REGIONAL DISTRICT OF NANAIMO

SPECIAL ELECTORAL AREA PLANNING COMMITTEE
TUESDAY, NOVEMBER 25, 2008
6:00 PM

(RDN Board Chambers)

A G E N D A

PAGES

CALL TO ORDER

DELEGATIONS

COMMUNICATIONS/CORRESPONDENCE

PLANNING

DEVELOPMENT PERMIT APPLICATIONS

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DEVELOPMENT VARIANCE PERMIT APPLICATIONS

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ADDENDUM

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

NEW BUSINESS

ADJOURNMENT

IN CAMERA

REGIONAL DISTRICT OF NANAIMO

	CAO APPROVAL	
S. EAP	✓	Nov 25 '08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO:	Geoff Garbutt Manager, Current Planning	**DATE:**	November 12, 2008
FROM:	Lainya Rowett Planner	**FILE:**	3060 30 60825
SUBJECT:	**Development Permit Application No. 60825 – Ron Einarsen Electoral Area 'A' – 1570 Raines Road**		

PURPOSE

To consider a request for the issuance of a Development Permit for the construction of an accessory building (garage) on a property located at 1570 Raines Road, legally described as Lot A, Section 5, Range 5, Cedar District, Plan VIP82644.

BACKGROUND

The applicant proposes to construct an accessory building (garage) within the rear yard of an existing residential lot located within the Nanaimo River floodplain. The property (0.32 ha) is designated within the Streams, Nesting Trees, and Nanaimo River Floodplain and Fish Habitat Protection Development Permit Areas, pursuant to the "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Bylaw No. 1240, 2001" *(see Attachment No. 1 for Subject Property Map).* The location of the proposed accessory building is outlined on *Schedule No. 2* and the elevations for the proposed accessory building are outlined in *Schedule No. 3.*

Sustainability Implications

The proposed building would be located on an existing lot outside of any environmentally sensitive areas. The Geotechnical Engineer has confirmed that the proposed building is geo-technically safe and suitable for the intended use as a garage (non-habitable). The building would also be constructed on a foundation that is certified by a Structural Engineer, and that the foundation would remain intact during a 200-year flood. Additionally, the applicant does not propose to remove any trees to accommodate the construction.

ALTERNATIVES

1. To approve the request for Development Permit No. 60825 subject to the conditions outlined in Schedules No. 1 to 4.
2. To deny the request for a Development Permit.

LAND USE & DEVELOPMENT IMPLICATIONS

The applicant proposes to construct an accessory building (garage) approximately 112 square metres in floor area within the rear yard of the subject property. Earlier this year, the applicant placed an engineered fill (gravel) building pad in the location of the proposed garage. Subsequently, it was identified that a Development Permit would be required because the proposed development is located within the Nanaimo River Floodplain as shown on the provincial floodplain mapping.

The proposed development is located outside of any environmentally sensitive areas, streams, or fish habitat, so a Development Permit is not required to address the Streams, Nesting Trees, and Nanaimo River Floodplain, and the Fish Habitat Protection Development Permit Areas. The applicant's surveyor has also confirmed that no setback or height variances are required to accommodate the proposed structure.

Given the location of the subject property within the Nanaimo River floodplain it is impossible to locate the proposed structure outside of the floodplain. A geotechnical assessment of the property was conducted by Lewkowich Geotechnical Engineering Ltd. to determine subsurface conditions and bearing capacities in the location of the proposed garage. The report concluded that the property and proposed garage would be inundated with floodwater in the event of a 200-year flood, as these structures are below the design flood level (*Schedule No. 4*). The proposed building is exempt from meeting the flood construction elevations of the Regional District of Nanaimo Board Policy No. B1.5 because the building is not intended to store goods damageable by flood waters, toxic materials, or materials that may contaminate the environment.

The Geotechnical report also stated that floodwaters would not cause erosion of soils around or under the proposed building, and that there is significant storage volume for floodwater on the subject property and adjacent lands. The report concluded that the proposed garage, being uninhabited, would be geotechnically safe and suitable for the intended use, provided the Engineer's recommendations are followed. The applicant would be required to retain an engineer through the Building Permit process to certify that these recommendations are met. Staff further recommends the applicant be required to register a Section 219 restrictive covenant against the subject property title, which includes the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd., and includes a save harmless clause releasing the Regional District of Nanaimo from all losses and damages as a result of flooding.

SUMMARY/CONCLUSIONS

This is an application for a Development Permit to facilitate the construction of an accessory building (garage) within an existing residential property. A Development Permit is required because the proposed development is located within the Streams, Nesting Trees, and Nanaimo River Floodplain Development Permit Area. Given that the geotechnical recommendations will be conditional to this permit, and the absence of negative impacts of the proposed building on the subject or neighboring properties, staff recommends approval of the Development Permit as submitted.

RECOMMENDATION

That Development Permit No. 60825 submitted by Harold Einarsen for the construction of an accessory building within the Streams, Nesting Trees, and Nanaimo River Floodplain Development Permit Area, and the Fish Habitat Protection Development Permit Area for the parcel legally described as Lot 1, Section 17, Range 7, Cranberry District, Plan 21852 be approved, subject to the conditions outlined in Schedule No. 1.

Report Writer

General Manager Concurrence

Manager Concurrence

CAO Concurrence

Schedule No. 1
Development Permit No. 60825
Conditions of Approval

The following conditions are to be completed as part of Development Permit No. 60825:

1. **Proposed Development**

   This development permit allows the development of an accessory building (garage) on the parent parcel as shown on Schedules No. 2 and 3. No other development or construction on the proposed parcels is considered by this permit.

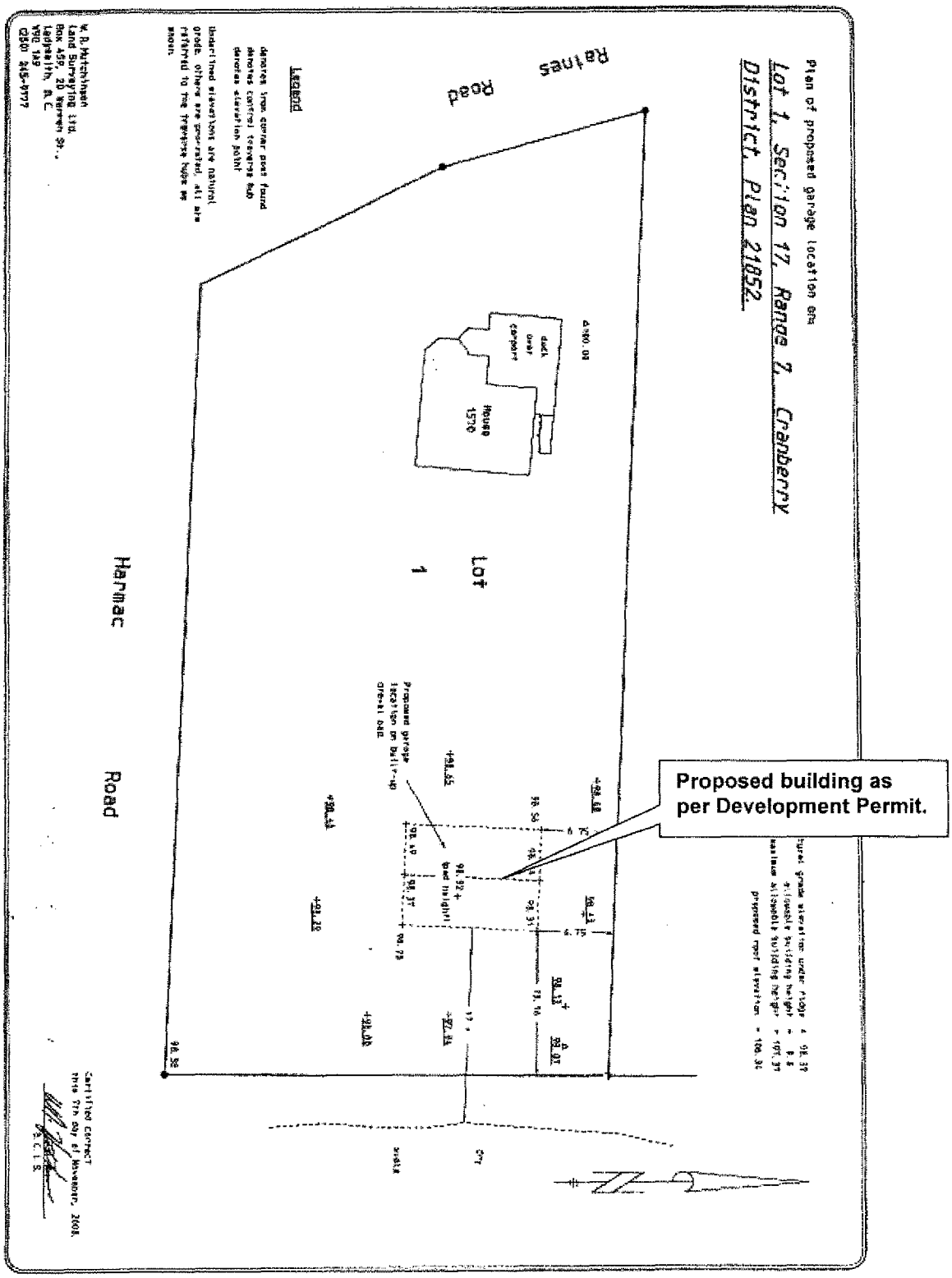
2. **Geotechnical**

   The proposed building must be constructed in accordance with the recommendations of the Geotechnical Report prepared by Lewkowich Geotechnical Engineering Ltd., dated August 20, 2008 and amended on September 25, 2008 (attached herein as Schedule No. 4).

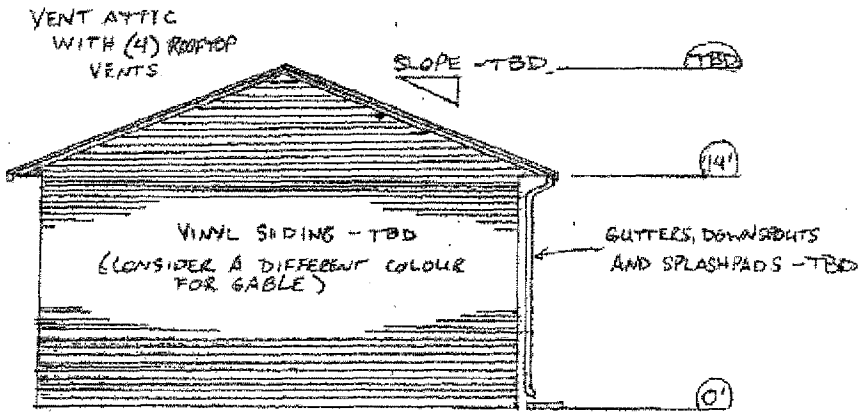
3. **Restrictive Covenant**

   Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a Section 219 restrictive covenant containing the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated August 20, 2008, and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of flooding.

