
Lot 5
Lot 6
Lot 7
Lot 12
Lot 13
UTILITY LOT (COMMUNITY SEPTIC FIELD)
0
30
60
Meters
Minimum Streamside Protection & Enhancement Area (SPEA)
Forested Edge (October 2022)
Zones of Sensitivity
LWD, Bank & Channel Stability
Litter Fall/Insect Drop
Shade
SPEA Protection Zone
Stream Boundary
Riparian Assessment Area
sartori
Subdivision Plan - Cove Bay Developments
Priestland Road, Sunshine Coast
Figure 2: Site Map
REV 00
DATE 2022-11-07
DRAWN BY S.S/J.C.
SCALE 1:1,000



Typical Riparian Suitable Fencing (Split-rail Zig-Zag type)

Typical Riparian Suitable Fencing (Split-rail Post & Rail type)

Construction of the Riparian Fencing must not impact any existing trees. The following specifications are recommended:

- Rails and posts should be constructed of wooden material (preferably raw cedar) that are inherently decay resistant and require minimal use of chemical treatment.
- The fence must be constructed with a minimum gap of 15 cm between the ground surface and bottom rail.
- The fence should be between 0.75 and 1.5 m in height.
- No materials or features may be used with potential to snag animals or birds.

The following species of trees and their prescribed total numbers for the Riparian Restoration Plan are as follows:

Trees Species to be planted

(minimum planting height of 1.5m; refer to RAPR Report for planting details)

Deciduous Trees (**Choose eighteen**)

- Big leaf maple (*Acer macrophylla)*
- Red alder (*Alnus rubra*)

Coniferous Trees (**Choose thirty-seven**)

- Western hemlock (*Tsuga heterophylla)*
- Western redcedar (*Thuja plicata)*
- Douglas fir (*Pseudotsuga menziesii*)

Planting polygons have been identified on this figure for the above listed trees to be planted within. Planting polygons were identified in field by SEI and were assessed as areas with sufficiently low tree and/or vegetation density to gain significant benefit from restoration planting.

Planting polygons have been numbered and the prescribed number of trees to be planted within their respective polygon is as follows:

- Planting Polygon 1: **3** total trees
- Planting Polygon 2: **2** total trees
- Planting Polygon 3: **2** total trees
- Planting Polygon 4: **10** total trees
- Planting Polygon 5: **6** total trees
- Planting Polygon 6: **1** total trees
- Planting Polygon 7: **5** total trees
- Planting Polygon 8: **2** total trees
- Planting Polygon 9: **11** total trees
- Planting Polygon 10: **11** total trees
- Planting Polygon 11: **2** total trees

Split-rail Riparian Fencing to be Installed

Forested Edge (October 2022)

Stream Boundary

4 Riparian Planting Polygon

Hazard Tree (Remove)

Protected Tree

sartori
ASSESSMENT | PLANNING | COMPLIANCE

Subdivision Plan - Cove Bay Developments
Priestland Road, Sunshine Coast

Figure 3: Riparian Restoration Plan		REV 00
DATE 2022-11-07	DRAWN BY S.S/J.C.	SCALE 1:1,000

SECTION 4: MEASURES TO PROTECT AND MAINTAIN THE SPEA

Danger Trees	A danger tree assessment was conducted by a Certified Arborist (Tree Inventory and Protection Report, 11 October 2022; see **Appendix A**). Five trees within the SPEA are recommended for removal. It is recommended that hazard trees not be removed entirely to stump height, rather be retained as wildlife trees following recommendations of the certified arborist, where feasible. Where not feasible to retain a wildlife tree, stumps should be cut low to the ground with root structures remaining in place. Stump removal, and specifically the ground disturbance associated with stump removal, is not acceptable with the SPEA.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection Regulation* made under the *Riparian Areas Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*.

Windthrow	Tree clearing within the RAA outside of the minimum SPEA may cause windthrow concerns as the new forested edge may have lost stability from the removal of trees and may be exposed to changing intensity and direction of wind forces. Trees that have grown on the edge of a forested stand tend to be more acclimated to wind with adaptation strategies which can increase stem strength through development of 'reaction wood', allow more flexibility of branches or stems through development of 'flexure' wood, and/or change the growth strategy of roots for better stability in the face of wind. Trees in the interior of a stand that are now on the forested edge can be less adapted to high wind conditions and be at higher risk of failure. Based on a review of available Google Earth imagery, the Subject Property was initially cleared sometime between October 2017 and July 2019. During field assessments, the current forested edge was observed generally intact, with limited signs of failure due to new wind pressures (*i.e.,* any unexpected degree of fallen or failing trees). To protect against potential windthrow risk, focus has been placed on the protection of the critical root zones (CRZs) of existing trees along the edge of the minimum SPEA. An additional two metre buffer to accommodate CRZ protection has been applied to the minimum SPEA throughout the assessed reach, on both sides of the watercourse. Where the CRZ of key trees identified along the minimum SPEA exceeds the two-metre buffer, the SPEA Protection Zone has been increased. This will provide increased protection to existing SPEA trees. Natural succession and planting of young conifers within this buffer and along the minimum SPEA will help provide wind breaks and create a new forested edge of wind-acclimated trees. SEI recommends that a Certified Arborist or Registered Professional Forester conduct hazard tree assessments along the forested edge of the SPEA Protection zone once per year for three years after final subdivision clearing is complete.

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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*.

Slope Stability	A Preliminary Geotechnical Analysis has been prepared by Kontur Geotechnical Consultants Inc. (November 4, 2022 Version 3) to assess geotechnical setbacks from Kitchen Creek (see **Appendix B**). No evidence of any recent deep-seated or wide-spread sloughing, slumping, or erosion, was observed at the time of the site visit. Some evidence of localized rock falls, topples, and/or slides, were observed by Kontur at the time of their site visit at the base the bedrock benches, bluffs, and steep slopes, described above and located within the Subject Property. A minimum horizontal setback of 15 m from Stream Boundary of Kitchen Creek has been recommended to provide an adequate buffer zone against potential avulsion and/or erosion protection purposes. In addition, it is recommended that a minimum Flood Construction Level of at least 1.5 m above Stream Boundary, or no less than 0.6 m above the existing ground surface, whichever is greater, be established. Where this horizontal setback cannot be achieved, measures to protect the building and/or lot from potential erosion, scour, and/or flooding, should be implemented, and the geotechnical setback may be reduced to no less than a horizontal distance of about 10 m from Stream Boundary. This may include construction of training berms, raising site grades to create level building pads, and protecting the perimeter/stream side against potential erosion and scour. From a geotechnical perspective, the SPEA Protection Zone (13.1 m from Stream Boundary) is considered acceptable to protect the integrity of the SPEA. It is important to note that any proposed erosion protection or slope mitigation measures required to reduce the 15 m Geotechnical setback cannot be constructed within the SPEA.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection Regulation* made under the *Riparian Areas Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*

Protection of Trees	Additional protection of the SPEA includes a 2 m buffer of protection off set from the minimum SPEA to provide a protected area for root growth of immature trees and new trees planted near the edge of the minimum SPEA. As outlined in Tree Inventory and Protection Report (11 October 2022), further tree protection has been applied to encompass the critical root zone (CRZ) of existing trees within the SPEA, which is typically six times the diameter at breast height (DBH). In reality, the calculated CRZs are from measured stump diameters and not DBH; thus, providing additional no disturbance protections above what is typical in the application of CRZs. In addition to the SPEA Protection Zone considering existing CRZs, a tree management zone (TMZ) has been applied at ten times DBH in which development can only take place under the direction or supervision of a certified arborist. As development is not completely restricted within the TMZ, it is not defined as part of the SPEA Protection Zone.

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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*

Encroachment	A split-rail fence is to be constructed around the SPEA Protection Zone enveloping the entire SPEA to discourage development. Further, development within the SPEA will be restricted by municipal bylaw. Areas of the SPEA that have already been encroached by tree clearing and ground disturbance will be restored as per the **Riparian Restoration Plan**. SEI notes that the proposed road (Priestland Crescent) off Upper Priestland Road is currently designed outside the minimum SPEA and applied SPEA Protection Zone. Following the installation of the Upper Priestland Culvert Crossing and prior to construction of Priestland Crescent, the stream boundary will be resurveyed to ensure that the Priestland Crescent right of way remains outside of the minimum SPEA.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection Regulation* made under the *Riparian Areas Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*.

