

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

**Riparian Areas Protection Regulation: Assessment Report**

Please refer to submission instructions and assessment report guidelines when completing this report.

Date

**I. Primary QEP Information**

First Name	Robert		Middle Name	William	
Last Name	Crandall				
Designation	Technologist		Company	Swordfern Environmental	
Registration #	27767		Email	[REDACTED]	
Address	[REDACTED]				
City	[REDACTED]	Postal/Zip	[REDACTED]	Phone #	[REDACTED]
Prov/state	B.C.		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	Pat & Sharon		Middle Name		
Last Name	Smith & Combs				
Company					
Phone #	[REDACTED]		Email	[REDACTED]	
Address	[REDACTED]				
City	Lake Cowichan	Postal/Zip	V0R2G0		
Prov/state	B.C.		Country	Canada	

**IV. Development Information**

Development Type	Single Family Residential				
Area of Development (ha)	0.03	Riparian Length (m)	175.7		
Lot Area (ha)	1.01	Nature of Development	Residential single family house (New).		
Proposed Start Date	<input type="text" value="May 3&lt;sup&gt;rd&lt;/sup&gt; 2025"/>		Proposed End Date	<input type="text" value="Sept.30&lt;sup&gt;th&lt;/sup&gt; 2026"/>	

**V. Location of Proposed Development**

Street Address (or nearest town)	Johel Road Lot 20, District Lot 48, Cowichan Lake District, Plan 34628 except part in plan VIP 57555. Will likely be 232 Johel Road civic.				
Local Government	Town of Lake Cowichan		City	Lake Cowichan	
Stream Name	Grants Lake & unnamed Ditch				
Legal Description (PID)	000-299-162		Region	Vancouver Island	
Stream/River Type	Lake		DFO Area	South Coast	
Watershed Code	9202577582				
Latitude	48	49	17	Longitude	124 02 06

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed.  
Insert that form immediately after this page.

**Table of Contents for Assessment Report**

	<b>Page Number</b>
1. Description of Fisheries Resources Values .....	3
2. Results of Riparian Assessment (SPEA width) .....	4 - 8
3. Site Plan .....	9
4. Measures to Protect and Maintain the SPEA (detailed methodology only).	
1. Danger Trees.....	10
2. Windthrow.....	10
3. Slope Stability.....	10
4. Protection of Trees.....	10
5. Encroachment .....	10
6. Sediment and Erosion Control.....	11
7. Floodplain.....	11
8. Stormwater Management.....	11
5. Environmental Monitoring .....	12
6. Photos .....	13 - 17
7. Assessment Report Professional Opinion .....	18
8. House designs.....	19 - 23

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

(Provide as a minimum: Species present, type of fish habitat present, description of current riparian vegetation condition, connectivity to downstream habitats, nature of development, specific activities proposed, timelines)

<u>Stream Code:</u> 9202577582				
<i>Stream Name: Kwassin and Grant Lakes, Sharon's Creek and Unnamed Ditch</i>				
<u>Operational Management Unit:</u> Lake Cowichan South				
<u>Municipal:</u> Town of Lake Cowichan				
A) <u>BIOPHYSICAL OVERVIEW:</u> This system includes two shallow lakes with a combined area of 7 HA; connected by a ditch. They receive drainage from numerous small wetlands to the southeast and west. The lakes drain to the Cowichan River via a man-made spill channel, which was blasted out in 1971. These streams are no longer fish bearing and are largely culverted in the Town of Lake Cowichan.				
<u>GRANT LAKE</u>				
2.2 HA	180	43,000	2.5	24
B) <u>FISH UTILIZATION LAND LIMITING FACTORS</u>				
Angling and snorkel surveys (in Kwassin and Grant lakes) in 1985 and 1986 revealed a large population of sticklebacks but no other fishes. In 1979 the Fish and Wildlife Branch lake survey, netting yielded no fish. (Kwassin and Grant Lakes).				
Prior to diversion of its headwater flow, a tributary stream supported a strong population of coho which spawned in the creek and the connector channel between the two lakes. Spawning also occurred in the inlet to Grant Lake.				
-Ted Burns R.P. Bio				

**Development Proposal:**

Landowners Pat Smith and Sharon Combs have plans to construct a house on Lot 20.