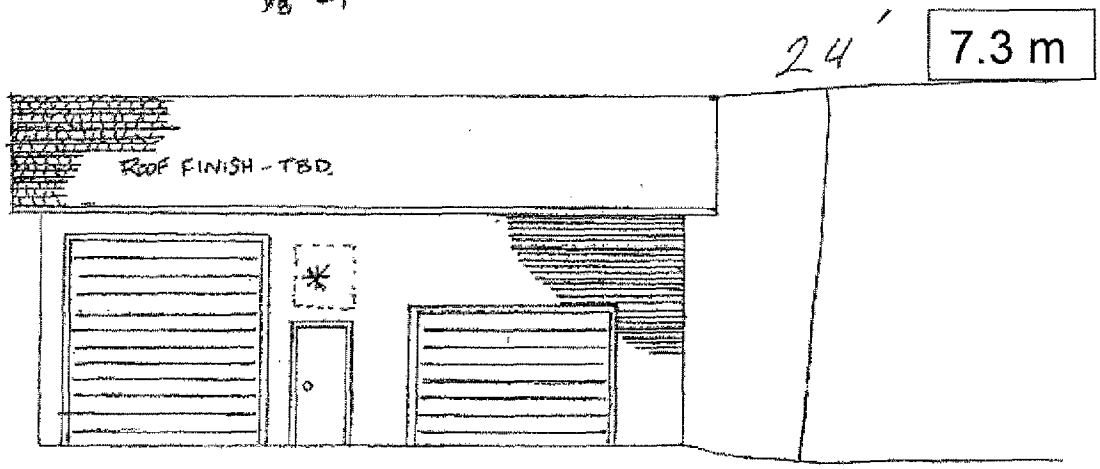
Schedule No. '2'
Development Permit No. 60825
Survey Site Plan for 1570 Raines Road



Schedule No. '3'
Development Permit No. 60825
Proposed Building Elevations (1 of 3)



SIDE ELEVATION
1/8" = 1'

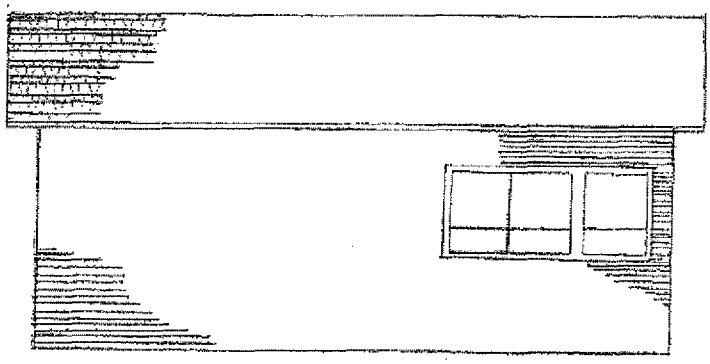


FRONT ELEVATION
1/8" = 1'

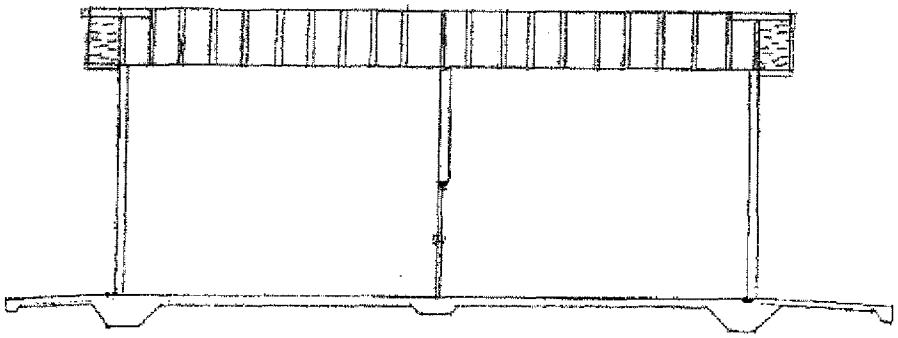
* OPTIONAL WINDOW: IF DESIRED DELETE LINTEL (2) AND CONTINUE LINTEL (1) OVER DOOR AND ADD (3) 2x6 MID SUPPORT

3

Schedule No. '3'
Development Permit No. 60825
Proposed Building Elevations (2 of 3)



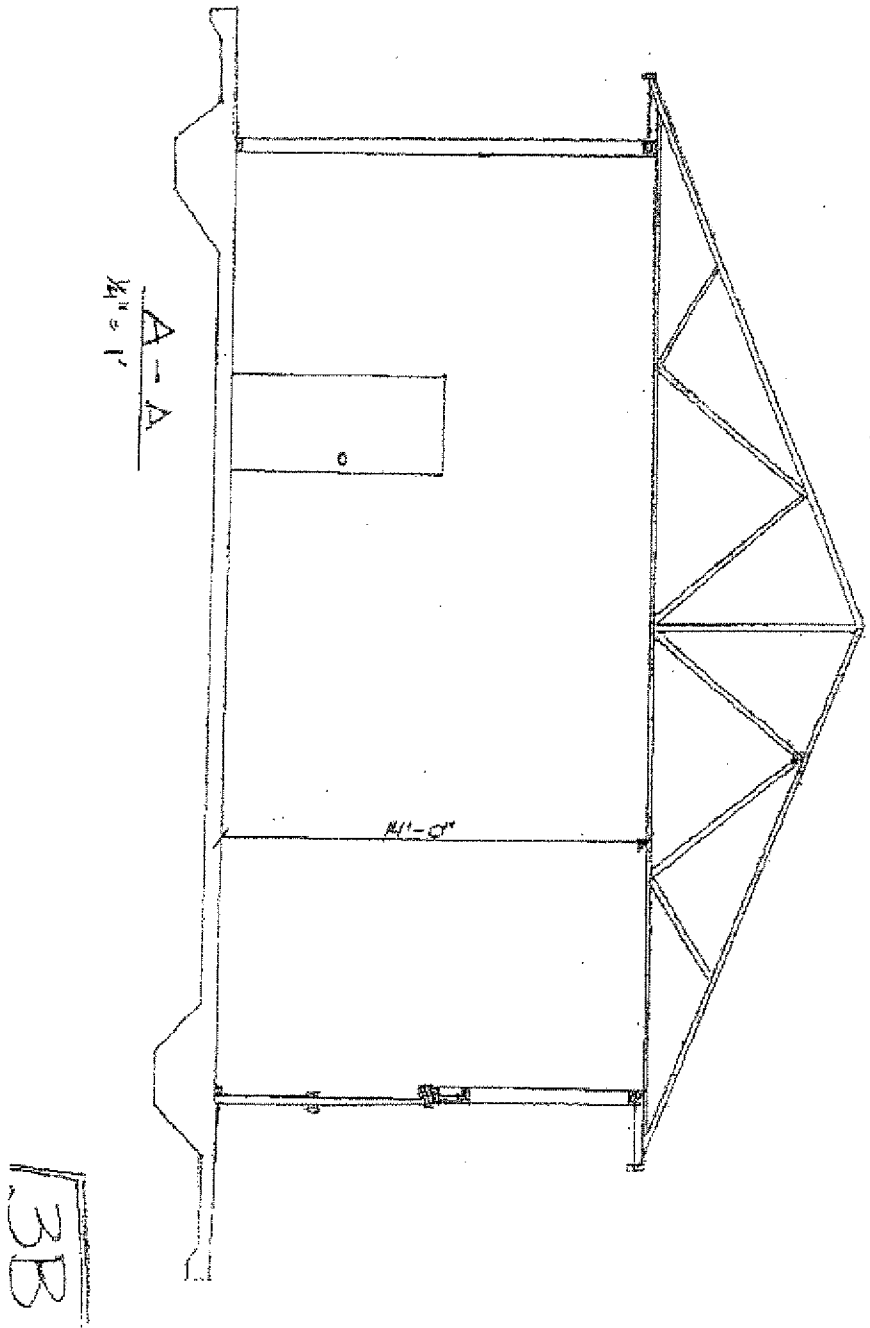
REAR ELEVATION
⅛" = 1'



B - B
⅛" = 1'

3A

Schedule No. '3'
Development Permit No. 60825
Proposed Building Elevations (3 of 3)



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Schedule No. '4'
Development Permit No. 60825
Geotechnical Assessment

Lewkowich Geotechnical Engineering Ltd.

GEOTECHNICAL REPORT

Ron Einarsen
1570 Raines Road
Nanaimo, BC V9X 1L3

File No: G6651.01
August 20, 2008

ATTENTION:	**Mr. Ron Einarsen**
PROJECT:	**1570 Raines Road, Nanaimo, BC**
SUBJECT:	**Geotechnical Assessment – Proposed Garage**

Dear Mr. Einarsen:

1. **Introduction:**

As requested, Lewkowich Geotechnical Engineering Ltd. (LGE) carried out site visits on July 25 and August 8 and 9, 2008 and observed the geotechnical conditions of the subject property at 1571 Raines Road in Nanaimo. The purpose of this work was to determine subsurface conditions and bearing capacities for the site of a proposed garage. This letter outlines our conclusions as well as our recommendations.

2. **Site Condition**

a. The subject property is located on the east side of Raines Road in Nanaimo. The lot slopes gently from west to east, away from the Nanaimo River toward a marshy area. The proposed garage is located behind the current residence, in the eastern half of the lot. The entire property is located within the floodplain of the Nanaimo River.

b. During our site visit on July 25, 2008, LGE observed a building pad built up with pit-run sand and gravel. We were informed the pad was placed and compacted approximately 8 months previously, and that surface organic material was removed. There was a berm comprised of sod and topsoil, approximately 1.3m high, surrounding the engineered fill building pad.

c. On August 8, 2008, a second site visit was conducted to investigate the depth of structural fill, determine the density of the fill, and to determine the material underlying the structural

Suite A - 2569 Kenworth Road, Nanaimo, British Columbia, V9T 3M4
Telephone: (250) 756-0355 Facsimile: (250) 756-3831

fill. Four test pits were advanced, one in each corner of the proposed garage. Density testing utilizing a nuclear densometer was performed at various locations on the surface of the structural fill, and also at varying depths in the test pits (as the test pits were advanced) using Modified Proctor ASTM D1557 and dry densities as a basis. The suggested minimum density requirement for structural fill for this site is at least 95% of optimum density. All the densometer test results were at or above 97% of optimum density and were judged to be satisfactory.

d. The soil profiles in all four test pits were similar, consisting of import granular material (pit-run sand and gravel) from ground surface to depths ranging from 0.6m to 1.3m; over dark brown, loose, silty organic sand containing small roots and rootlets. No water or seepage was noted in any of the test pits. Test pit logs showing details of each test pit are attached at the end of the report.

e. LGE returned to the property on August 9, 2008 to hand augur four test holes outside the proposed garage perimeter, starting at the native ground surface. This was done in an attempt to determine the depth of the silty organic sand. We advanced the hand auger to a depth of approximately 1.2m in all locations. Soils were consistently loose silty organic sand, similar to those logged in the test pits, at all four hand auger locations.