Sediment and Erosion Control	An erosion and sediment control plan should be created by a qualified professional and implemented at the construction phase to sufficiently protect Kitchen Creek from mobilized sediment during construction.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

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b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*

Stormwater Management	A Storm Water Management Plan is being prepared for submission as part of the SCRD Development Permit application process. Areas for storm water management features will be situated outside the SPEA Protection Zone. Any discharge to Kitchen Creek required to facilitate stormwater management will require consideration and approval through the *Water Sustainability Act*.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection Regulation* made under the *Riparian Areas Protection Act*;

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c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*

Floodplain Concerns	The Subject Property falls within SCRD's Creek Corridor DPA (DPA2A). Kontur Geotechnical Consultants Inc. have contemplated floodplain concerns in a Preliminary Geotechnical Analysis report (November 4, 2022 Version 3; See **Appendix B**). Key wordage surrounding floodplain concerns adapted from sections of the referenced report is as follows: • Kitchen Creek, located near the central part of the Subject Property is situated at the base of a poorly-defined meandering stream channel or floodplain. The Kitchen Creek floodplain is about 120 to 130 m wide and crosses the property from the southeast to northwest. At the time Kontur's site visit, flowing water was observed in the stream channel, with some evidence of the stream locally overtopping its current banks. • No evidence of any recent signs of debris flow/flood were observed in the stream channels at the time of Kontur's site visit. • It is Kontur's opinion that the proposed subdivision, namely the area that is part of the Kitchen Creek Floodplain may be subject to stream avulsion, erosion, and/or flooding. • Appropriate geotechnical setbacks from the stream channel should be implemented, to protect proposed buildings and infrastructure against localized stream avulsion or flooding. • From a geotechnical point-of-view, a minimum horizontal setback of at least 15 m should be established from the Stream Boundary of Kitchen Creek to provide an adequate buffer zone against potential avulsion

	and/or erosion protection purposes. In addition, it is recommended that a minimum Flood Construction Level of at least 1.5m above the Natural Boundary of the creek, or no less than 600 mm above the existing ground surface, whichever is greater, be established. • Where this horizontal setback cannot be achieved, measures to protect the building and/or lot from flooding should be implemented, and **the geotechnical setback may be reduced to no less than a horizontal distance of about 10 m from the Natural Boundary**. • **The SPEA Protection Zone established by SEI, generally follows a horizontal setback of about 13.1 m from the Stream Boundary (but varies due to the presence of significant trees/vegetation) and is considered acceptable from a geotechnical point-of-view.** It is important to note that any proposed erosion protection or slope mitigation measures required to reduce the 15m Geotechnical setback noted in the previous paragraph cannot be constructed within the SPEA.

I, Stephen Sims (name of qualified environmental professional) hereby certify that:

a) I am a qualified environmental professional, as defined in the *Riparian Areas Protection Regulation* made under the *Riparian Areas Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Cove Bay Developments Inc.;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the *Riparian Areas Protection Regulation*.

SECTION 5: ENVIRONMENTAL MONITORING

Routine recruitment of restorative plantings and invasive species management monitoring of the riparian restoration area should be conducted by a QEP once during the first growing season, at least two months after completed riparian planting and removal of invasive species has taken place (Year 1) and again every year for three total years. The inspections will assess riparian plant health and confirm 80% survival of the planted specimens in the Riparian Planting Plan and will recommend additional planting as necessary to maintain the 80% survival rate. Invasive species will be monitored during both inspections and recommendations for removal will be made pending observations of any invasive grow back. Invasive species management should be conducted in spring months, prior to flowering and seeding of observed invasive species. Invasive plant species observed growing in the vicinity of the riparian planting area must be removed along with their root structures. Only mechanical control is recommended for removal of invasives on the Subject Property. The QEP should also confirm that the split-rail fence is properly installed and remains installed throughout the three-year monitoring period.

SECTION 6: PHOTOS

Photo 1. Transect T-3 pictured showing organic substrate.

Photo 2. Transect T-10 pictured.

Photo 3. Transect T-c pictured showing gravel and rock substrate.

Photo 4. Transect T-g pictured showing undefined channel.

Photo 5. Disturbed RAA northeast of the future Upper Priestland Road crossing.

Photo 6. Disturbed RAA southeast of the future Upper Priestland Road crossing.

SECTION 7: PROFESSIONAL OPINION

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

Date	2022-11-07

1. I/We Stephen Sims,

(Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

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 Cove Bay Developments Inc., 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) ☐ *Not applicable* the site of the proposed development is subject to Undue Hardship, 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.

[NOTE: "Qualified Environmental Professional" means an individual as described in section 21 of the Riparian Areas Protection Regulation

Appendix A – Tree Inventory and Protection Report (Heartwood Tree Consulting; October 11, 2022)

(9 pages)

Tree Inventory and Protection Report

Date: October 11, 2022

Report commissioned by: Alister Toma

Site Address: Priestland Road, Halfmoon Bay

Inspection conducted by: Krista Braathen, ISA Certified Arborist PN -5458A, TRAQ Certified

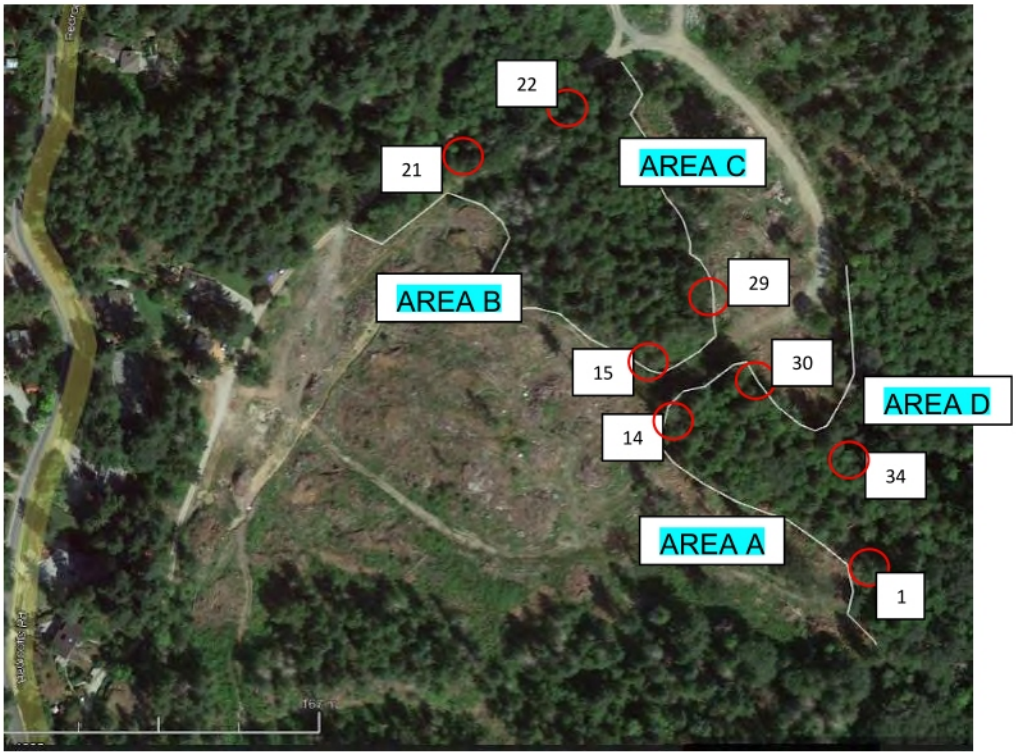
Site inspection: Friday, October 7. Weather was warm and sunny.

Purpose

Heartwood Tree Consulting was contracted by Mr. Toma to provide an inventory and protection report for trees within the SPEA.

The tree hazard inspection completed for this report was a limited visual assessment (level one) which is a general visual overview of the trees. This includes basic observations from the ground to note any concerns or problems observed. Further hazard assessments and higher levels of inspection may be recommended and outlined in this report.

Figure 1 – approximate location of some trees in question



A site visit was conducted on October 7, 2022, and an assessment carried out to determine the condition and safety of the trees, to inventory removed trees and to provide protection areas for trees within the SPEA.