**Property Description:**

The subject property is previously undeveloped; however, portions were cleared in past decades. The remaining trees consist of Douglas Fir, Big Leaf Maple, Hemlock, Western Red Cedar, Red Alder, Shore Pine and Dogwood. The understory consists of Swordfern, Bracken, Oregon Grape, Salal, BC Trailing Blackberry, Indian Plum, Salmon Berry, Nootka Rose and one Holly bush, a small amount of Scottish Broom and H. Blackberry can be found in cleared areas. Labrador Tea (*Ledum groenlandicum*) is also present. The riparian fringe consists of Sweet Gale, Hardhack, Willow, Carex Reed grasses and sedges. The slope over the property ranges from 1.5% to 2%.

**2. Results of Detailed Riparian Assessment**

Refer to Section 3 of Technical Manual

Date: April 2nd 2025

Description of Water bodies involved (number, type)

1 Ditch unnamed

Stream	
Wetland	
Lake	
Ditch	X
Number of reaches	1
Reach #	1

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

	Channel Width(m)	Gradient (%)	
starting point	2.1		I, <u>(Robert Crandall)</u> , hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i> . b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> . 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 technical manual to the Riparian Areas Protection Regulation.
upstream	1.8	1.2	
	2.0		
	1.4		
downstream	1.5		
	1.3		
	1.5		
	1.5		
	1.3		
	0.9		
	1.2	1.3	
Total: minus high /low	13.5	2.5	
mean	1.5	1.25	
	R/P	C/P	
Channel Type	X		

**Site Potential Vegetation Type (SPVT)**

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

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

I, (Robert Crandall), 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 (Pat Smith & Sharon Combs).  
 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 technical manual to the Riparian Areas Protection Regulation.

Polygon No:   
 SPVT Type: 

LC	SH	TR
<input type="text"/>	<input type="text"/>	<input checked="" type="text" value="x"/>

Method employed if other than TR

Polygon No:   
 SPVT Type: 

LC	SH	TR
<input type="text"/>	<input type="text"/>	<input type="text"/>

Method employed if other than TR

Polygon No:   
 SPVT Type: 

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Method employed if other than TR

**Zone of Sensitivity (ZOS) and resultant SPEA**

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

LWD, Bank and Channel Stability ZOS (m)   
 Litter fall and insect drop ZOS (m)   
 Shade ZOS (m) max

South bank Yes  No

Ditch Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)

Ditch Fish Bearing Yes  No  If non-fish bearing inserts no fish bearing status report

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

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

LWD, Bank and Channel Stability ZOS (m)   
 Litter fall and insect drop ZOS (m)   
 Shade ZOS (m) max

South bank Yes  No

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

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

LWD, Bank and Channel Stability ZOS (m)

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

Litter fall and insect drop ZOS (m)				
Shade ZOS (m) max		South bank	Yes	No
<b>SPEA maximum</b>		(For ditch use table3-7)		

I, (Robert Crandall), 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 (Pat Smith & Sharon Combs).

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 technical manual to the Riparian Areas Protection Regulation.

**Comments**

This watercourse is a man-made ditch that collects storm water from back yards and has no significant headwaters. It is ephemeral. I gave it fish bearing status so there is a 5m SPEA. There are no plans to develop on south side of little ditch.

**2D. Results of Detailed Riparian Assessment**

Refer to Section 3 of Technical Manual

Date: April 2<sup>nd</sup> 2025

Description of Water bodies involved (number, type)

1 Lake Grant's Lake

Stream	
Wetland	
Lake	X
Ditch	
Number of reaches	1
Reach #	1

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

Channel Width(m)	Gradient (%)
starting point upstream	
downstream	
Total: minus high /low	

I, (Robert Crandall), hereby certify that:

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

f) I am qualified to carry out this part of the assessment of the development proposal made by the developer (Pat Smith & Sharon Combs) ;

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

h) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

mean	<input type="text"/>	<input type="text"/>	<input type="text"/>
	R/P	C/P	S/P
Channel Type	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Site Potential Vegetation Type (SPVT)**