3. Discussion and Recommendation:

a. The placement and compaction of the structural fill building pad for the proposed garage was considered to be acceptable from a geotechnical engineering aspect. However, while surficial organic material was removed, the underlying loose, silty organic sand that was not removed is not considered to be a suitable subgrade, and will compress over time. There are three possible scenarios to address this shortcoming:

i. Remove the structural fill already placed, excavate down to suitable bearing soil, and backfill with structural fill.

ii. Drive piles down to a suitable bearing layer and build the proposed garage using the piles to support the building's load, or;

iii. Build the proposed garage on the existing structural fill utilizing a reinforced monolithic concrete slab designed by a Structural Engineer; and expect the structure to settle with time.

b. Both consolidation of the soft native soil and organic material decomposition can cause settlement. Fill that is not adequately compacted (or naturally loose soil) usually undergoes most of its settlement a short time after construction. The amount of this consolidation (settlement) depends on the depth of the loose soil. We expect an increasing depth of loose soil towards the east; as one approaches the Nanaimo River. This will likely cause the east side of the proposed garage to settle more than the west side. Decomposition of the organic content of the soil can result in movement in varying time frames, depending on the nature of the organics. In addition, changes in the ground water regime could affect timing for the deterioration or organics, which in turn can result in various time frames of movement. The cessation of settlement could require a considerable period of time.

c. The total amount of settlement over time is unknown. We expect that settlement should be fairly uniform in the north-south direction, and that settlement on the east side will be greater than the west side. We do not expect large differential settlement to occur. Considering the non-residential use of the proposed building, and the much higher cost of the other two scenarios, we suggest the third option is suitable.

d. Based on the subgrade material and varying thickness of the structural fill, a bearing value of 75 kPa may be applied to the *in situ* soils that are to be supporting a reinforced, monolithic concrete slab foundation **designed by a Structural Engineer**. The floating concrete slab should be reinforced to bridge localized settlement of 1.5m across.

e. Perimeter and rainwater drains should be designed so that drainage flows to the east, as settlements will be greatest in that direction. This will prevent a reversal of direction of water flow as settlement progresses.

f. In the event of the 200-year design flood, we expect the property and garage would be inundated with floodwater, as the garage appears to be at or below design flood level. LGE assumes that because the structure is non-habitable, construction will be permitted. It is expected, however, that the floodwater would be relatively quiescent, and would raise and lower without producing substantial flows that would erode soils around and/or under the structure. In addition, the low-lying area to the east of the property would provide a relatively large storage volume for floodwater and would likely facilitate the drainage of floodwater from the property. Berming around the garage is not considered adequate flood protection.

g. It is LGE's opinion that the bearing materials should perform as indicated, providing support the proposed garage with "designed settlement", as long as our recommendations are followed.

h. Provided that the recommendations within this report are incorporated into development of the project, the site is considered geo-technically safe and suitable for the intended use. The risk of impact of geotechnical hazard would then be less than 10% in 50 years, with the exception of a 'design' seismic event where a probability of occurrence of 2 percent in 50 years is considered safe.

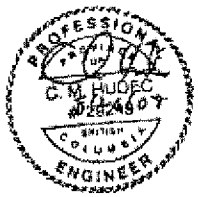
4. Closure

Lewkowich Geotechnical Engineering Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or if we can be of further service, please contact us at your convenience.

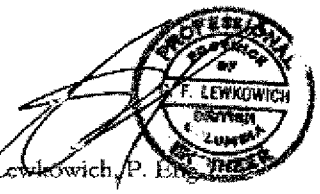
Respectfully Submitted,

Lewkowich Geotechnical Engineering Ltd.

Reviewed by:

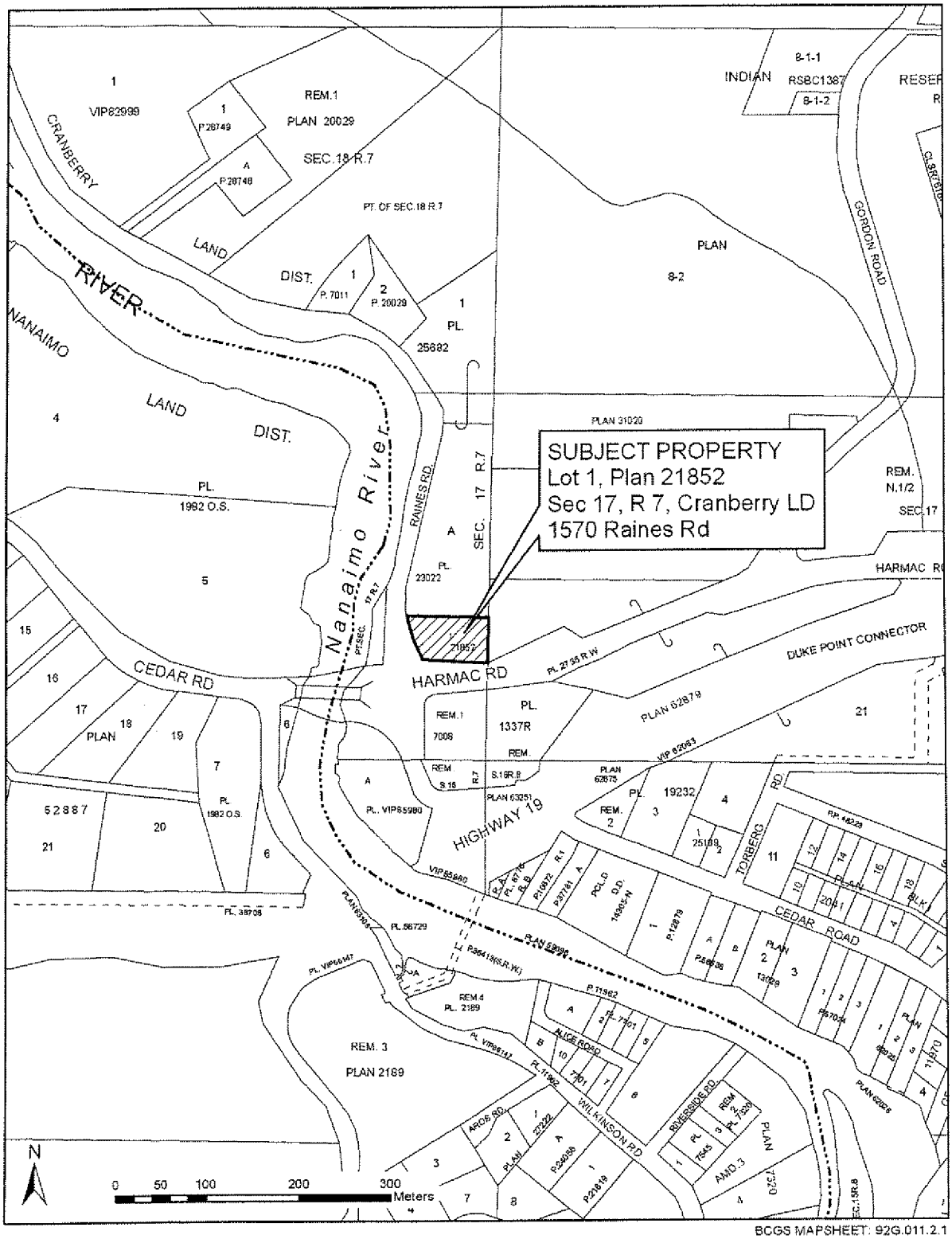


Chris Hudec, M.A.Sc., P.Eng.
Project Engineer



Gerry Lewkowich, P. Eng.
Principal

Attachment No. 1
Development Permit No. 60825
Location of Subject Property



BCGS MAPSHEET: 92G.011.2.1

REGIONAL DISTRICT OF NANAIMO

RDN REPORT		
CAO APPROVAL		
S. EAP	✓	Nov 25 '08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO: Geoff Garbutt, Manager of Current Planning **DATE:** November 12, 2008

FROM: Kristy Marks, Planner **FILE:** 3060 30 60833

SUBJECT: **Development Permit Application No. 60833 – Sinclair**
Lot 11, District Lot 40, Newcastle District, Plan 15818
Electoral Area 'H', Folio No. 769.14512.000

PURPOSE

To consider an application for a Development Permit to allow the construction of a single residential dwelling and attached garage on a property located at 4695 Maple Guard Drive.

BACKGROUND

The subject property, legally described as Lot 11, District Lot 40, Newcastle District, Plan 15818, is a coastal property located on Maple Guard Drive in Electoral Area 'H' (*See Attachment No. 1 for location of subject property*). Currently a travel trailer and shelter occupy the property and they are proposed to be removed as part of this application. The parcel contains an upper plateau with a lawn area and several mature trees and a moderately steep slope adjacent to the sea. The subject property is bordered by the sea to the east, developed residential parcels to the north and south and Maple Guard Drive to the west.

The subject property is designated within the Environmentally Sensitive Features for aquifer protection, Hazard Lands and Fish Habitat Protection Development Permit Areas (DPA) pursuant to "Regional District of Nanaimo Electoral Area 'H' Official Community Plan Bylaw No. 1335, 2003". The applicant has completed the Riparian Areas Regulation Property Declaration Form and as there are no streams on or within 30 metres of the subject property the application is exempt from the requirements of the Fish Habitat Protection DPA.

The parcel is approximately 0.26 ha in size and is currently zoned Residential 2 (RS2) pursuant to "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987". The applicant is requesting approval to construct a 238m^2 residential dwelling and attached garage within the Hazard Lands DPA.

Sustainability Implications

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist". This proposal represents infill development of an existing residential parcel. The applicant is proposing to construct in a location that has already been cleared and to retain existing vegetation on the subject property. In addition, the applicant has provided a Geotechnical Evaluation of the slope conditions in order to ensure that the property is safe and suitable for residential use. From a sustainability perspective the applicant is proposing to redevelop an existing property, retain sensitive vegetation and utilize the cleared portion of the site in order to reduce potential impacts.

ALTERNATIVES

1. To approve Development Permit No. 60833 subject to the conditions outlined in Schedules No. 1- 4.

2. To deny the requested development permit.

LAND USE AND DEVELOPMENT IMPLICATIONS

As outlined above, the applicant is requesting approval to develop an existing residential property at 4695 Maple Guard Drive. The location of the proposed residential dwelling and attached garage are outlined on *Schedule No. 2.* Building elevations for the proposed development are outlined on *Schedule No. 3.*

In keeping with the Hazard Lands DPA, the applicant has submitted a Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated June 11, 2008 which addresses the proposed dwelling unit and attached garage (*Schedule No. 4*). This report states that the proposed development is geotechnically safe and suitable for the intended purpose of residential development. As per board policy, staff recommends that the applicant be required to register a section 219 covenant that registers the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd., and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.

In staff's assessment of this application, the proposed development meets the requirements of the Hazard Lands Development Permit Area.

VOTING - Electoral Area Directors – one vote, except Electoral Area 'B'.

SUMMARY/CONCLUSIONS

This is an application for a Development Permit to allow the construction of a residential dwelling and attached garage at 4695 Maple Guard Drive in Electoral Area 'H'. Given that the applicant has submitted a Geotechnical Evaluation of the slope conditions consistent with the guidelines of the Hazard Lands DPA, staff recommends that the requested Development Permit be approved subject to the terms outlined in Schedules No. 1- 4 of this report.

RECOMMENDATION

That Development Permit Application No. 60833, to permit the construction of a residential dwelling and attached garage on the property legally described as Lot 11, District Lot 40, Newcastle District, Plan 15818, be approved subject to the conditions outlined in Schedules No. 1-4.