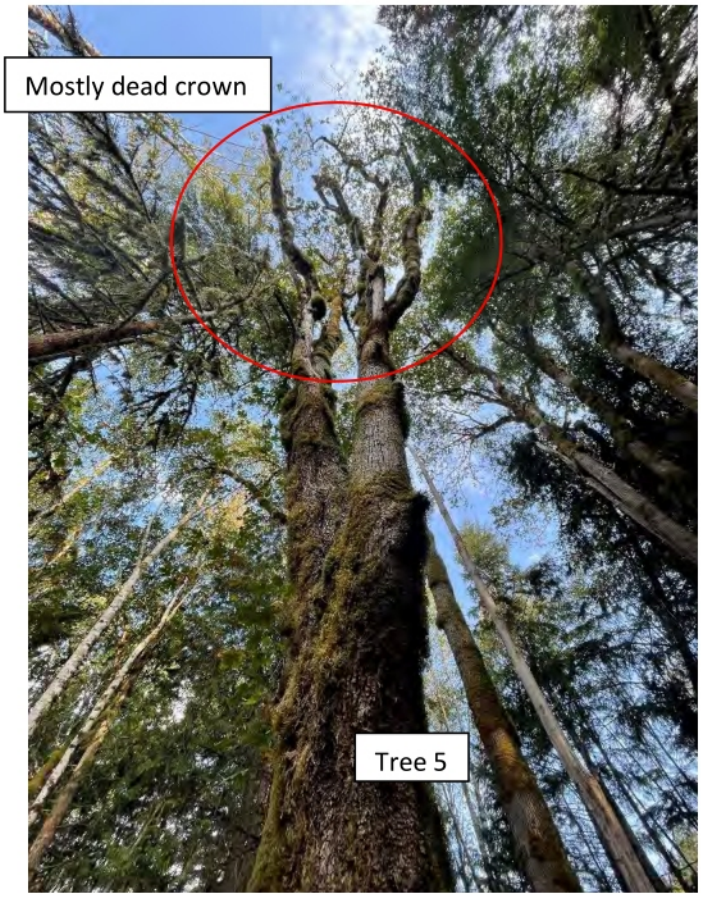
Photo 1 – tree 2 (tag #225) hemlock recommended for removal; excessive sap sucker damage and deadwood

Area A

tree	species	Tag #	diameter	condition	critical root zone	tree management zone	comment
1	cedar	224	66cm	average	4m	6.6m	
2	hemlock	225	40cm	fair			removal recommended
3	hemlock	226	71cm	average	4.3m	7.1m	
4	alder	227	26cm	poor			removal recommended
5	big leaf maple	228	49cm	fair			removal recommended

6	alder	229	46cm				removed
7	cedar	230	82cm				removed
8	alder	231	34/23cm				removed
9	hemlock	232	27cm	poor			removal recommended
10	alder	233	31cm	poor			removal recommended
11	cedar	234	45/35				removed
12	cedar	235	78cm				removed
13	hemlock	236	46cm	average	2.8m	4.6m	
14	alder	237	30/24/25	poor			removal recommended

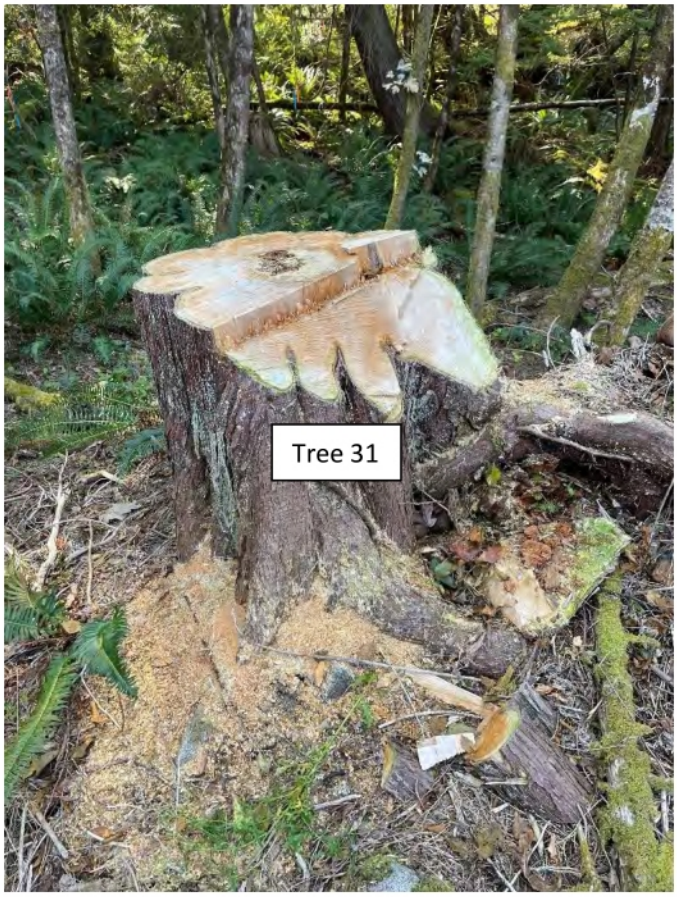
Photo 2 – tree 5 (tag #228) declining maple; majority of crown dead and weighted towards lots



Area B

tree	species	Tag #	diameter	condition	critical root zone	tree management zone	comment
15	alder	238	28/18				removed
16	big leaf maple	239	90cm	average	5.4m	9m	
17	cedar	240	70cm	average	4.2m	7m	
18	Douglas fir	241	85cm	good	5.1m	8.5m	
19	cedar	242	74cm	good	4.4m	7.4m	
20	cedar	243	79cm	average	4.7m	7.9m	
21	Douglas fir	244	68cm	good	4.1	6.8m	

Photo 3 – tree 31 (tag #28) removed from SPEA; 102cm red cedar



Area C

tree	species	Tag #	diameter	condition	critical root zone	tree management zone	comment
22	alder	245	30cm	good	1.8m	3m	
23	cedar	246	87cm	average	5.2m	8.7m	6m to SPEA edge
24	hemlock	247	53cm	average	3.2m	5.3m	
25	alder	248	77cm	average	4.6m	7.7m	3m from SPEA edge
26	cedar	249	87cm	good	5.2m	8.7m	
27	cedar	250	67cm	average	4m	6.7m	
28	big leaf maple	25	133cm	average	8m	13.3m	
29	cedar	26	27cm				removed

Photo 4 – Tree 32 (tag #29); adjacent trees protected by tree protection area for tree 32

Area D

tree	species	Tag #	diameter	condition	critical root zone	Tree management zone	comment
30	cedar	27	106cm	good	6.4m	10.6m	SPEA edge
31	cedar	28	102cm				removed
32	cedar	29	98cm	good	5.9m	10m	3 cedars and 1 fir in group protected
33	cedar	30	72cm	good	4.3m	7.2m	1m to SPEA edge
34	big leaf maple	31	74cm	average	4.4m	7.4m	

Green highlighted trees are assigned protection due to their size and proximity to SPEA edge
Blue highlighted trees are considered hazardous to proposed development
Red highlighted trees have been removed

Observations

Trees within the creek corridor are a generally healthy mix of red cedar, Douglas fir, Western hemlock, red alder and big leaf maple; no sign of disease was discovered. The creek and SPEA boundaries had been recently flagged to ensure trees within the protected creek zone could be assessed.

Eight trees were confirmed to have been removed from within the SPEA. Six trees were tagged as hazardous considering the potential targets of planned development activities. Twenty trees were given protection areas as their root areas are larger that the distance to the SPEA edge.

Summary

Trees noted as removed within the SPEA were measured at grade; restitution is required.

Trees deemed hazardous are suggested to be removed before any development activity begins.

Critical root zones are areas where no work can occur and tree protection areas are part of the root zones where work can be considered if supervised by a Certified Arborist. Tree protection is expected to be installed to ensure critical root zones are protected.

Note

Trees assigned critical root zones and management zones were determined by diameter and proximity to SPEA edge.

Further information would be required to compare assigned tree protection areas to any proposed excavation lines; if digging is planned within or adjacent to any protection areas, impact assessment recommendations can be made.