	Yes	No	
SPVT Polygons	<input type="text"/>	X	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes
			<p>I, (Robert Crandall), hereby certify that:</p> <p>e) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>f) I am qualified to carry out this part of the assessment of the development proposal made by the developer (Pat Smith &amp; Sharon Combs) ;</p> <p>g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and</p> <p>h) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.</p>
Polygon No:	<input type="text"/>		Method employed if other than TR
SPVT Type	LC	SH	TR
	<input type="text"/>	<input type="text"/>	X
Polygon No:	<input type="text"/>		Method employed if other than TR
SPVT Type	LC	SH	TR
	<input type="text"/>	<input type="text"/>	<input type="text"/>
Polygon No:	<input type="text"/>		Method employed if other than TR
SPVT Type	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Zone of Sensitivity (ZOS) and resultant SPEA**

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)	15						
Litter fall and insect drop ZOS (m)	15						
Shade ZOS (m) max	15	South bank	Yes	<input type="text"/>	No	X	
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)					<input type="text"/>	
Ditch Fish Bearing	Yes	<input type="text"/>	No	<input type="text"/>	If non-fish bearing insert no fish bearing status report		
<b>SPEA maximum</b>	<b>15</b>	(For ditch use table3-7)					

Segment No:	<input type="text"/>	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)	<input type="text"/>						

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

Litter fall and insect drop ZOS (m)	<input type="text"/>					
Shade ZOS (m) max	<input type="text"/>	South bank	Yes	<input type="text"/>	No	<input type="text"/>
<b>SPEA maximum</b>	<input type="text"/>	(For ditch use table3-7)				
Segment No:	<input type="text"/>	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)	<input type="text"/>					
Litter fall and insect drop ZOS (m)	<input type="text"/>					
Shade ZOS (m) max	<input type="text"/>	South bank	Yes	<input type="text"/>	No	<input type="text"/>
<b>SPEA maximum</b>	<input type="text"/>	(For ditch use table3-7)				

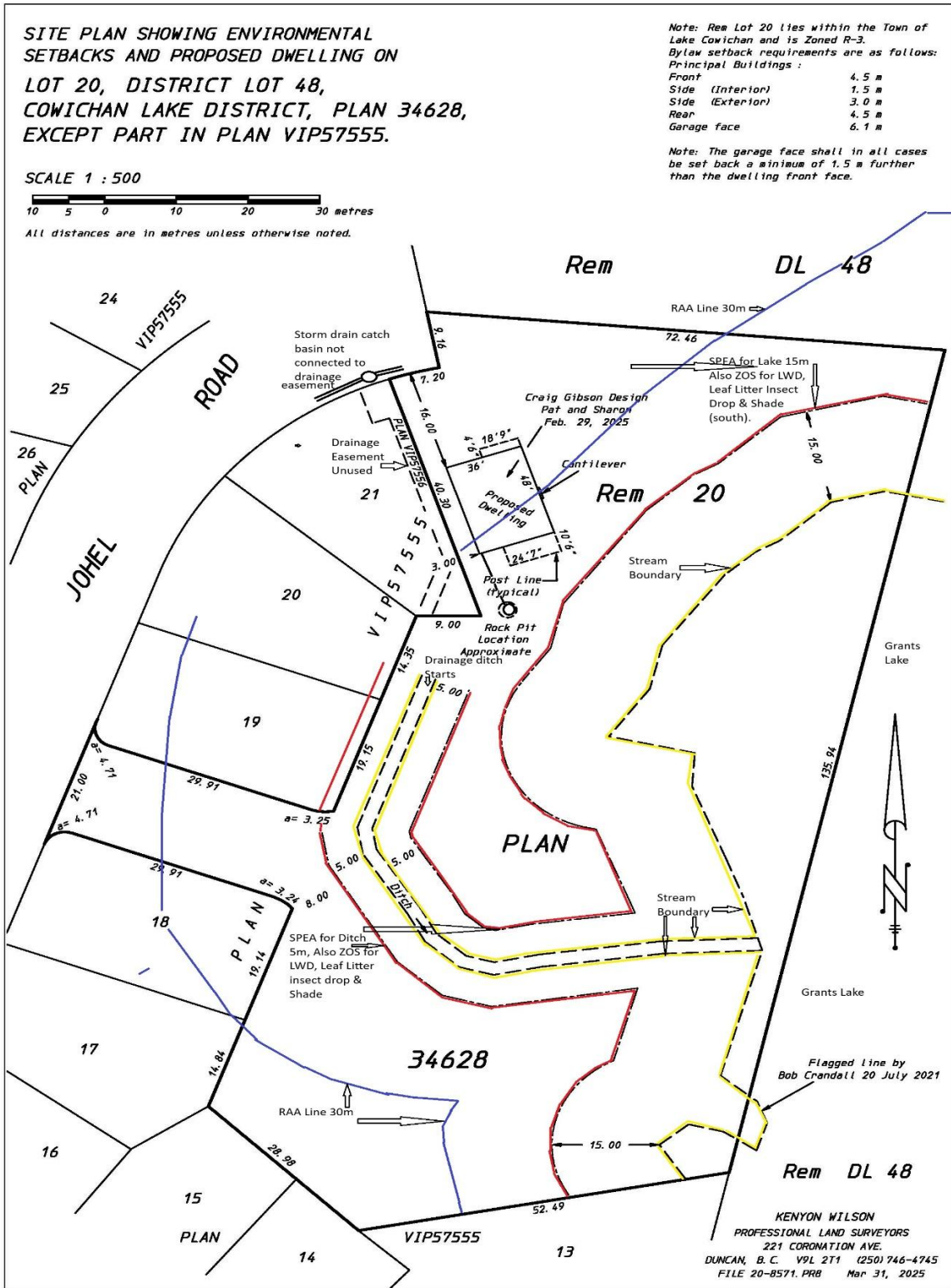
I, (Robert Crandall), hereby certify that:

- e) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
- f) I am qualified to carry out this part of the assessment of the development proposal made by the developer
- g) (Pat Smith & Sharon Combs) ;
- h) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
- i) In carrying out my assessment of the development proposal, I have followed the technical manual to the Riparian Areas Protection Regulation.

**Comments**

Development of one house is proposed at Johel Road on north side of Grant Lake.

Site Plan next page:



FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

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

This section is required for detailed assessments. Attach text or document files, as need, for each element discussed in Part 4 of the RAPR. It is suggested that documents be converted to PDF *before* inserting into the assessment report. Use your “return” button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

1. Danger Trees	There are no danger trees on the property.
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>j) I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>k) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>l) 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 Minister’s technical manual to the Riparian Areas Protection Regulation.</p>	
2. Windthrow	All trees are windfirm and without root rot nor heat blisters. There are no plans to remove any trees at this time.
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Pat Smith &amp; Sharon Combs</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister’s technical manual to the Riparian Areas Protection Regulation.</p>	
3. Slope Stability	The lot is stable with only a 1.5-2% grade.
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister’s technical manual to the Riparian Areas Protection Regulation.</p>	
4. Protection of Trees	This property should see no tree cutting as the proposed build is in an open area. The SPEA line/s protect the trees and will be marked well.
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister’s technical manual to the Riparian Areas Protection Regulation.</p>	
5. Encroachment	The SPEA line will be permanently denoted during house construction which will include permanent demarcation of SPEA line with live fence, row of boulders or split rail fence prior to receiving an occupancy permit.
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p>	

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report

<p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.</p>	
<p>6. Sediment and Erosion Control</p>	<p>During construction a Silt Fence will be installed along the SPEA line adjacent to the house build envelope to ensure that sediment does not enter the water. Straw bales (dispersed) may also be required during precipitation events greater than 50mm daily. A foundation will not be part of the house plans (slab only)= no excavation.</p>
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and in carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.</p>	
<p>7. Stormwater Management</p>	<p>During construction perimeter drains will carry storm water to catchment infiltration chamber. See site plan.</p>
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u> ;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.</p>	
<p>8. Floodplain Concerns (highly mobile channel)</p>	<p>The average elevation of the subject property is 173m while flood plain elevation is 169m. The waters are not highly mobile and are rather still and at times stagnant.</p>
<p>I, <u>(Robert Crandall)</u>, hereby certify that:</p> <p>a. I am a qualified environmental professional, as defined in the Riparian Areas Protection Regulation made under the <i>Riparian Areas Protection Act</i>;</p> <p>b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>(Pat Smith &amp; Sharon Combs)</u>;</p> <p>c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Minister's technical manual to the Riparian Areas Protection Regulation.</p>	

**Section 5. Environmental Monitoring**

Attach text or document files explaining the monitoring regimen Use your "return" button on your keyboard after each line. It is suggested that all document be converted to PDF *before* inserting into the PDF version of the assessment report. Include actions required, monitoring schedule, communications plan, and requirement for a post development report.

***Pre-construction***

A pre-construction meeting will be held with the landowner and his contractor to finalize construction plans and ensure that no impacts will occur. Best Management Practices will be utilized to ensure sediment and erosion control ie; Silt fencing and straw bales where required.