Report Writer

General Manager Concurrence

Manager Concurrence

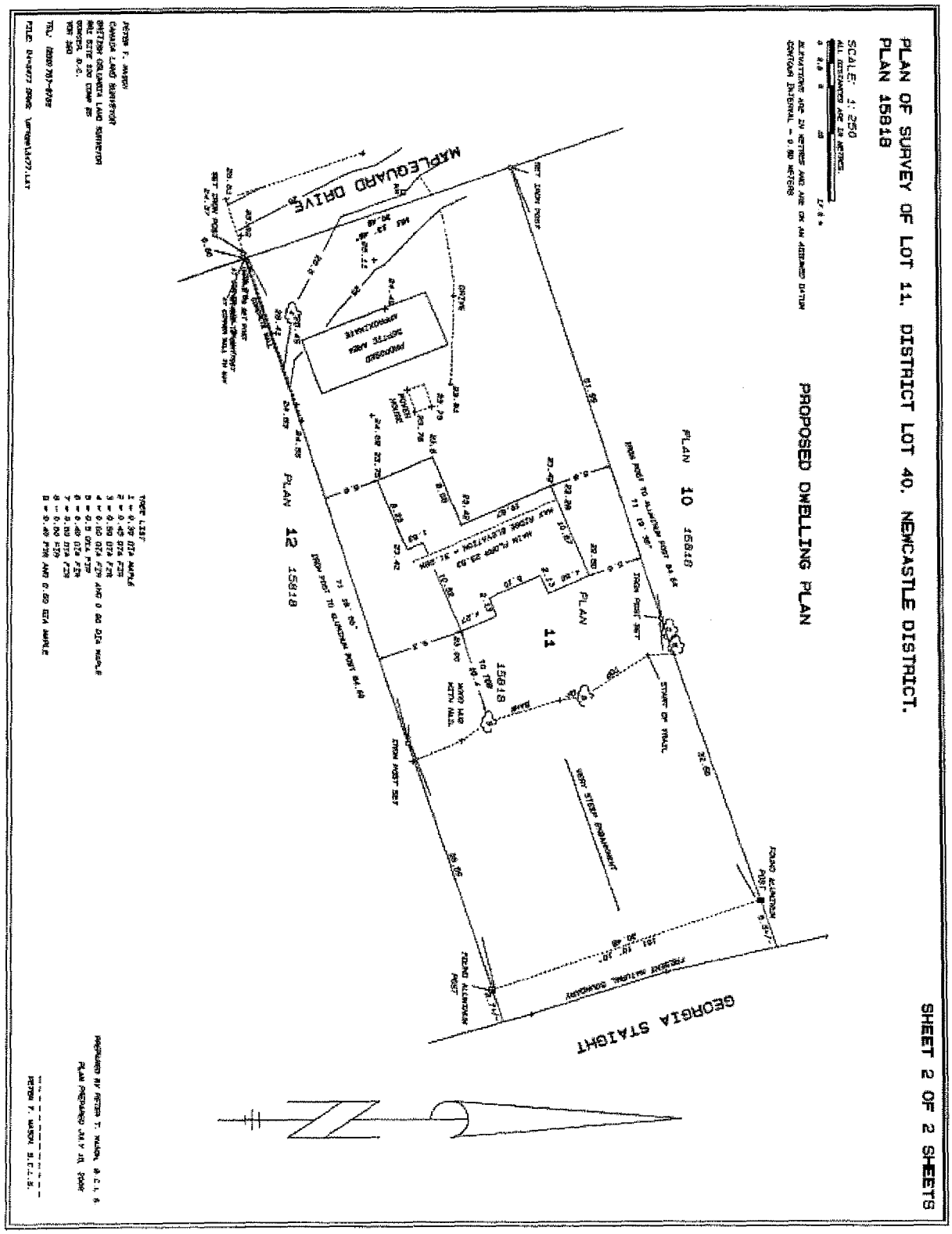
CAO Concurrence

Schedule No. 1
Terms of Development Permit No. 60833

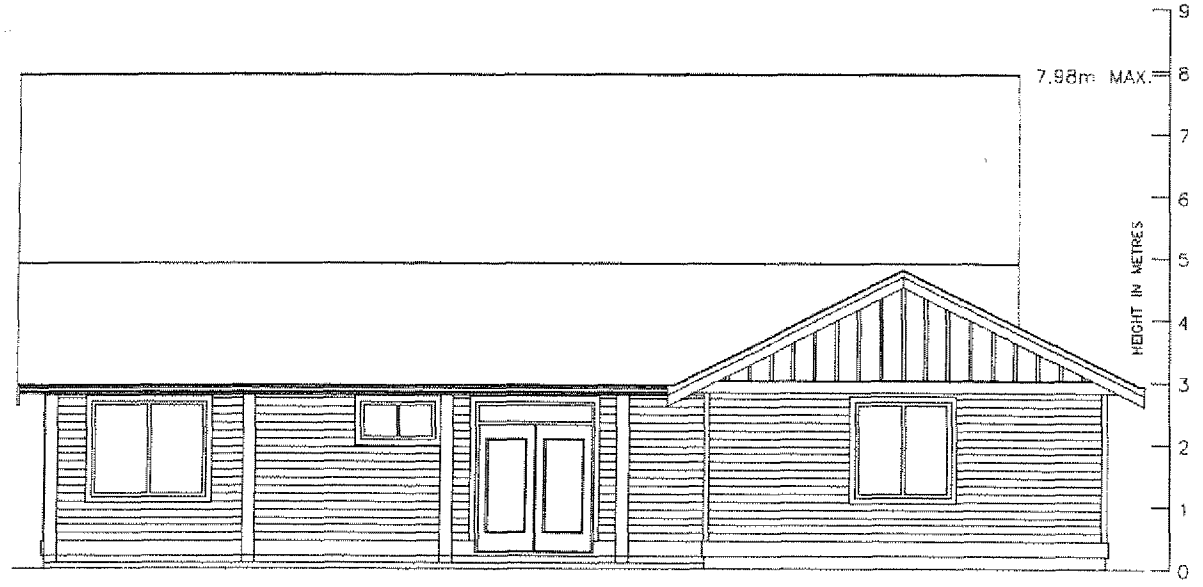
The following sets out the terms and conditions of Development Permit No. 60833.

1. The dwelling unit and attached garage shall be sited in accordance with the site plan prepared by Peter T. Mason BCLS dated July 15, 2008 attached as *Schedule No. 2.*
2. The dwelling unit and attached garage shall be developed in accordance with the building elevations prepared by Lindberg CAD Services attached as *Schedule No. 3.*
3. The dwelling unit and attached garage shall be constructed in accordance with the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated June 11, 2008, attached as *Schedule No.4.*
4. Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a section 219 covenant that registers the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated June 11, 2008 and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.
5. The applicant is required to provide a building location certificate and confirmation of height prepared by a British Columbia Land Surveyor at framing stage of construction.

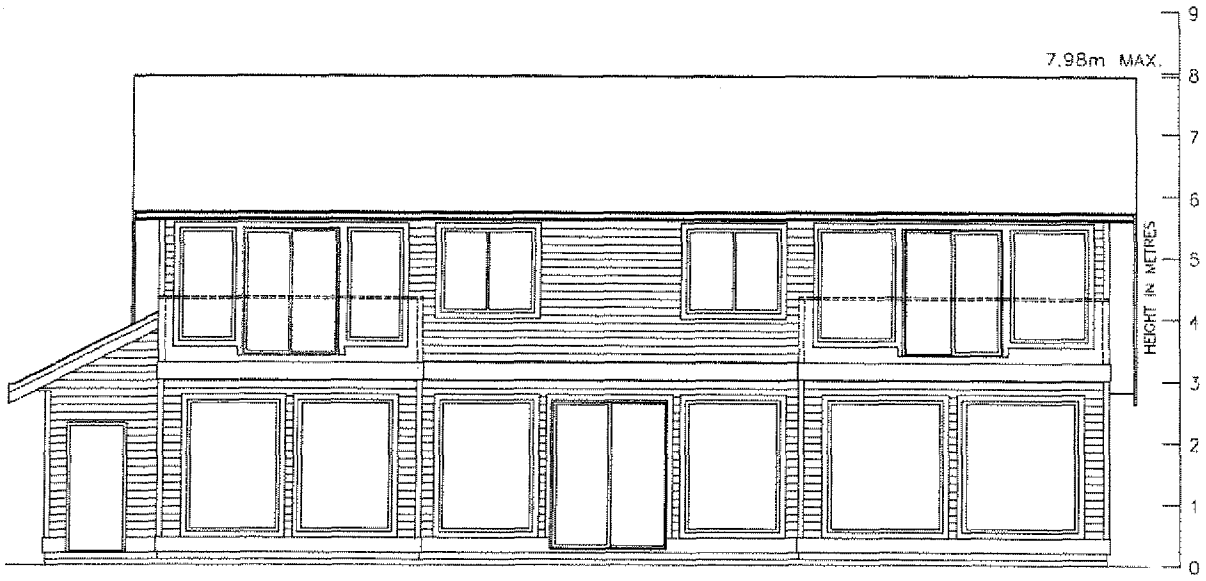
Schedule No. 2
Site Plan



Schedule No. 3
Building Elevations
(Page 1 of 2)

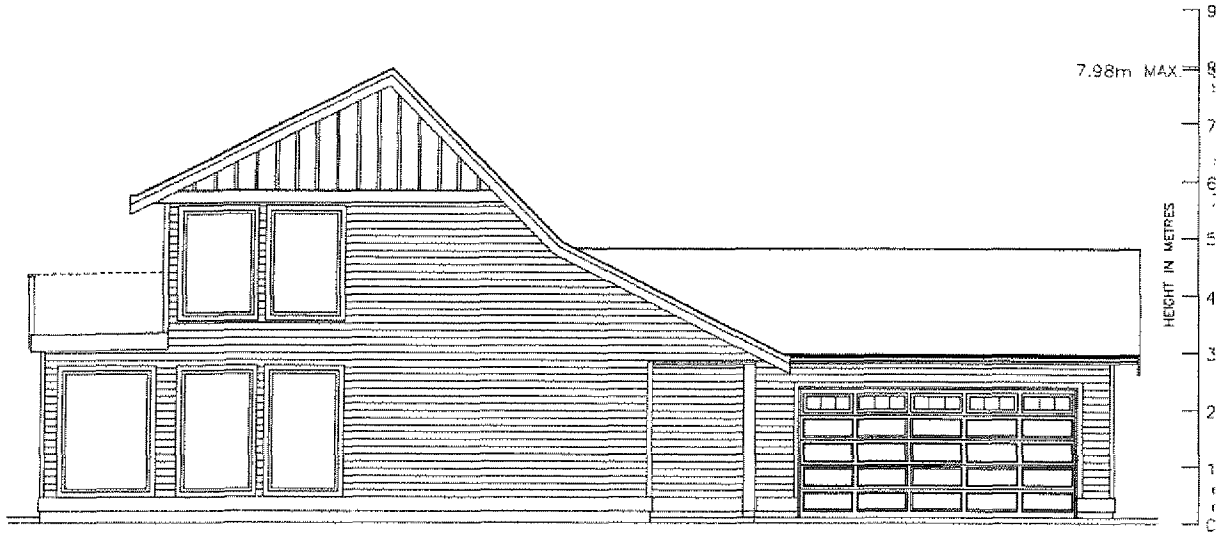


FRONT ELEVATION

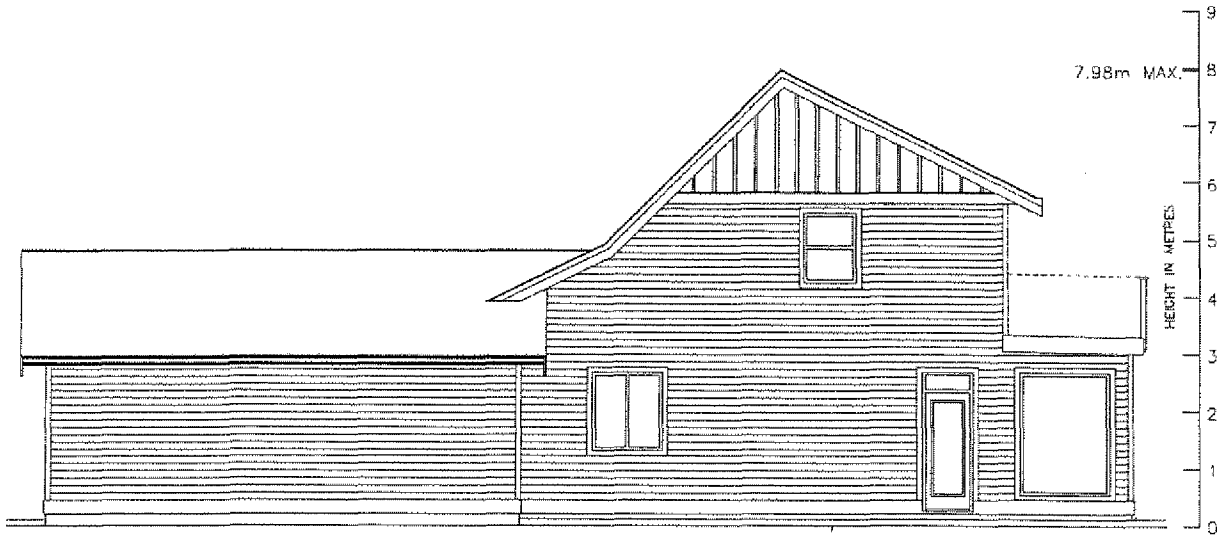


REAR ELEVATION

Schedule No. 3
Building Elevations
(Page 2 of 2)



LEFT ELEVATION



RIGHT ELEVATION

Schedule No. 4
Geotechnical Evaluation
(Page 1 of 5)

Lewkowich Geotechnical Engineering Ltd.