Krista Braathen
ISA Certified Arborist PN - 5458A
ISA Certified Tree Risk Assessor (TRAQ)
Heartwood Tree Consulting

Figure 2 – creek and SPEA boundaries; areas A-D

Assumptions, Limiting Conditions and General Waiver

I confirm that the trees listed on the property identified in this report have been inspected.

I have no current or prospective financial interest in the vegetation or the property which is the subject of this report and have no personal interest or bias in favour of or against any of the involved parties or their respective position(s) if any.

The analysis, opinions and conclusions stated herein are the product of my independent professional judgement and based on current scientific procedures and facts, and the foregoing report was prepared according to commercially reasonable and generally accepted arboriculture standards and practices for British Columbia.

The information included in this report covers only those trees that were examined and reflects the condition of the trees as of the time and date of inspection. This report is 'valid' for the day of inspection only, as this is natural entity and weather conditions and site factors can change.

This report and the opinions expressed herein are not intended, nor should they be construed as any type of warranty or guarantee regarding the condition of the subject trees in the future.

To the best of my knowledge and belief, all statements and information in this report are true and correct and information provided by others is assumed to be true and correct.

I am not an attorney or engineer. This report does not cover those areas of expertise and represents advice only of arboricultural nature. Without limiting the generality of the preceding sentence, it is understood that nothing contained in this report is intended as legal advice or advice or opinions regarding soil stability or zoning laws, and this report should not be relied upon to take the place of such advice.

Appendix B – Preliminary Geotechnical Assessment (Kontur Geotechnical Consultants Inc; November 4, 2022, Version 3)

(21 pages)

PRELIMINARY GEOTECHNICAL ASSESSMENT
Proposed Residential Subdivision – Bayview Hills Phase 1
Block A DL 1427, Halfmoon Bay B.C.

Document Type: Version 3

Date: November 4, 2022

Project No.: **K-221130-00**

Submitted to:

Bayview Hills at Halfmoon Bay
Suite 710 – 939 Homer Street
Vancouver, B.C.
V6B 2W6

Attention: Mr. Alistar Toma
alistertoma@mac.com

Submitted by:

Kontur Geotechnical Consultants Inc.
Unit 107, 2071 Kingsway Avenue, Port Coquitlam BC
778 730 1747 | info@kontur.ca | www.kontur.ca

Per: Ziad Merdas EIT
zmerdas@kontur.ca
Per: Matthew Yip MEng PEng
myip@kontur.ca

Template Report v0

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Kontur Geotechnical Consultants Inc. (Kontur) has completed this *Preliminary Geotechnical Assessment* for the above-referenced project. The purposes of the assessment were to characterize the site from a geotechnical point-of-view and to provide geotechnical comments and recommendations related to subdivision and site development. Preliminary recommendations for site development and foundation design are included.

This report, which summarizes the findings of the assessment, has been prepared in accordance with standard and widely accepted geotechnical engineering principles and practices for similar developments in this region. This report does not address any environmental issues related to the proposed project.

Review and use of this report should be completed in accordance with the attached *Interpretation and Use of Study and Report* document. This document is an integral part off this report and should be read in conjunction with all parts of this report.

2.0 UNDERSTANDING OF PROJECT

It is Kontur's understanding that as part of Phase 1 of the Bayview Hills Development it is planned to subdivide and develop the above-referenced property. The property comprises an area of about 27 acres and will be subdivided into nineteen (19) single-family freehold and eleven (11) single-family strata lots. The project will consist of four new roads (Priestland Road, South Priestland Road, Priestland Crescent, and Cliff Road). Cuts and fills will be necessary to construct the proposed roadways across the site. Kitchen Creek also crosses the property from the northeast to southwest and will pass beneath South Priestland Road and Cliff Road through culverts.

3.0 SOURCES OF INFORMATION

- Preliminary Civil Drawings prepared by Webster Engineering Ltd. dated May 2021;
- Report titled *'Hydrogeoloigc Assessment for Sewage Disposal'* prepared by Piteau Associates Ltd. and dated July 19th, 2012;
- Report titled *'Priestland Road Subdivision SWMP'* prepared by Kerr Wood Leidal Associates ltd. and dated March 2, 2009;
- Report titled *'Preliminary Geotechnical Assessment'* prepared by Geotactics Media Engineering (2007) Ltd. and dated March 3, 2008.
- Published surficial geology maps of the area;
- A review of Kontur's in-house geotechnical database and experience of the area; and,
- A site reconnaissance completed by Kontur.

A site reconnaissance was completed on November 12th and December 16th, 2021. The site reconnaissance was completed by a Principal Geotechnical Engineer who traversed the site by foot to visually assess the area for features of geotechnical engineering significance.

The general site layout are shown on the attached Civil Layout Drawing Plan in Appendix B of this report. Select photographs are shown in Appendix C.

4.0 SITE DESCRIPTION

4.1 General

The legal description of the site is Block AB DL 1427; and it is located near the 8600 Block of Redroofs Road, Halfmoon Bay B.C. The property covers an area of about 10.9 hectares (27 acres) and is irregular in shape. The property is bounded by Priestland Road to the west and undeveloped land to the south, and east. The north side of the property is bounded by a rurally developed single-family residential property. In general, the property is about 615m long (north to south) and about 105m wide at its narrowest location (central part of property). The north and south boundaries of the property are about 220 and 330m wide, respectively. Kitchen Creek Crosses the central part of the property from the southeast to the northwest.

In general, the property is divided into two zones from a geotechnical perspective. The first zone, being located northeast of Kitchen Creek and the second zone being located to the southwest of Kitchen Creek.

From Priestland Road, the ground surface within the first zone rises to the northeast over a series of steep bedrock bluffs and slopes. The steep slopes or bluffs are sloped near-vertical to an average inclination of about 1.2(H):1(V) (Horizontal:Vertical) and range from about 3 to 15m in height. The bluffs and slopes are generally separated by relatively flat or gently sloped benches that range from a width of about 50 to 100m in width. The ground surface within the benches is generally located between an elevation of about 40 to 60m, geodetic.

From Priestland Road, the ground surface within the second zone generally rises to the south to southeast and an average inclination of about 4(H):1(V) to 5(H):1(V), from an elevation of about 30m to 60m, geodetic. The ground surface is comprised of a series of local bedrock steps and slopes.

Kitchen Creek, located near the central part of the property, delineates the two zones described above and is situated at the base of a poorly-defined meandering stream channel or floodplain. The Kitchen Creek floodplain is about 120 to 130m wide and crosses the property from the southeast to northwest. At the time of the site visit, flowing water was observed in the stream channel and some evidence of the stream locally overtopping its current banks were noted.

The site is undeveloped and has generally been cleared of vegetation, with gravel-surfaced access roads having been constructed to access the site (and extend off of Priestland Road). A rocky fill slope is noted immediately above Priestland Road and Kitchen Creek below the location of proposed Cliff Road and appears to have been developed by end-dumping of random fill materials.

No evidence of any recent deep-seated or wide-spread sloughing, slumping, or erosion, was observed at the time of the site visit. No evidence of any recent signs of debris flow/flood were observed in the stream channels at the time of the site visit. Some evidence of localized rock falls, topples, and/or slides, was observed at the time of the site visit at the base the bedrock benches, bluffs, and steep slopes, described above and located within the subject property.

4.2 Subsurface Conditions

Interpretation of subsurface conditions at the site is based on the published surficial geology map of the area, observations of soil or bedrock outcrops within the property, and Kontur's nearby and relevant experience. A geotechnical exploration (test pits or testholes) has not been completed as part of this stage of the project by Kontur.

According to *Figure 1 – Surficial Geology Sunshine Coast Area* published by the Ministry of Mines and Petroleum Resources B.C., the site is underlain by Bedrock or bedrock covered with a thin mantle of glacio-marine sediments, usually till or marine veneer. Thicker Granular deposits (sands and gravels) may be encountered in low-lying depressions within the subject property and/or in the floodplain area of Kitchen Creek. The bedrock in the area is typically massive and granitic, with wide discontinuity sets oriented subparallel to the face of the bedrock slopes/steps and horizontal plane. Persistent discontinuities typically have a spacing of about 2 to 4m.