***Construction***

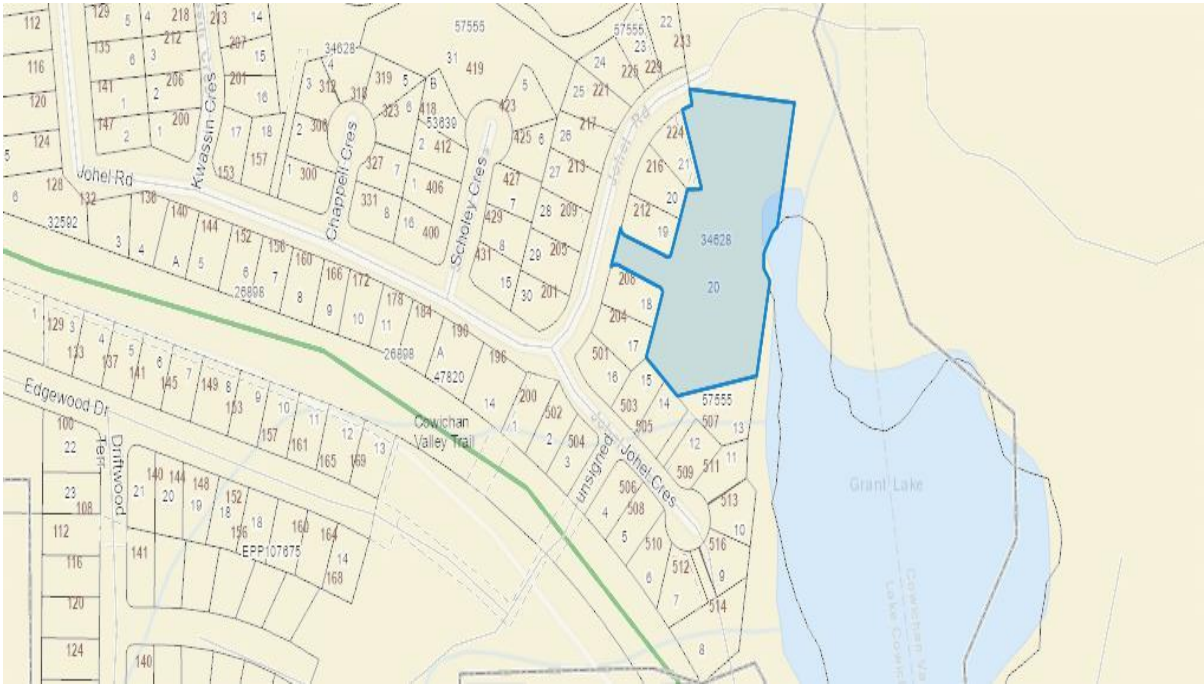
The site will be monitored during construction and always following precipitation events (50mm per day or greater). During the installation of the storm water infiltration pit the QEP will be onsite environmental monitoring and best management practices (BMP s) for erosion and sediment control will be utilized. Spill kits will be on site. Any disturbed soils will have native grass seed mix cast or native plants added.

***Post Construction***

A post construction report that describes SPEA protection, compliance, enhancement and makes recommendations for future action will be prepared. The roof top will drain to infiltration pit in order to reduce run off. Native grass seeding will take place in the final dressing stage upon completion of the work.

**Section 6. Photos**

Provide a description of what the photo is depicting, and where it is in relation to the site plan.



Civic Map



Aerial View

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report



Looking south and measuring SPEA 15m from stream boundary of Grants Lake.



Looking east from southwest side of Lot 20 with Grants Lake in distance. No proposed development here.



Measuring and staking SPEA at southeast corner of Lot 20. No development proposed here.

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report



Staking SPEA(5m) and stream boundary at little unnamed ditch.



SPEA 5m staked for little unnamed ditch.

FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report



Staking 5m SPEA for little ditch.



Little unnamed ditch starts here (orange flag) at the back of lot 20 (civic #216 Johel Road) & lot 21 (civic #224 Johel Road). rooftop storm water flows from these houses to this little ditch.



Staking SPEA 15m north side of Grant Lake.

# FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report



The truck with open door is the proposed new house location.



Measuring and staking Grant Lake SPEA 15m (north side).