File: G6249.01
June 11, 2008

Ms. Tara Sinclair
3095 St. Anne's Drive
North Vancouver, B.C.
V7R 1E7

PROJECT: PROPOSED SINGLE FAMILY RESIDENTIAL STRUCTURE 4695 MAPLEGUARD DRIVE, BOWSER, B.C. (LOT 11, DISTRICT LOT 40, NEWCASTLE DISTRICT, PLAN 15818)

SUBJECT: GEOTECHNICAL EVALUATION - SLOPE CONDITIONS

Dear Ms. Sinclair:

1. Introduction

a. As you requested, Lewkowich Geotechnical Engineering Ltd. evaluated the subject site to determine whether the property is geotechnically safe and suitable for the intended purpose of residential development. This letter summarizes our site observations, together with our comments, conclusions and recommendations.

b. We understand that you propose to develop the property by the construction of a single family residential home. The proposed building site is to be in the general vicinity of an area between the crest of an ocean-facing slope an existing septic field. A trailer providing temporary shelter lies to the west of the septic field.

c. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report may be requested by the Building Inspector of the Regional District of Nanaimo as a precondition to the issuance of a building permit and that this report, or any conditions contained in this report may be included in a restrictive covenant under Section 699 of the Local Government Act and filed against the title to the subject property.

Suite A - 2569 Kenworth Road, Nanaimo, British Columbia, V9T 3M4
Telephone: (250) 756-0355 Facsimile: (250) 756-3831

Schedule No. 4
Geotechnical Evaluation
(Page 2 of 5)

d. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report has been prepared for and at the expense of the Owner of the subject land. Lewkowich Geotechnical Engineering Ltd. has not acted for or as an agent of the Regional District of Nanaimo in the preparation of this report.

2. Site Conditions

a. The property is bounded by Mapleguard Road to the west, the Georgia Strait to the east, and other residential properties to the north and south. In general, the property consists of an upper plateau area within the western 2/3 of the lot, and a moderately steep ocean-facing slope within the eastern 1/3. A survey plan showing general property layout and ground contours - prepared by Peter Mason, B.C.L.S. - was provided by yourselves.

b. The upper plateau area has a gentle slope down from west to east, with relief of about three metres. This area includes mature trees as well as the currently developed portions of the lot. Development includes a ground disposal (septic) field, a power house, and a travel trailer being used as a temporary shelter.

c. The ocean-facing slope comprising the eastern third of the property has relief of about 18 metres as shown on the survey plan. The slope inclination varies somewhat, but averages about 26 to 30 degrees from horizontal. A foot path, which we understand was established by yourselves between five and ten years ago, zig-zags across the slope face. During the course of our site visit, we walked this trail to observe slope conditions. In general, slope vegetation consists of mature trees and light to moderate underbrush. There was no evidence of slope movement, and growth habit of the coniferous trees was straight suggesting relatively stable slope surface conditions. Trail installation was done in a manner that did not negatively impact slope conditions.

Schedule No. 4
Geotechnical Evaluation
(Page 3 of 5)

d. We examined the condition of the shoreline. There was no indication of wave-induced slope toe erosion. In addition, the beach area appeared to be accreting. This is confirmed by evidence provided on the survey plan, which notes that the present natural boundary is an average distance of five metres east of the original survey posts, which probably represented the natural boundary at the time of property subdivision.

e. Soil conditions at this site, as inferred from our previous experience in the area combined with exposures noted during our site reconnaissance, are concluded to consist of a veneer of sand/gravel soils present within the upper plateau area, underlain by a very dense glacial till soil (mixture of silt, sand gravel and cobbles), in turn underlain by a uniformly graded pre-glacial outwash sand. This latter material was not observed at the site, but is inferred based on small volumes of seepage water emanating from the base of the slope.

3. Comments, Conclusions and Recommendations

a. We conclude that the site is geotechnically safe and suitable for the intended purpose of support for a residential building provided recommendations outlined here are followed during development.

b. In general, shallow ground conditions within the upper plateau area are expected to be reasonably favourable, consisting of a compact formation of granular soils (sand and gravel) overlying very dense glacial till soils. A conventional spread footing foundation system designed and built in accordance with the current B.C. Building Code should be suitable for building support, provided any fill, organic or disturbed soils are removed prior to construction.

Schedule No. 4
Geotechnical Evaluation
(Page 4 of 5)

c. the ocean-facing slope is concluded to currently be in a reasonably stable condition. There was no observed evidence of past or ongoing slope instability within the slope face, and the potential for erosion at the slope toe is considered to be relatively low given the inferred accretion that is currently occurring.

d. However, because of the potential for slope degradation during a severe/design seismic event (using design parameters outlined in the current B.C. Building Code) and current state of knowledge as to the strength of soils inferred to be present at this site, we recommend that the proposed home be provided with a minimum setback distance from the crest of the ocean-facing slope. At a minimum, we recommend that a setback distance of at least ten metres be provided from the present position of the slope crest. (We understand that your planned house site will comply with this distance, as discussed at the property during our site visit).

e. The intent of this setback is to provide a level of protection against loss of support for the proposed home, in the event of a severe/design seismic event, or erosion such as may occur from a severe storm event. Please note that we recommend that slope vegetation be maintained as a precautionary measure against slope face erosion.

f. In general, slope vegetation should consist of mature indigenous tree growth as is currently present. We do not object - from the geotechnical aspect - to the removal of trees within a three metre vertical distance as measured from the slope crest since these trees could represent a surcharge. In this instance, however, stumps should be left in place. If enhancement of an ocean view is desired, it should be achieved by "crown thinning" by experienced pruning personnel, rather than by topping or removal of trees further down-slope.

Schedule No. 4
Geotechnical Evaluation
(Page 5 of 5)

g. As noted above, it is our opinion that the existing trail does not negatively affect the slope from an aspect of erosion or slope face degradation. If widening of the trail (which can be reasonably expected to require additional vegetation removal) or installation of a stairway structure is contemplated in future, input from an experienced registered geotechnical engineer should be provided to ensure that the slope face is not geotechnically impacted.

h. Drainage from the house should be allowed to dissipate over the width of the house, rather than be collected into a drainage system that would then result in concentrated flows. This may be done through the use of down-spouts and splash-pads spread around the periphery of the house, or through the use of a ground infiltration system that is installed to distribute intercepted and/or gathered flows uniformly over the length of the house.

4. Closure

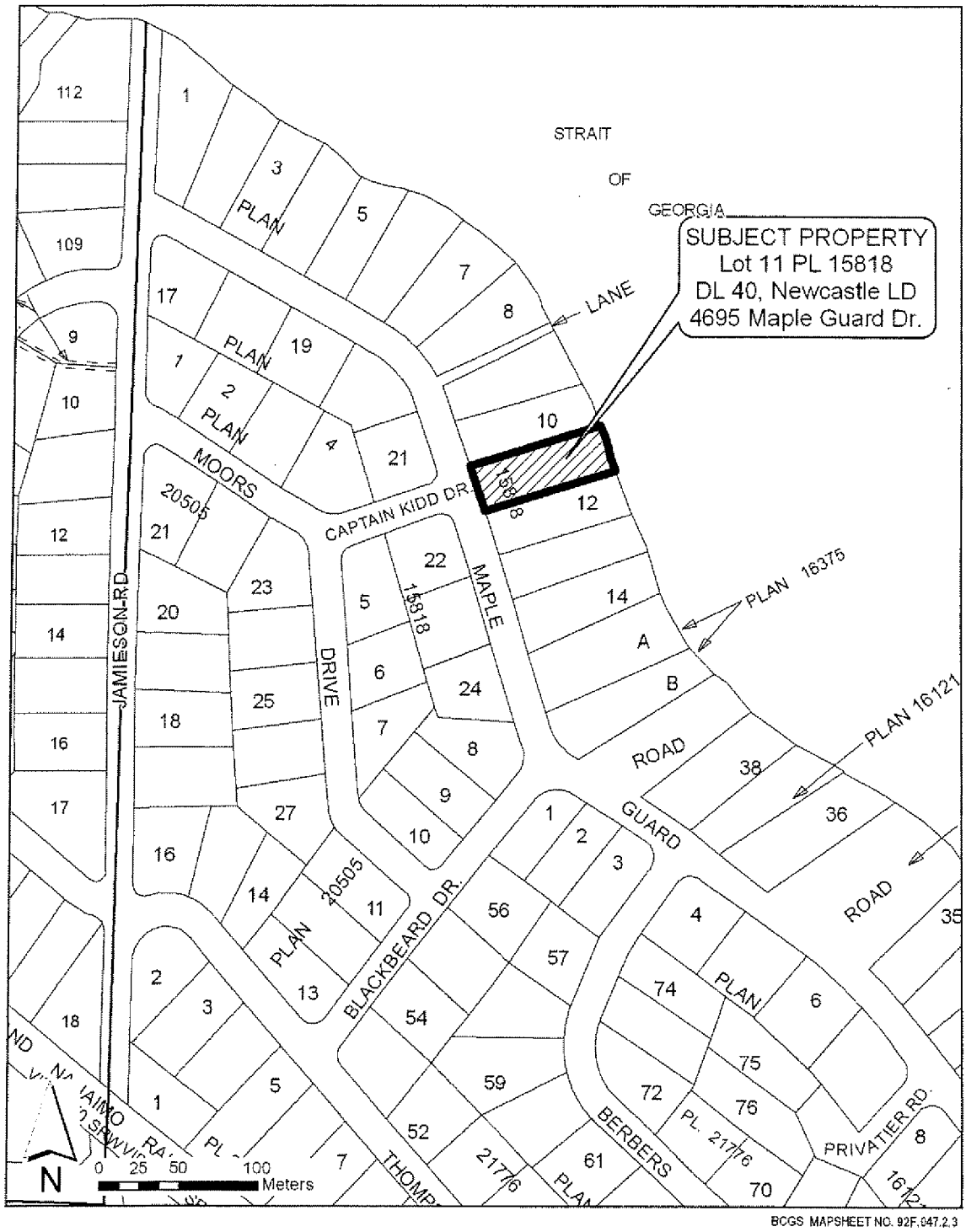
Lewkowich Geotechnical Engineering Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or if we can be of further service, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Geotechnical Engineering Ltd.