Static groundwater levels are anticipated to be encountered at depths greater than about 10m below existing ground surface; however, localized and/or perched groundwater conditions may be encountered throughout the site. Local and naturally occurring springs may develop along bedrock slopes/steps as surface water runoff infiltrates into the ground surface and is conveyed through discontinuities in the rock mass. It can be anticipated that local groundwater levels at the site are typically influenced by periods of prolonged or intense rainfall, rapid snowmelt, and/or influences from nearby developments.

4.3 Subsurface Variability

It is important to note that the subsurface conditions described above generalized. Extrapolation and interpretation of the subsurface conditions is formulated based on an assumed horizontal continuity of subsurface conditions across the site. Therefore, the subsurface conditions described above are generalized and variation in the stratigraphic conditions should always be expected. Site-specific geotechnical explorations should be completed during later stages of the project to where more certainty in subsurface conditions is deemed to be necessary.

5.0 COMMENTS AND RECOMMENDATIONS

5.1 General

It is Kontur's opinion that the significant geotechnical considerations associated with subdivision of this site may be related to:

- Establishing appropriate geotechnical setbacks from steep and high bedrock slopes/steps and/or implementing local stabilization measures to mitigate potential rock falls, topples, or slides;
- Stabilization or re-construction of the end-dumped fill slope below Cliff Road;
- Establishing appropriate geotechnical setbacks and Flood Construction Levels associated with Kitchen Creek;
- Excavation/blasting in bedrock to achieve the desired design grades for the proposed roadways and associated infrastructure; and/or,
- Placement of *Engineered Fill* beneath the footprint of the access roads and common areas.

Based on the observations, information, and findings presented above, the following sections outline the geotechnical comments and recommendations provided by Kontur with respect to subdivision and site development.

5.2 Seismicity

According to the 2018BCBC, the S*ite Classification* can be taken as *C- Very dense soil and soft rock.* As interpolated from the 2015 National Building Code's Seismic Hazard Calculation per the requirements of the 2018BCBC, for firm ground at this site (with coordinates 49.502N and 123.908W), for a 2% probability of exceedance in 50 years, the *Peak Ground Acceleration* may be taken as 0.36g. *Spectral Acceleration* values may be taken as:

- $S_A(0.2)$ = 0.81;
- $S_A(0.5)$ = 0.74;
- $S_A(1.0)$ = 0.43;
- $S_A(2.0)$ = 0.27;
- $S_A(5.0)$ = 0.09; and,
- $S_A(10.0)$ = 0.03.

5.3 Geotechnical Hazards

5.3.1 General

As defined by *APEGBC Guidelines for Legislated Landslide Assessments for Residential Developments in BC (May 2010 version)*, the term *'Landslide Risk'* is defined as a combination of the probability of occurrence of a landslide and the consequence of the landside (i.e. damage to property, injury or loss of life). As defined by the guideline, the term 'Landslide' refers to 'any movement of rock, debris, or earth down a slope'. The qualitative Landslide Assessment completed as part of the study presented herein is based on the site reconnaissance and desk study completed as described in this letter, sound engineering judgement, and Kontur's local and regional experience with landslide hazards, in accordance with widely accepted geotechnical practice in this region.

5.3.2 Historical Air Photograph Review

A limited review of historical aerial photographs was completed by Kontur. Aerial photographs were obtained form the UBC GIS Department and included air photographs from 1947, 1950, 1957, 1967, 1964, 1976, 1980, 1985, 1990, 1994, and 2003. Significant signs of erosion, stream avulsion, or other slope movements could not be visually detected on the photographs. Man-made alterations, such as logging operations, construction of roads, and/or development of residential subdivisions, were noted in the areas surrounding the site.

5.3.3 Identified Potential Geotechnical Hazards

As described above, the Kitchen Creek Floodplain crosses part of the proposed subdivision. Kitchen Creek is located in a poorly-defined and meandering stream channel and the sidewalls of the stream channel show signs of localized and shallow sloughing, soil creep, and/or erosion. Deep-seated or wide-spread signs of slope instability or erosion were not observed at the time of the site visit. Minor accumulations

of rock fragments and/or dislodged blocks of bedrock were noted near or at the base of steeply-inclined bedrock slopes/steps and/or knolls/ridges. Rock fragments ranged in from about 0.3 to more than 3m in size.

Therefore, it is Kontur's opinion that the proposed subdivision, namely the area that is part of the Kitchen Creek Floodplain may be subject to stream avulsion, erosion, and/or flooding. In addition, areas located near steeply-sloped or near-vertical bedrock steps/ridges/knolls, may be subject to localized rock falls, topples, or slides. It is Kontur's opinion that the subject property is not considered to be susceptible to deep-seated, wide-spread, and/or catastrophic landslides, rockfalls, rock topples, debris flows, or snow avalanche.

5.3.4 Level of 'Landslide Safety

It is noted that the Sunshine Coast Reginal District has adopted a level of 'landslide safety' that is defined as 2% in 50 years for a seismic event, 1 in 200 years for creek flooding, and 100 years for sea level rise.

Other jurisdictions in the region generally discuss *Significant Hazard* areas as having probability of occurrences more frequently than about 1:25 to 1:100 annually and *Moderate Hazard* areas as having a probability of occurrence of between about 1:100 to 1:500 annually.

This terminology or criterion is similar to that defined by many other jurisdictions in the region, such as those established by the British Columbia Ministry of Transportation and Infrastructure (BCMOTI) and a 1993 report entitled *Hazard Acceptability Thresholds for Development Approvals by Local Government* prepared by Dr. Peter W. Cave. These guidelines may differ from the requirements of the approving authority and should be compared to acceptability guidelines considered appropriate by the approving authority.

Table 1 – Relative Terms and Ranges of Probability of Occurrence

Relative Term of Probability of Occurrence	Estimated Annual Probability of Occurrence	Comments
Very Low	< 1 in 2500 Years	-
Low	1 in 2500 to 1 in 500 years	Indicates the hazard is of uncertain significance.
Moderate	1 in 500 to 1 in 100 years	Indicates the hazard within a given lifetime is not likely, but possible. Signs of previous events, such as vegetation damage may not be easily noted.
High	1 in 100 to 1 in 20 years	Indicates that the hazard can happen within the lifetime of a person or typical structure. Events are clearly identifiable from deposits and vegetation but may not appear fresh
Very High	> 1 in 20 years	Indicates the hazard is imminent and well within the lifetime of a person or typical structure. Events occurring with a return period of 1 in 20 years or less generally have clear and fresh signs of disturbance.

Following the BCMOTI guidelines for subdivision approval, the following criteria has been referenced:

- 1 in 475 years for damaging events related to landslides;
- 1 in 200 years for damaging events related to flooding;

- 1 in 300 years for damaging events related to snow avalanche; and,
- 1 in 10,000 years for life-threatening events.

It should be noted that these guidelines do not constitute conditions for geological hazard acceptability. The frequency or probability of occurrence of Landslide Hazards can be defined by the preceding table (Table 1) based on a reference provided by the Resource Inventory Committee, Government of British Columbia Slope Task Force (1996).

5.3.5 Estimated Occurrence of Potential Geotechnical Hazards

Estimates of the annual return frequencies (probability of occurrence of a landslide) is very complex. In accordance with standard geotechnical and geological engineering practices for this area and type of development, the quantification of these values is based on the qualitative observed site conditions, sound engineering judgement, and all the information available to Kontur at the time this study was completed. Quantification of the estimated probability of occurrence for potential landslide hazards that could impact the development are summarized below.

Based on the observations, interpretations, and findings made by Kontur, the following estimates of annual probability of natural geological hazard occurrences influencing the proposed development are provided (Table 2 below).

Table 2 – Estimated Probability of Occurrences

Hazard	Relative Term of Probability
Localized Stream Avulsion or Erosion	Moderate to High
Localized Rockfalls, Topples, or Slides	Moderate to High

It is Kontur's opinion that the geotechnical hazards identified above are generally limited to localized areas and can be conventionally mitigated by suitable building setbacks/elevations and/or slope stabilization practices as described in the following sections.

Provided the geotechnical comments and recommendations herein are implemented, namely that the proposed buildings meet the minimum recommended geotechnical setbacks or appropriate slope stabilization measures are implemented as outlined in this letter, it is Kontur's opinion that the level of 'landslide safety' can then be reduced and considered to be *Low* to *Very Low,* which would meet or exceed the SCRD's minimum requirements.