Staking the 15m SPEA on north side of Grant Lake this location is actually off subject property (lot 20) to the north.

Section 7. Professional Opinion

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

Date

1. I/We Robert  
Crandall

---

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

hereby certify that:

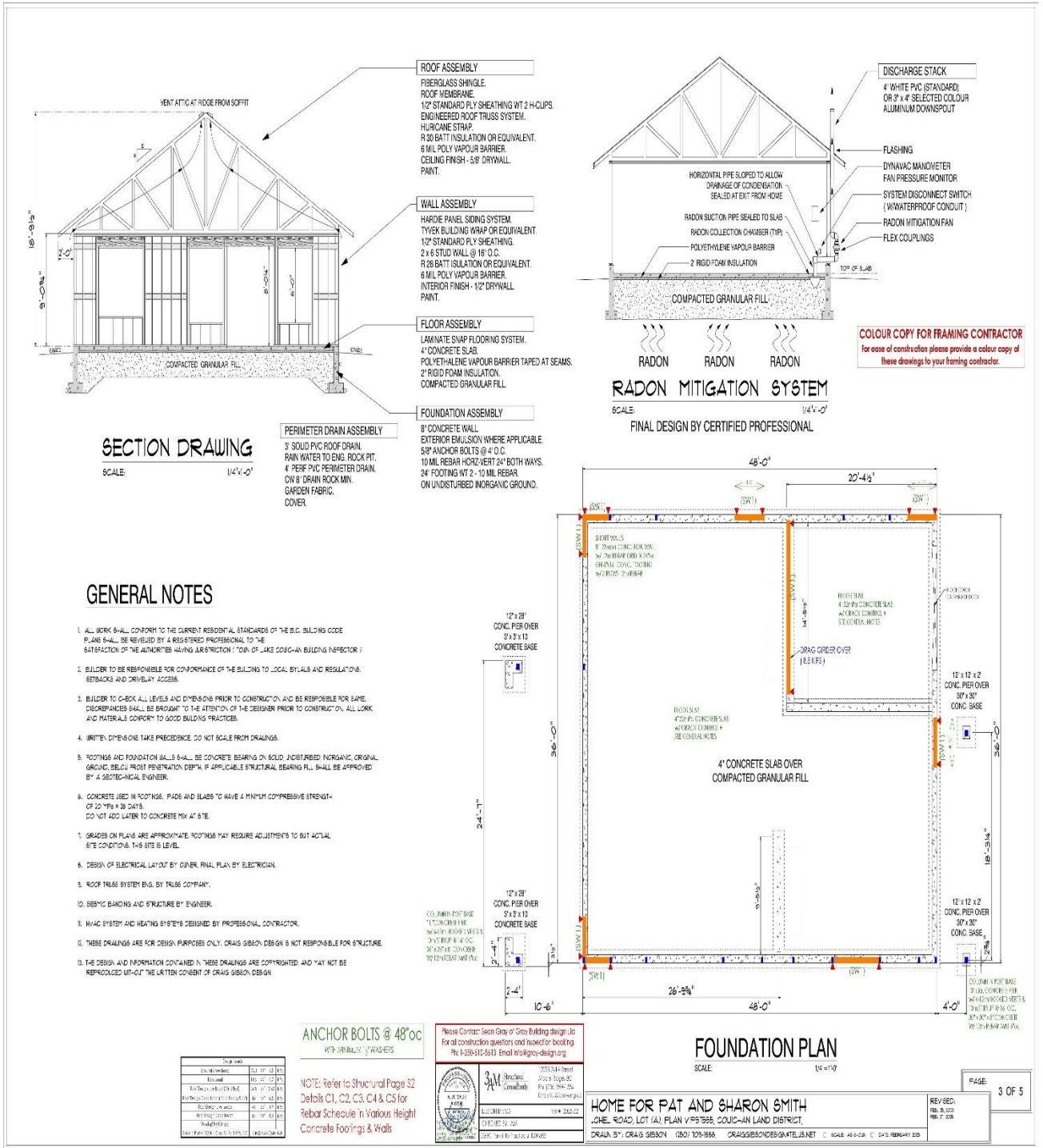
- a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Protection Regulation made under the *Riparian Areas Protection Act*;
- b) I am/We are qualified to carry out the assessment of the proposal made by the developer (Pat Smith & Sharon Combs), which proposal is described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

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:
- a)  the site of the proposed development is subject to undue hardship, (if **applicable, indicate N/A otherwise**) and
  - b)  the proposed development will meet the **riparian protection standard** if the development proceeds as proposed in the report and complies with the measures, if any, recommended in the report.