G.F. Lewkowich, P.Eng.
Principal

Lewkowich Geotechnical Engineering Ltd.

Attachment No. 1
Location of Subject Property



REGIONAL DISTRICT OF NANAIMO

RON REPORT		
CAO APPROVAL		
EAP	✓	Nov 25 '08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO: Geoff Garbutt, Manager of Current Planning **DATE:** November 12, 2008

FROM: Kristy Marks, Planner **FILE:** 3060 30 60834

SUBJECT: **Development Variance Permit Application No. 60834 – Cheesman**
Lot B, District Lot 89, Newcastle District, Plan VIP77421
Electoral Area 'H', Folio No. 769.12207.020

PURPOSE

To consider an application for a Development Permit to allow the construction of a dwelling unit and detached garage with a second dwelling unit above (coach house) on a property located at 2045 Widgeon Road.

BACKGROUND

The subject property, legally described as Lot B, District Lot 89, Newcastle District, Plan VIP77421, is a coastal property located on Widgeon Road in Electoral Area 'H' (*See Attachment No. 1 for location of subject property*). The property is a vacant parcel that is relatively flat above or south of a steep slope which is adjacent to the foreshore. A portion of the property has been cleared for construction of the dwelling unit and coach house. In addition, the applicant has also cleared trees and low lying vegetation from within the setback area recommended in a previous geotechnical report. The subject property is bordered by the sea to the north, developed residential parcels to the east and west and Widgeon Road to the south.

The subject property is designated within the Environmentally Sensitive Features for aquifer protection, Hazard Lands and Fish Habitat Protection Development Permit Areas (DPA) pursuant to "Regional District of Nanaimo Electoral Area 'H' Official Community Plan Bylaw No. 1335, 2003". The applicant has completed the Riparian Areas Regulation Property Declaration Form and as there are no streams on or within 30 metres of the subject property, the application is exempt from the requirements of the Fish Habitat Protection DPA.

The parcel is 2.09 ha in size and is currently zoned Rural 1 (RU1) pursuant to "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987". The applicant is requesting approval to construct a 250m^2 dwelling unit within the Hazard Lands DPA and a 155m^2 coach house which is located outside the Hazard Lands DPA, approximately 37 metres from the top of the bank.

Sustainability Implications

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist". This proposal represents the development of an existing residential parcel. The applicant has provided a Geotechnical Assessment of the slope conditions in order to ensure

that the property is safe and suitable for residential use. The applicant has also submitted a re-vegetation plan which includes native drought resistant plants in order to help reduce erosion along the slope. From a sustainability perspective the applicant is proposing to develop an existing property, retain sensitive vegetation and plant new vegetation along the crest of the slope.

ALTERNATIVES

1. To approve Development Permit No. 60834 subject to the conditions outlined in Schedules No. 1-5.

2. To deny the requested development permit.

LAND USE AND DEVELOPMENT IMPLICATIONS

As outlined above, the applicant is requesting approval to develop an existing residential property at 2045 Widgeon. The location of the proposed residential dwelling and coach house are outlined on *Schedule No. 2*. Building elevations for the proposed development are outlined on *Schedule No. 3*.

In keeping with the Hazard Lands DPA the applicant has submitted a Geotechnical Assessment prepared by Lewkowich Geotechnical Engineering Ltd. dated October 16, 2008 which addresses the proposed dwelling unit (*Schedule No. 4*). This report does not discuss or address the construction of the proposed coach house as it is located outside the Hazard Lands DPA, further away from the top of the bank. This report states that the proposed development is geotechnically safe and suitable for the intended purpose of residential development. As per board policy, staff recommends that the applicant be required to register a section 219 covenant that registers the Geotechnical Report prepared by Ground Control Geotechnical Engineering Ltd., and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.

As recommended in the Geotechnical Assessment prepared by Lewkowich Geotechnical Engineering Ltd. (LGE) the applicant has submitted a re-vegetation plan in order to "stabilize the soil and reduce the rate of retrogression of the foreshore slope". The applicant had previously removed several trees along the slope contrary to the recommendation of a previous geotechnical assessment prepared by LGE in 2003. The re-vegetation plan prepared by Streamside Native Plants dated November 7, 2008 (*Schedule No. 5*) recommends a 2 metre wide buffer along the crest of the slope planted with native drought resistant plants staggered at one metre intervals in companion groupings of five to seven plants, approximately 40 plants for every 20 metres.

Given that the applicant has submitted a Geotechnical Assessment and a re-vegetation plan, in staff's assessment, the guidelines of the Hazard Lands DPA have been addressed.

VOTING - Electoral Area Directors – one vote, except Electoral Area 'B'.

SUMMARY/CONCLUSIONS

This is an application for a Development Permit to allow the construction of a residential dwelling and coach house at 2045 Widgeon Road in Electoral Area 'H'. Given that the applicant has submitted a Geotechnical Assessment of the slope conditions and a re-vegetation plan consistent with the guidelines of the Hazard Lands DPA, staff recommends that the requested Development Permit be approved subject to the terms outlined in Schedules No. 1-5 of this report.

RECOMMENDATION

That Development Permit Application No. 60834, to permit the construction of a residential dwelling and coach house on the property legally described as Lot B, District Lot 89, Newcastle District, Plan VIP77421, be approved subject to the conditions outlined in Schedules No. 1-5.