5.4 Building Setbacks and/or Special Measures

As identified above, appropriate geotechnical setbacks from the crest or toe of any steep slope or stream channel should be implemented, to protect proposed buildings and infrastructure against potential rock falls, topples, or slides (localized) and/or localized stream avulsion or flooding. Where these setbacks are not achieved, special measures to stabilize or protect the slope from erosion or instability may be required as directed by the Geotechnical Engineer.

No part of the foundation for any building or critical infrastructure should be placed within the above-described geotechnical setbacks unless additional measures have been implemented under the direction of a qualified Geotechnical Engineer.

All other setbacks, such as environmental setbacks or setbacks required by the SCRD, must be implemented. The geotechnical setback may be reduced at the sole discretion of the Geotechnical Engineer on a lot-by-lot basis, provided additional measures to stabilize the slope and protect the building are considered and/or implemented.

5.4.1 Subdivision Infrastructure, Strata Lot B to J and Lots 14 to 20

From a geotechnical point-of-view and due to the bedrock-controlled topography within the subject property, geotechnical setbacks from the crest and/or base of bedrock slopes steeper than about 1.5(H):1(V) and higher than about 3m should be implemented on a lot-by-lot for any new buildings and for any subdivision infrastructure, such as roads, sidewalks, and buried utility services. The setbacks should be developed based on lot-specific information and further geotechnical review of the proposed building and may range from about 3 to 6m from the crest of the slope. Setbacks from the toe of the slope should be established by projecting a 2(H):1(V) gradient line down from the crest of the slope.

Where geotechnical setbacks are not feasible, special measures should be implemented to stabilize the slopes as appropriate. Slope stabilization measures may include scaling rock slopes, pinning loose or dislodged rock fragments to the underlying rock mass (i.e. rock bolting), use of wire mesh and/or catchment areas, and/or construction of retaining walls or buttresses.

5.4.2 Lots 1 to 7, 12, and 13

From a geotechnical point-of-view, a minimum horizontal setback of at least 15m should be established from the Natural Boundary of Kitchen Creek to provide an adequate buffer zone against potential avulsion and/or erosion protection purposes. In addition, it is recommended that a minimum Flood Construction Level of at least 1.5m above the Natural Boundary of the creek, or no less than 600mm above the existing ground surface, whichever is greater, be established.

Where this horizontal setback cannot be achieved, measures to protect the building and/or lot from potential erosion, scour, and/or flooding, should be implemented, and the geotechnical setback may be reduced to no less than a horizontal distance of about 10m from the Natural Boundary. This may include construction of training berms (similar to that proposed by KWL in 2009), raising site grades to create level building pads and protecting the perimeter/stream side against potential erosion and scour (this would require the toe of the embankment to be keyed into the ground surface or pinned to the underlying bedrock surface).

A Streamside Protection and Enhancement Area (SPEA) has been established by the Environmental Consultant (and generally follows a horizontal setback of about 13.1m from the Natural Boundary but varies due to the presence of significant trees/vegetation) and is considered acceptable from a geotechnical point-of-view. It is important to note that proposed erosion protection or slope mitigation measures required to reduce the 15m Geotechnical setback noted in the previous paragraph cannot be constructed within the SPEA.

5.5 Existing Fill Slope Below Cliff Road and above Priestland Road

The end-dumped fill slope located above Priestland Road from about Station (Sta.) 0+380 to 0+500 is considered to be marginally stable under static conditions, and unstable under seismic conditions. Therefore, it is recommended that the existing fill materials be stripped and removed to expose the underlying bedrock surface and/or otherwise stabilized. Stabilization measures may include designing and constructing a buttress or retaining wall along the toe of the slope. A suitably sized catchment zone or rockslide barrier could also be considered. Upon request, Kontur can provide detailed geotechnical design input to mitigate and/or stabilize the existing fill slope.

5.6 Foundation Design Considerations

All building foundations should be designed and constructed in accordance with the 2018 British Columbia Building Code (2018BCBC). The undisturbed natural subgrade or intact bedrock encountered at the site are considered to be competent to support the loads associated with typical lightly-loaded buildings on conventional shallow foundations. Upon request, Kontur can provide detailed geotechnical comments and recommendations for new buildings on a building-by-building basis. Foundation drainage should also be provided.

5.7 Road and Pavement Structure

The minimum recommended pavement structure for new roadways is provided in the table below:

Table – Minimum Recommended Pavement Structure

Road Structure Type	Material Description
Hot-mix Asphalt Pavement	85 mm placed in two lifts (35mm top/50mm bottom)
Road Base	100 mm of 19mm minus well-graded Crushed Gravel (MMCD Granular Base)
Road Subbase	300 mm of 75mm minus Pit Run Gravel (MMCD Pit Run Gravel Sub base)
Approved Subgrade Surface	Per Geotechnical Engineer

Subgrade preparation for new road structures should be in accordance with the recommendations provided in this report. All pavement materials should meet the latest requirements of the MMCD Specifications.

5.8 Retaining Walls

Where retaining walls are required, retaining walls may consist of Gravity or Mechanically Stabilized Earth (MSE) walls. Retaining wall systems such as Stacked Rock and Concrete Lock-block are considered appropriate. Other systems, such as Sierra-scape Walls, Allan-Bock Walls, and/or reinforced concrete, could also be considered. Retaining walls exceeding a height of 1.2m should be engineered and designed in accordance with the latest version of the EGBC Guidelines for Retaining Walls.

For Stacked Rock Walls, as-built, the outer face of the wall should be sloped no steeper than 1(H):3(V), up to a height of about 2.5m. For wall heights greater than 2.5m, geogrid panels to act as tie-backs and reinforced the backfill zone are required. Typically, the length of geogrid panels should be at least 0.8H, where H is the height of the wall, and be clamped between each row of rocks and extend into the backfill zone. This length, does not consider any additional surcharge loads placed at or near the top of the wall.

For Concrete Lock-block walls, as-built, the outer face of the wall, should be sloped no steeper than 1(H):5(V). Geogrid panels to act as tie-backs and reinforce the backfill zone are required and should be determined similarly to the Stacked Rock wall described above.

For either retaining wall type, the base of the wall should be keyed-into the subgrade surface. Where bedrock is encountered and sloping away from the wall, additional measures to prevent basal sliding may be necessary. This may include pinning the lowermost row of rocks or blocks to the bedrock surface for additional shear resistance.

Where required, Kontur can provide specific retaining all designs upon request.

5.9 Permanent Slopes and Training Berms/Erosion Protection

Permanent cut and fill slopes in soil should be sloped no steeper than about 2(H):1(V) with appropriate erosion protection measures implemented. Permanent rock fill slopes that are properly designed and constructed, or geogrid reinforced, should be sloped no steeper than about 1.5(H):1(V). Fill slopes should consist of an approved granular material and be properly compacted in accordance with the Geotechnical Engineer.

Permanent bedrock cut slopes, provided there are no adversely oriented discontinuities in the cut face, may be sloped no steeper than about 1(H):4(V). A catchment zone at the toe of the bedrock cut of at least 1.5m wide and 0.75m deep should be implemented. For bedrock cut slopes greater than 4.5m in height, the catchment area should be increased to 3m in width.

For preliminary coordination and design purposes, where training berms or embankments are constructed within the geotechnical setbacks established for Kitchen Creek, the berms or embankments should be properly designed and protected against potential erosion and/or scour. Berms should have a minimum crest width of 1.5m and the side slopes of the berm or embankments should be no steeper than about 2(H):1(V). The crest of berms and embankments should be established at an appropriate elevation. The water side of the berm or embankment should be adequality protected against erosion by placing a minimum Class 10kg Rip Rap that is at least 1m thick (measured horizontally). A layer of heavy non-woven filter fabric or a natural granular filter should be placed between the rip rap and underlying fill materials. The base of berms and/or embankments should be adequately keyed into the underlying subgrade surface for shear resistance and to avoid development of a preferential slip plane or surface. The final dimensions and rip rap size/class will be dependant on the design water levels and flow velocities established for Kitchen Creek.