**House design plan on next pages:**



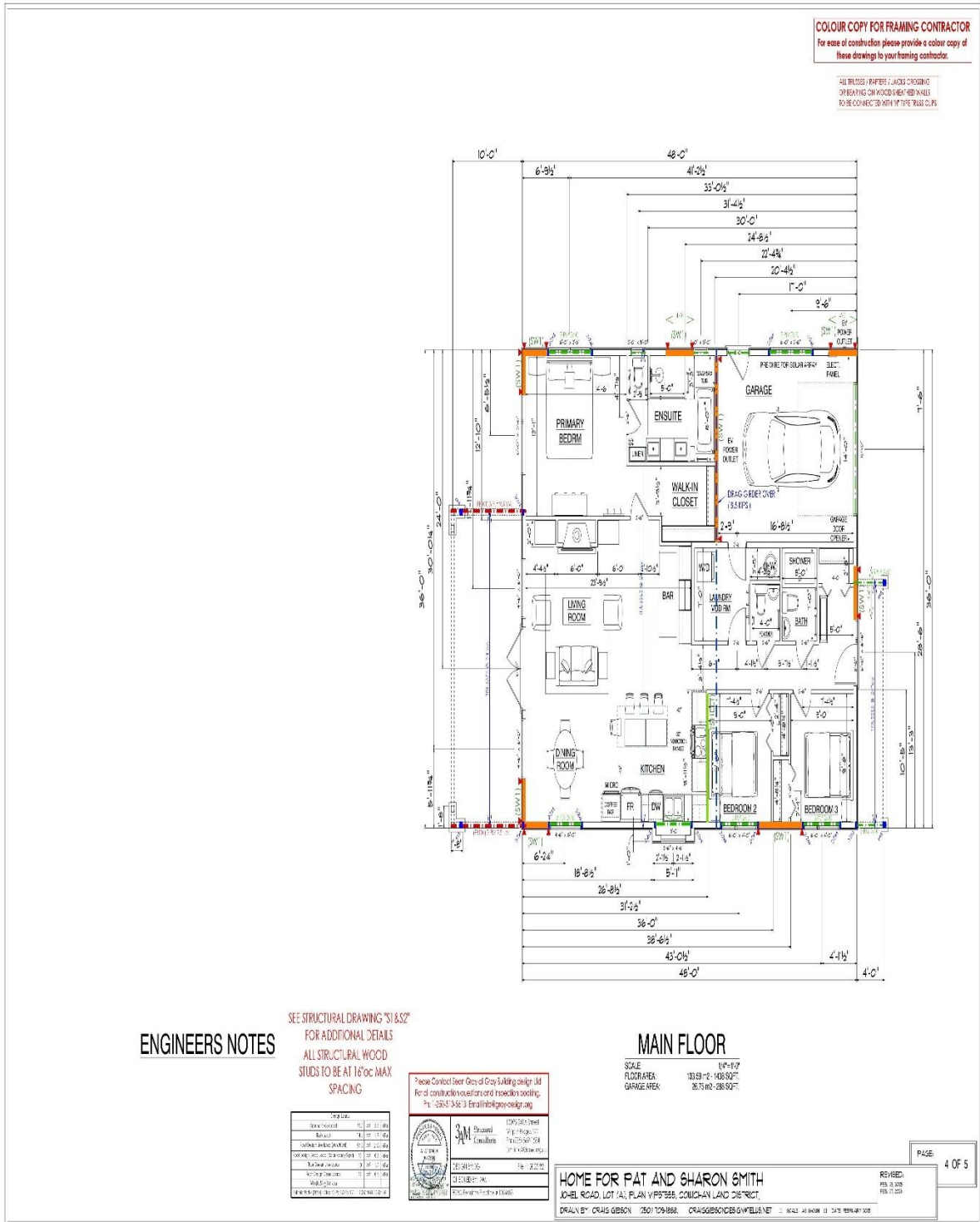




Foundation plan notes perimeter drains to rock pit infiltration chamber. Rock pit is on Land Surveyors site plan.

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FORM 1

Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report



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Riparian Areas Protection Regulation - Qualified Environmental Professional - Assessment Report