Report Writer

General Manager Concurrence

Manager Concurrence

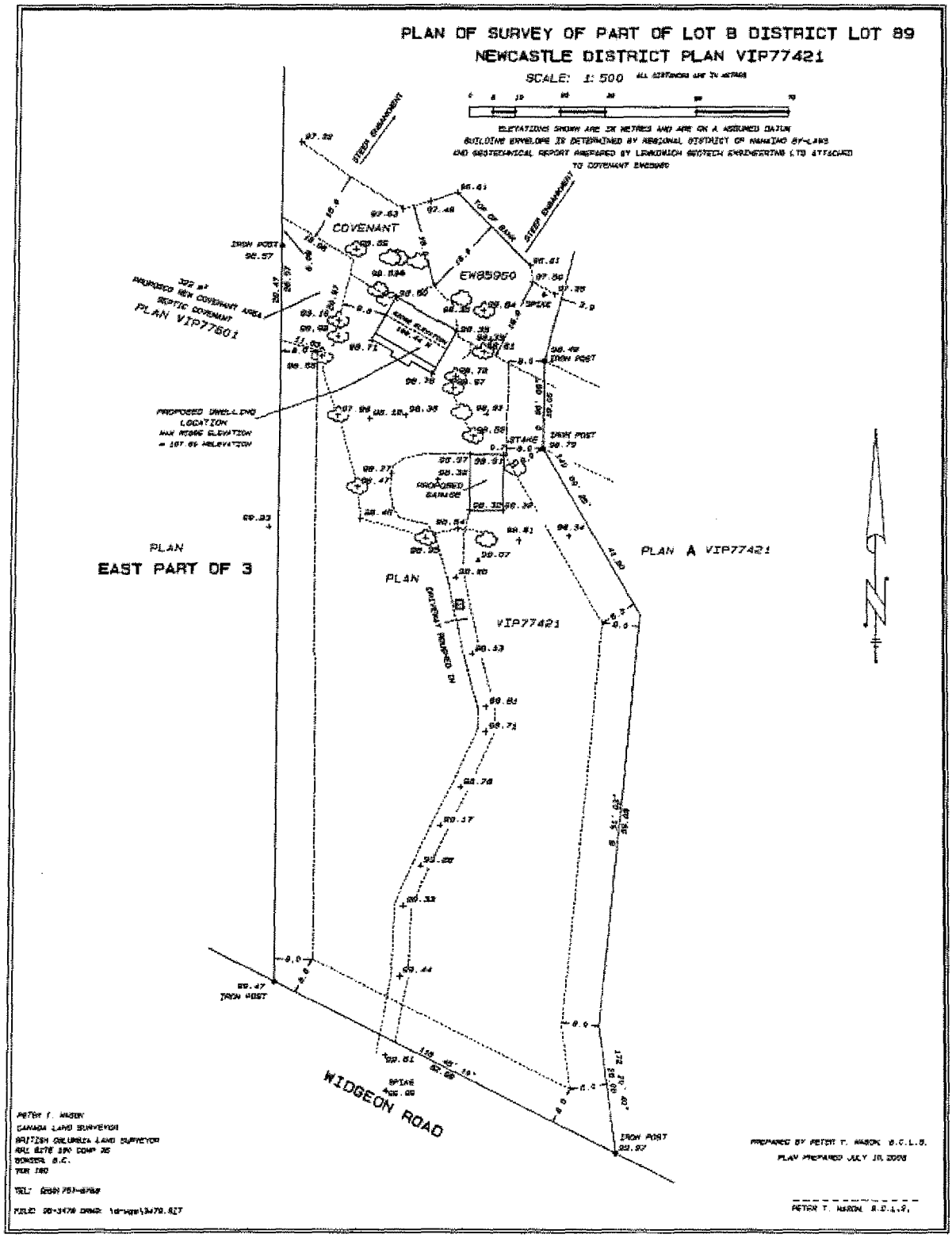
CAO Concurrence

Schedule No. 1
Terms of Development Permit No. 60834

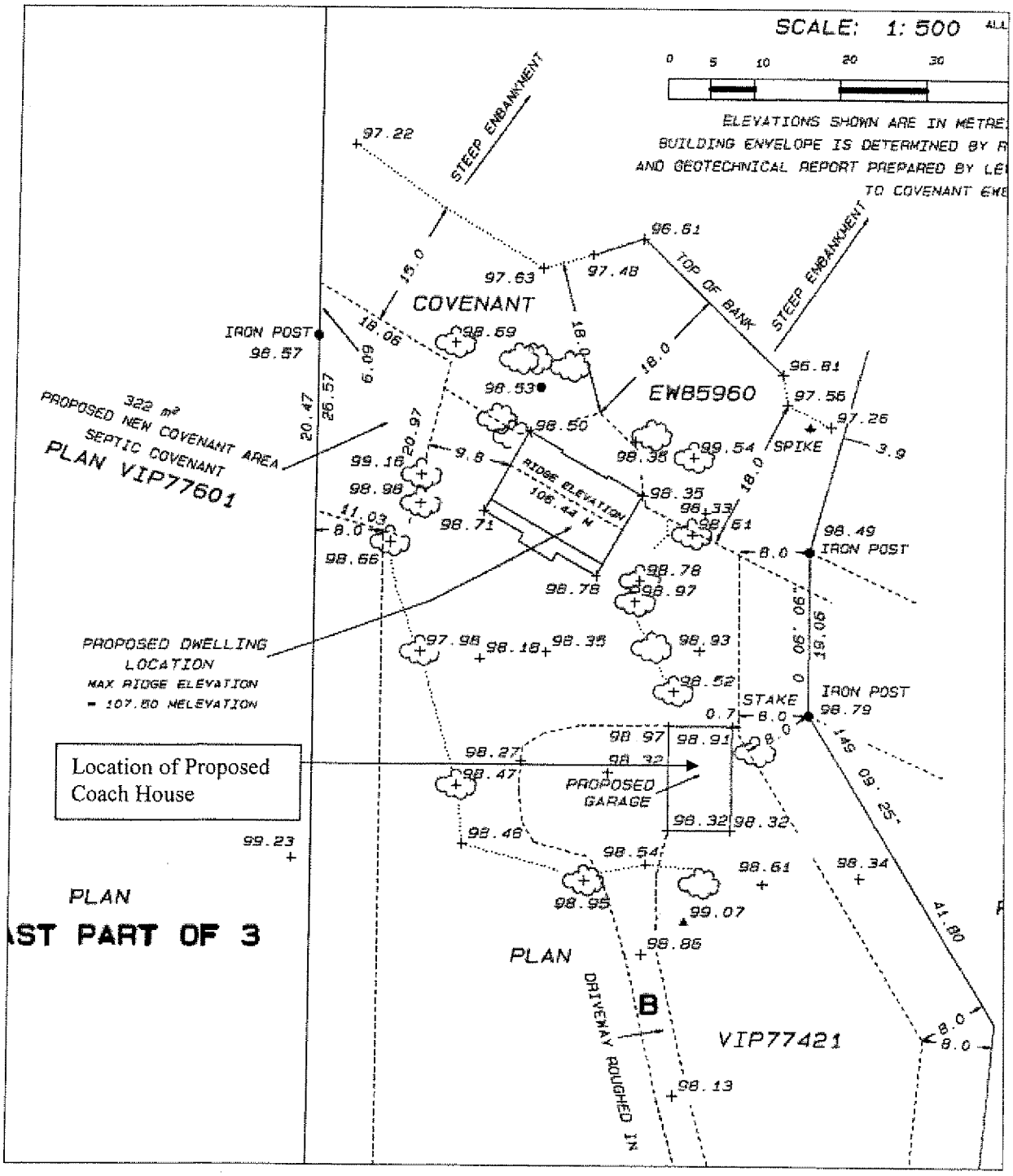
The following sets out the terms and conditions of Development Permit No. 60834.

1. The dwelling unit and coach house (garage and second dwelling) shall be sited in accordance with the site plan prepared by Peter T. Mason BCLS dated July 10, 2008 attached as *Schedule No. 2.*
2. The dwelling unit and coach house (garage and second dwelling) shall be developed in accordance with the building elevations prepared by Lindberg CAD Services attached as *Schedule No. 3.*
3. The dwelling unit shall be constructed in accordance with the Geotechnical Assessment prepared by Lewkowich Geotechnical Engineering Ltd. dated October 16, 2008, attached as *Schedule No. 4.*
4. Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a section 219 covenant that registers the Geotechnical Assessment prepared by Lewkowich Geotechnical Engineering Ltd. dated October 16, 2008 and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.
5. The applicant shall develop the subject property in accordance with the recommendations of the re-vegetation plan prepared by Streamside Native Plants dated November 7, 2008, attached as *Schedule No. 5.*
6. The applicant shall re-vegetate an area two metres in width along the entire crest of the slope with native drought resistant plants staggered at one metre intervals (i.e. 2 plants per metre) as per the landscape plan prepared by Streamside Native Plants dated November 7, 2008, attached as *Schedule No. 5.*
7. The applicant is required to provide a building location certificate and confirmation of height prepared by a British Columbia Land Surveyor at framing stage of construction.

Schedule No. 2
Site Plan
(Page 1 of 2)



Schedule No. 2
Site Plan (Detail)
(Page 2 of 2)

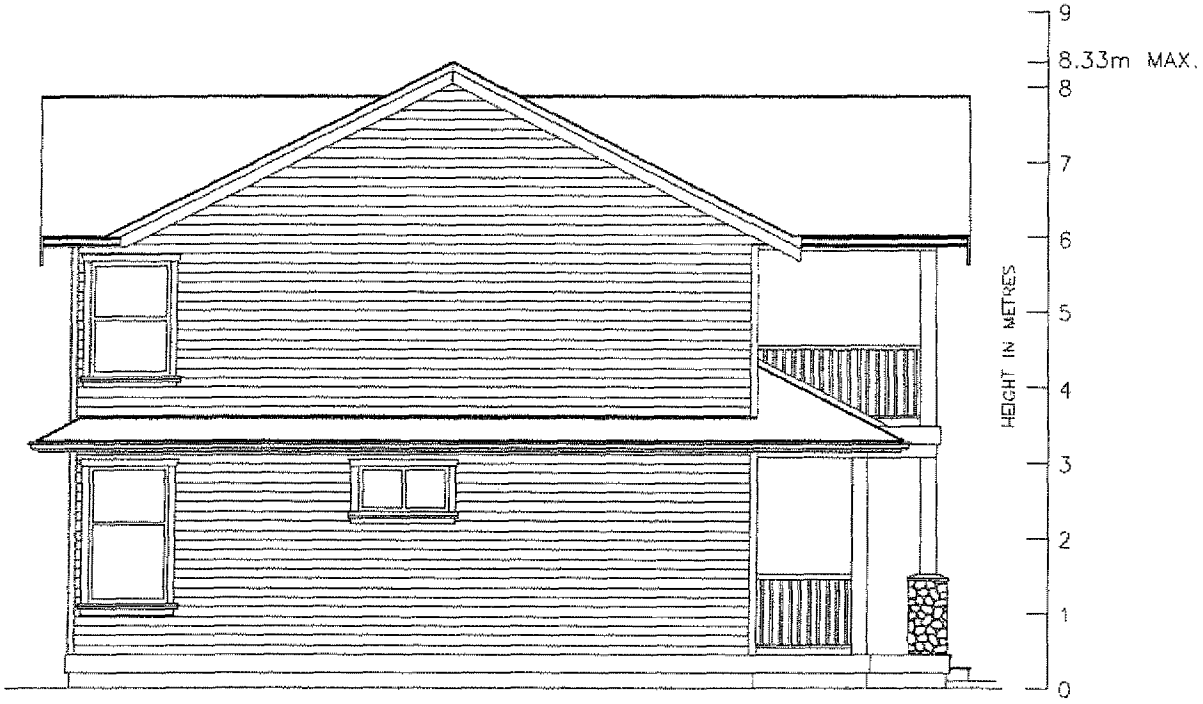


Schedule No. 3
Building Elevations for Main Dwelling Unit
(Page 1 of 4)

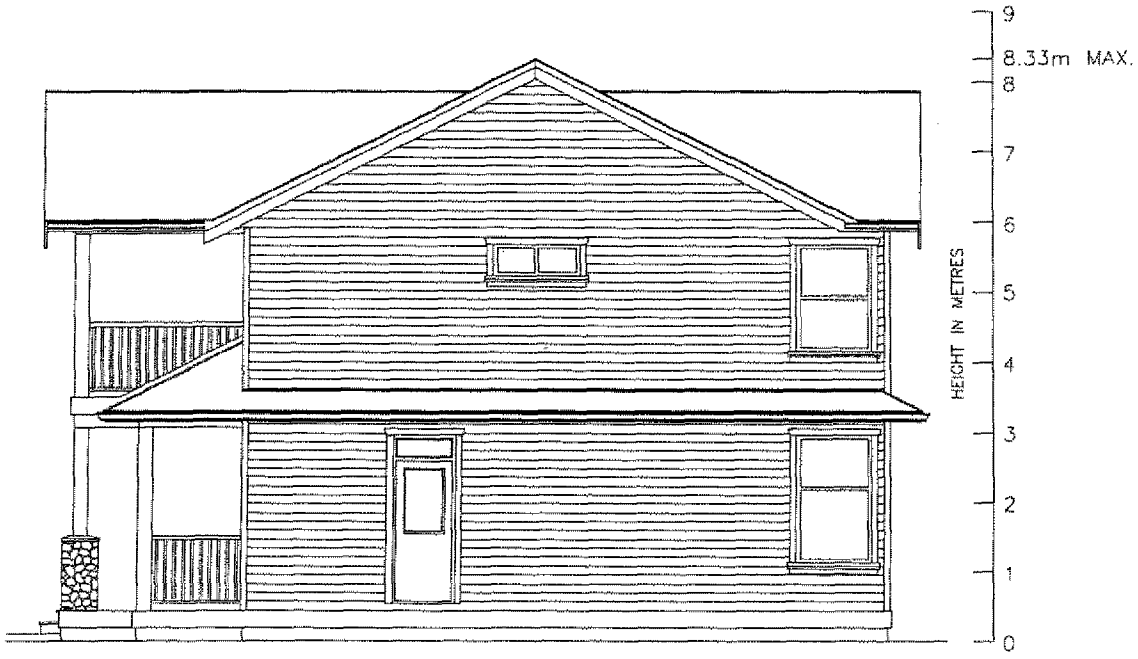
FRONT ELEVATION

REAR ELEVATION

Schedule No. 3
Building Elevations for Main Dwelling Unit
(Page 2 of 4)