It should be noted that the intent of a training berm is to mitigate potential erosion and/or stream avulsion. If the training berm is designed for flood protection purposes, the training berm would fall within the definition of a Dike as defined by the Province's *Dike Maintenance Act*. In the ladder case, all requirements set out by the *Dike Maintenance Act* would need to be followed.

5.10 Site Development

5.10.1 Temporary Excavation and Groundwater Control

Most of the project site is underlain by bedrock, or bedrock covered with a thin mantle/veneer of overburden soil. Therefore, provision for specialized excavation methods such as blasting of bedrock and large cobbles/boulders, should be planned for. Specialized methods may include the use of hydraulic rock hammering/fracturing, rock splitting, and blasting techniques, to achieve design grades and/or to excavate utility service trenches.

Where blasting techniques are implemented, it is recommended that vibration monitoring during the work be completed in addition to a pre- and post-construction survey of nearby sensitive or important buildings and/or structures.

All WorkSafeBC Regulations, Guidelines, and Best Practices, for safe and stable excavations should be implemented by the Contractor. An initial review by the Geotechnical Engineer should be completed for any excavation deeper than 1.2m below the surrounding ground surface.

5.10.2 Surface and Groundwater Control

The excavated surface must be protected and kept dry during construction. Depending on the time of year construction takes place, it should be expected that some groundwater (perched) may be encountered in the building excavation. Water accumulations in the excavation are anticipated to be able to be controlled with conventional swales, shallow sumps, and pumps.

It is the responsibility of the contractor to protect and provide a dry environment for the placement and compaction fills and/or concrete. Contractors should make their own assessment and are responsible for selecting the appropriate methods to control groundwater during construction at this site.

5.10.3 Site Preparation

Areas of foundations, roadways, or other hard-scape surfaces should be stripped and cleared of all unsuitable material including loose, saturated, organic, or other deleterious material to expose a suitable subgrade surface, such as undisturbed glacio-marine soil, or intact bedrock. The excavated subgrade surface should be reviewed and approved by the Geotechnical Engineer prior to placement of any *Engineered Fill* or concrete.

5.10.4 Engineered Fills

Where *Engineered Fill* is required to achieve design grades, the material should consist of an approved granular soil such as a 75mm minus well graded pit run sand and gravel with no more than 5% fines passing the No.200 (0.075mm) sieve or approved equivalent. *Engineered Fill* should extend at least 450mm beyond the edges of the proposed foundation or at least a horizontal distance equal to the thickness of the fill, whichever is greater.

All *Engineered Fill* materials must be placed and compacted in lifts no thicker than 300mm. The material should be near its optimum moisture content and be compacted to at least 95% of the material's *Modified Proctor Maximum Dry Density* (MPMDD) value. Field Density Test reports should be forwarded to the

Geotechnical Engineer for review and approval of compacted fill zones, or the Geotechnical Engineer should observe and witness placement and compaction of the material.

For non-structural areas, backfills may be placed and compacted as described above except to no less than 85% of the material's MPMDD value. Excavated material and/or existing fill materials may be reused in non-structural areas for general site grading purposes. These materials are not suitable for use as *Engineered Fill* in structural areas.

5.10.5 Utility/Service Trenches

Trench backfills should meet MMCD requirements for Pipe Bedding and Surround Materials and be properly compacted to at least 95% of the material's Modified Proctor Maximum Dry Density value as discussed above.

6.0 ADDITIONAL STUDY AND/OR FIELD REVIEWS

As noted above, additional study may be required to establish detailed geotechnical design inputs for various components of the proposed subdivision. This may be related to development geotechnical inputs for training berms, retaining walls, rockfall catchment areas, rockfall/slide stabilization and/or buttressing measures.

To sign-off on the work, Kontur must complete the necessary field reviews during the construction stage of the project. Field reviews may be required, but are not limited to, the following stages:

- Development of detailed geotechnical design inputs;
- Review of final Civil Designs from a geotechnical perspective;
- Bulk excavation, stripping and final excavation;
- Subgrade and bearing surface review and approvals;
- Placement and compaction of fills;
- Construction of stabilization measures, embankments, or berms; and/or,
- Installation of site drainage.

Kontur requires at least 48 hours of advanced notice to visit the site when the work is ready for review.

7.0 CLOSURE

The comments and recommendations presented in this report are based on the referenced information and Kontur's understanding of the project as described herein. If site conditions or project parameters differ from those described in this report, Kontur should be notified promptly to review geotechnical aspects of the project and provide additional or modified comments and recommendations, as deemed appropriate. Contractors should make their own assessments of subsurface conditions at this site and select the construction means and methods that are most appropriate for encountered site conditions.

This report has been prepared for the exclusive use of the Bayview Hills Developments, its agents, and the Sunshine Coast Regional District and/or their designated agents or consultants. Any use of the information contained in this letter for other than its intended purpose or by any other party must first be verified in writing by Kontur. Kontur does not accept any responsibility or damages because of any

other party relying on or using the information, interpretations, opinions, comments, and/or recommendations that are contained in this report.

Kontur trusts that the information described above meets your current requirements. If you should have any concerns or questions, please do not hesitate to contact the undersigned.

Sincerely,

Kontur Geotechnical Consultants Inc.

Per:

Ziad Merdas
Geotechnical Engineer

Per:

Matthew Yip MEng PEng
Principal |Geotechnical Engineer

APPENDIX A

Interpretation and Use of Study and Report Document

INTERPRETATION AND USE OF STUDY AND REPORT DOCUMENT

1.0 STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental engineering or consulting.

2.0 COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3.0 BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4.0 USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS "APPROVED USERS". The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

5.0 INTERPRETATION OF THE REPORT

Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations, or building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

Reliance on Provided information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

To avoid misunderstandings, KONTUR should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by KONTUR. Further, KONTUR should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor's work is being carried out in general conformity with KONTUR's recommendations. Any reduction from the level of services normally recommended will result in KONTUR providing qualified opinions regarding adequacy of the work.

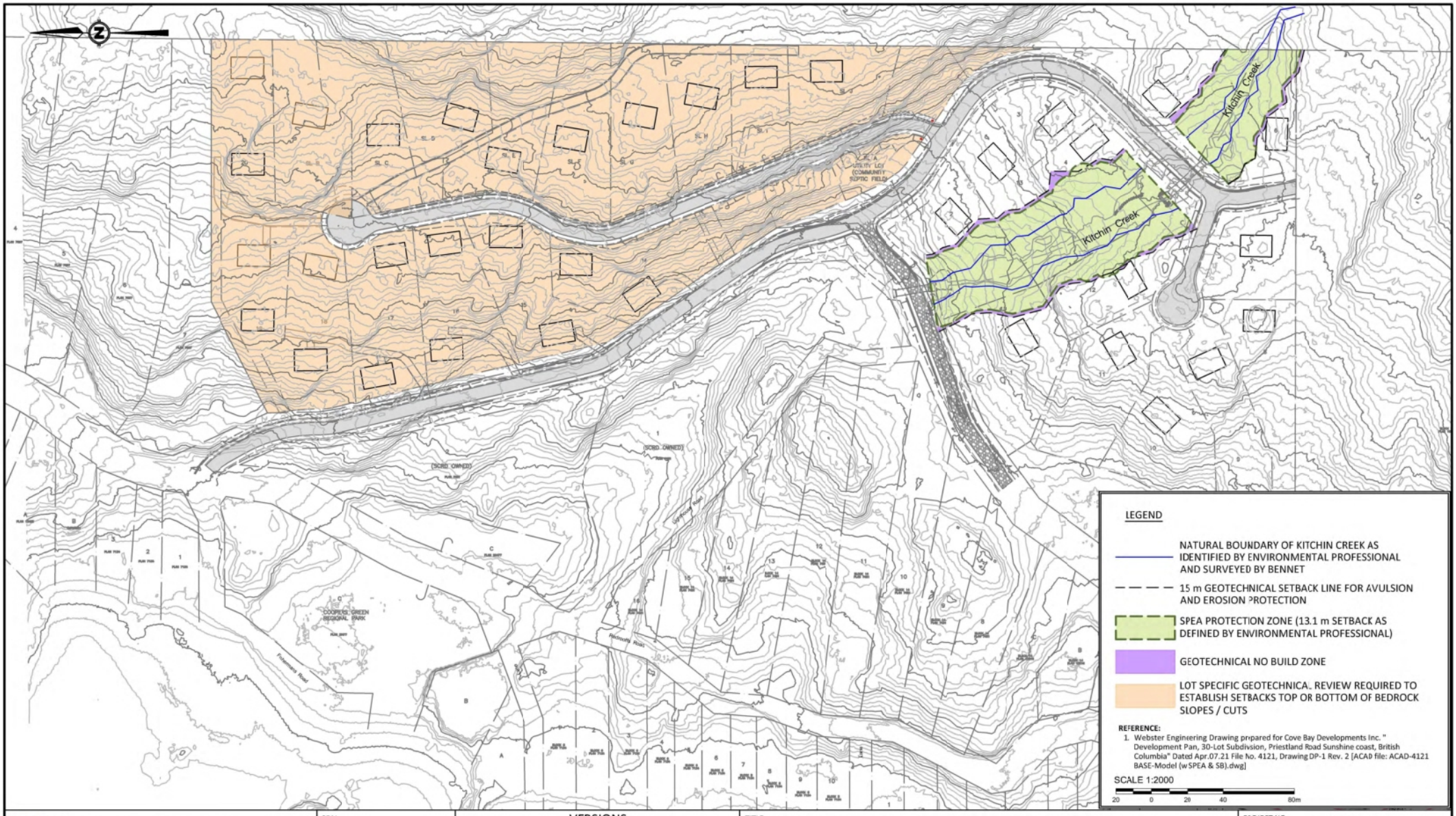
6.0 ALTERNATE REPORT FORMAT

When KONTUR submits both electronic file and hard copies of reports, drawings and other documents and deliverables (KONTUR's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by KONTUR shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by KONTUR shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of KONTUR's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except KONTUR. The Client warrants that KONTUR's instruments of professional service will be used only and exactly as submitted by KONTUR.

The Client recognizes and agrees that electronic files submitted by KONTUR have been prepared and submitted using specific software and hardware systems. KONTUR makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

APPENDIX B
Figures



November 4, 2022 1:49:53 PM

KONTUR GEOTECHNICAL CONSULTANTS inc.
Unit 10', 2071 Kingsway Avenue, Port Coquitlam, B.C. V3C 6N2
t. 1 (778) 730 1747 | toll-free. +1 (833) 301 7575 | e. info@kontur.ca | www.kontur.ca

SEAL

VERSIONS

NO	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	2022-11-03
1	ISSUED FOR REVIEW	2022-11-04

TITLE: FIGURE 1: GEOTECHNICAL MARKUP OF DEVELOPMENT PLAN

PROJECT NO.: K-221130-00

CLIENT: BAYVIEW HILLS AT HALFMOON BAY - PARCEL A

DATE: 2022-11-03 | SCALE: 1:2000 | DWG NO.: FIGURE 1

PROJECT LOCATION: PRIESTLAND ROAD, HALFMOON BAY, B.C.

DRAFT: SG | DESIGN: ZM | CHECK: MY

APPENDIX C
Photographs

Photograph – Bedrock Cut above Priestland Road (Sta. 0+260 to 0+340)

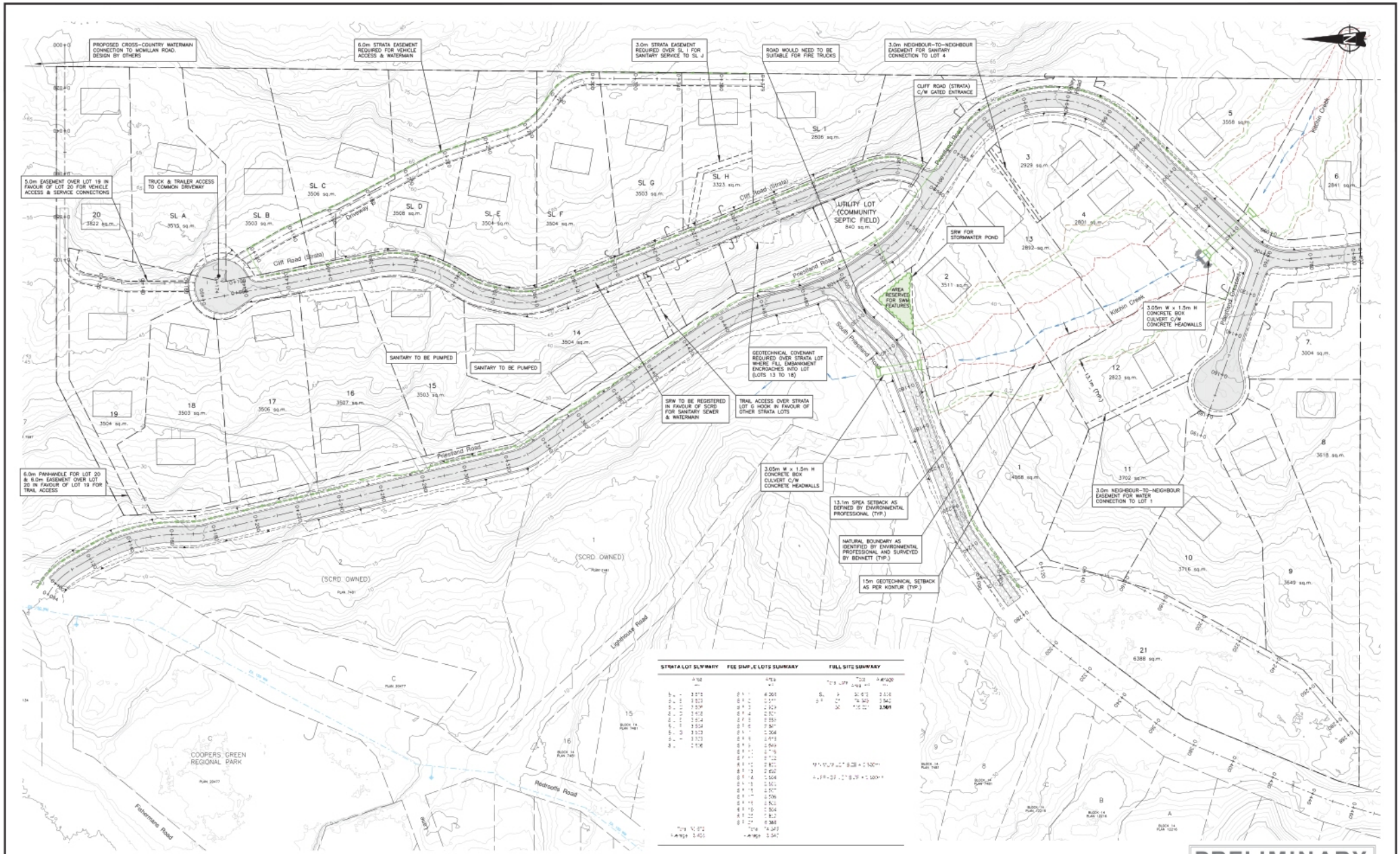
Photograph – Bedrock slopes above Cliff Road (Near Strata Lots)

Photograph – Existing end-dumped Fill Slope above Priestland Road (Sta. 0+380 to 0+500)

Photograph – Large loose rock fragments (SL E and/or F)

Appendix C – Subdivision Development Plan (Webster Engineering Ltd; November 7, 2022,)

(1 page)



no.	date	revision	chk'd
2	APR.05.22	DP SUBMISSION	JAT
1	MAY.20.21	SUBMISSION TO MOTI	JAT

client: COVE BAY DEVELOPMENTS INC.

project: 30 - LOT SUBDIVISION, PRIESTLAND ROAD SUNSHINE COAST, BRITISH COLUMBIA

STEEP ROCKY TERRAIN SPECIALISTS
WEBSTER ENGINEERING LTD
PROFESSIONAL ENGINEERS — LAND DEVELOPMENT CONSULTANTS
212-828 HARBOURSIDE DRIVE, NORTH VANCOUVER, B.C. V7P 3R9 604-893-0458

EGBC PERMIT No. 1001444

approved

designed by	J.A.T.
drawn by	S.T.
checked by	H.K.G.
date	APR.07.21

title: DEVELOPMENT PLAN

scales hor.	1:750
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file no.	4121
drawing no.	DP-1
rev.	2