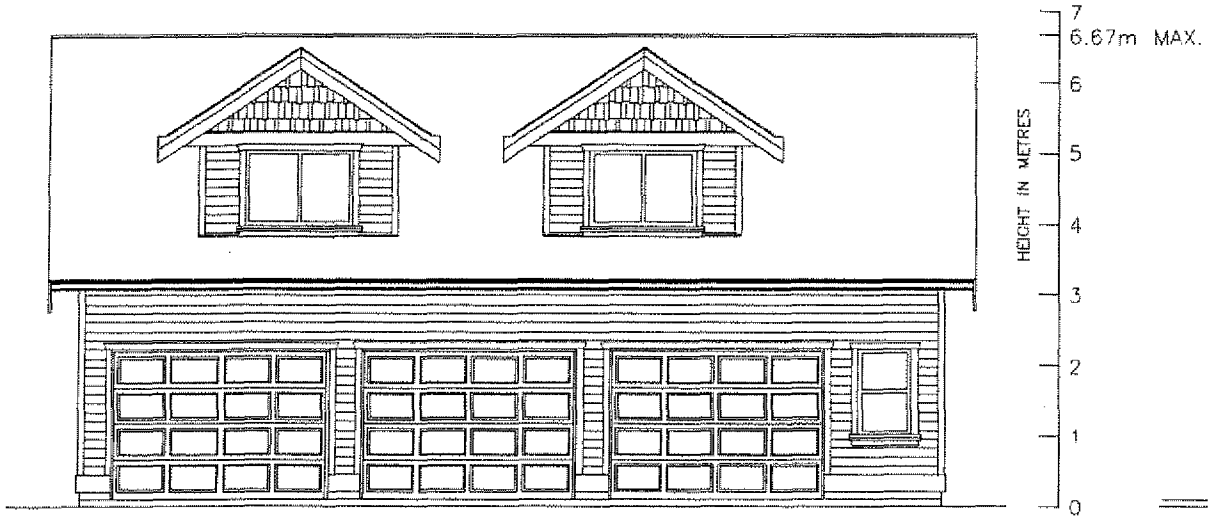


LEFT ELEVATION

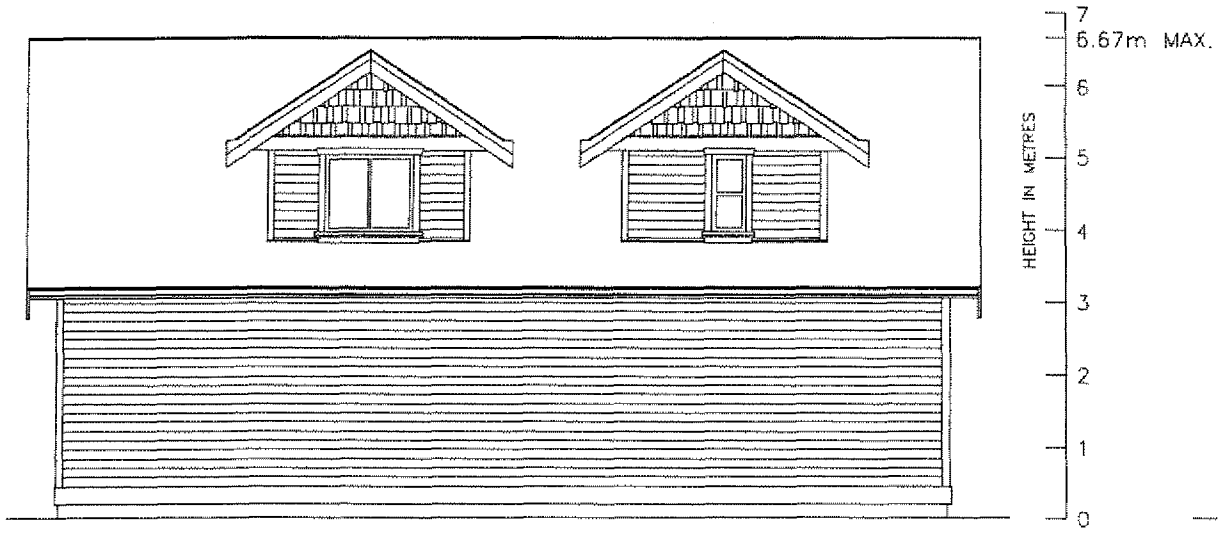


RIGHT ELEVATION

Schedule No. 3
Building Elevations for Garage and Second Dwelling Unit (Coach House)
(Page 3 of 4)

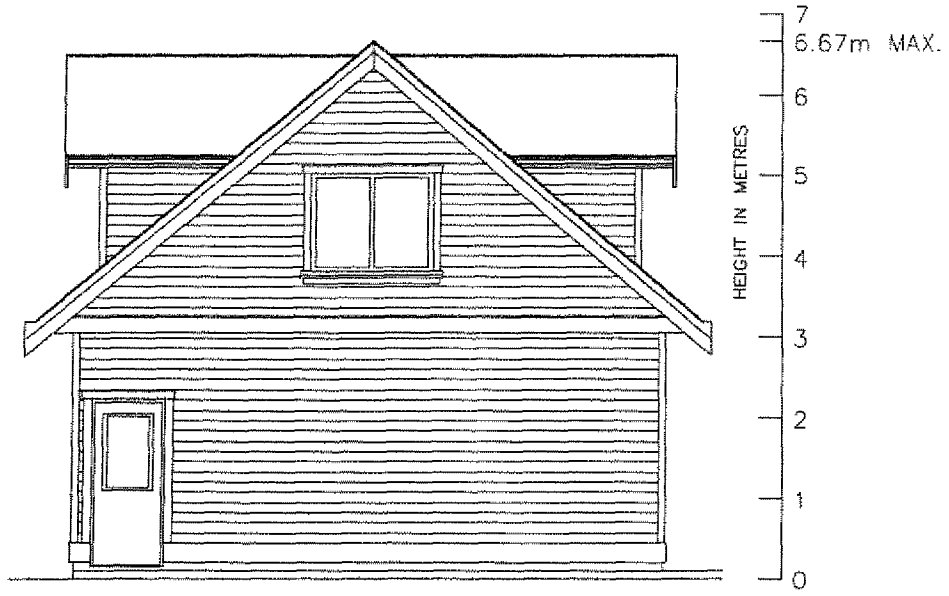


FRONT ELEVATION

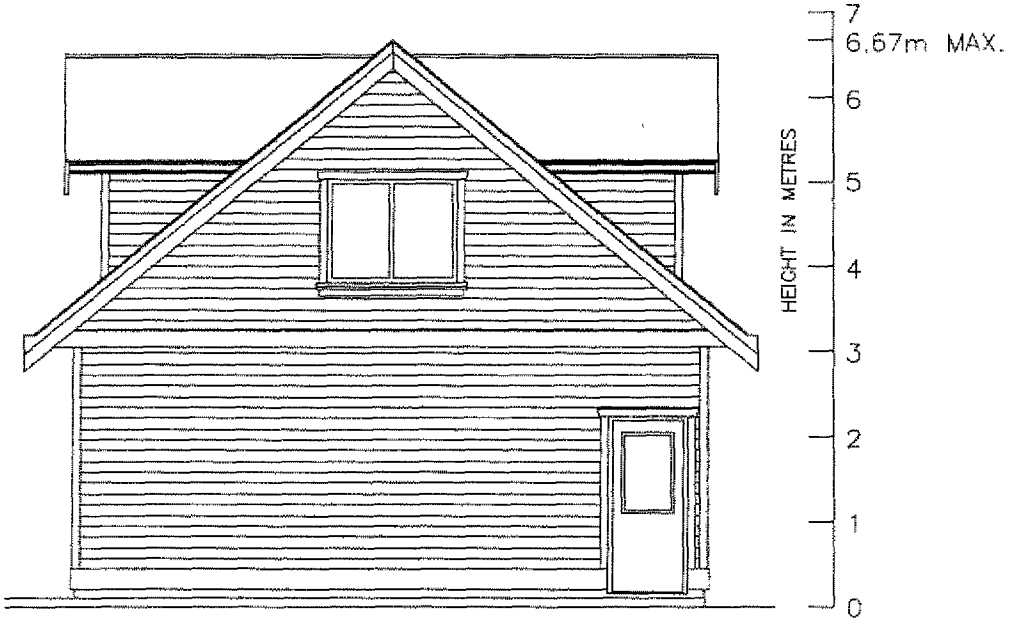


REAR ELEVATION

Schedule No. 3
Building Elevations for Garage and Second Dwelling Unit (Coach House)
(Page 4 of 4)



LEFT ELEVATION



RIGHT ELEVATION

Schedule No. 4
Geotechnical Assessment
(Page 1 of 6)

Lewkowich Geotechnical Engineering Ltd.

File No: G6855.01
October 16, 2008

Mr. Mark Cheesman
2275 Comox Ave. Unit 409
Comox, BC
V9M 1X6

Attention: Mr. Mark Cheesman

PROJECT: **2045 WIDGEON ROAD, QUALICUM BEACH, BC**
SUBJECT: **GEOTECHNICAL ASSESSMENT**

REFERENCES: LGE report, dated July 31, 2003, entitled ***"Proposed Residential Subdivision – 2035 Widgeon Road, Qualicum Beach, BC – Geotechnical Assessment"*** (LGE file reference: G2228.02).

LGE report, dated August 11, 2003, entitled ***"Proposed Residential Subdivision – 2035 Widgeon Road, Qualicum Beach, BC – Addendum to Geotechnical Report"*** (LGE file reference: G2228.03).

Dear Mr. Cheesman

1. Introduction

a. At your request, Lewkowich Geotechnical Engineering Ltd. (LGE) has carried out a geotechnical assessment relating to the proposed development at 2045 Widgeon Road in Qualicum Beach, BC. The purpose of the work was to assess the ground conditions at the property and to provide geotechnical discussions and recommendations relating to slope stability and site development.

b. The property is approximately 2.5 ha in area and is accessed by a driveway from Widgeon Road. The legal description of the property is *Lot B, District Lot 89, Newcastle District, Plan VIP77421*. The property has had an area cleared for the purpose of building a single family residence. Vegetation and some trees have also been removed from the setback area defined in the above referenced report and from the foreshore slope face.

c. The following presents a summary of the observations made during a site reconnaissance,

Suite A - 2569 Kenworth Road, Nanaimo, British Columbia, V9T 3M4
Telephone: (250) 756-0355 Facsimile: (250) 756-3831

Schedule No. 4
Geotechnical Assessment
(Page 2 of 6)

and provides geotechnical discussions and recommendations regarding the proposed development.

2. Site Reconnaissance

a. LGE visited the site on October 15, 2008. The following is a brief summary of the observations from our prior reports and observations made during the recent site reconnaissance.

- The property is situated between Widgeon Road and the foreshore slope of the Strait of Georgia. The ground surface above (to the south of) the foreshore slope crest is generally flat and level, and at approximately the same elevation as Widgeon Road. The distance from Widgeon Road to the slope crest ranges from about 120 to 150m.

- A relatively large area near the foreshore slope crest has been cleared of low lying vegetation and approximately 5 trees. A large tree on the crest of the slope has fallen down slope at some point, possibly because of soil erosion at the crest of the slope. The root ball is still partially embedded in the crest of the slope. This indicates that regression of the slope crest is occurring. It is not known if the tree had fallen down prior to or after our original investigation. It is not mentioned in the prior reports, so we assume it had fallen down since the earlier reports were written. The report G2228.03 stated: "Vegetation within the setback area should also be maintained and this area should not be clear-cut, although some clearing and removal of trees is permissible."

Schedule No. 4
Geotechnical Assessment
(Page 3 of 6)

- Trees on the middle and upper foreshore slope have been limbed, and approximately 5 trees have been cut down. The subdivision report referenced above (G2228.02) stated: "The existing vegetative cover on the foreshore slope should be maintained. The slope should not be cleared of vegetation, although select topping of trees is permissible."

- The foreshore slope is around 30 m in total height and appears to be comprised of a series of old failure scarps that have re-vegetated with mature, coniferous trees and thick undergrowth. The upper (10 to 12 m) portion of the slope is at angles around 38° to 45°, with a generally straight and uniform ground surface. In some areas, the upper 2 to 3 m of slope is near vertical.

- The middle section of slope is at angles of around 32° to 35°, with an irregular ground surface. Surface seepage was observed near the middle of the slope directly downslope from some of the scarps observed at the slope crest. The scarps appear to develop into gullies on the lower sections of slope, which carry seepage to the beach along the toe. The gullies are generally U-shaped with straight, uniform side walls of around 25° to 30°. The gullies do not contain well-defined flow channels along their centrelines.

- The lower section of slope – directly above the beach – is around 25°, and is between 5 and 10 m in height. This section of foreshore slope tends to be saturated and surface seepage runoff was observed along the toe. The toe of the slope does not appear to be impacted by direct wave action.

- The lower section of foreshore slope and the gully floors tended to be vegetated with wet site indicator plants, such as ferns.

Schedule No. 4
Geotechnical Assessment
(Page 4 of 6)

- Surficial soils exposed in percolation test pits above the foreshore slope consist of well-graded, clean sand and gravel.

3. Discussions and Recommendations

a. The recently fallen tree and the irregular ground surface on the foreshore slope indicate that the foreshore slope is not static and that slow downslope movement (creep) of the surficial soils is taking place. The recent cutting of trees (as opposed to topping) on the foreshore slope will likely increase the rate of downslope movement (creep). Over time, the creep will result in gradual retrogression of the foreshore slope crest. The cutting of trees on the foreshore slope crest will increase the rate of regression of the foreshore slope crest. Under extreme natural occurrences, such as earthquakes or low frequency storm events, there may be a more rapid loss of slope and retrogression of the crest.

b. Based on the conditions observed during the October 15, 2008 site reconnaissance, and on the interpreted mechanism of slope movement described above, it is considered that the building set back of 18 m from the crest of the slope for the proposed residence would be sufficient so that the site would be safe, from a geotechnical perspective, for the use intended. The safe condition is dependent on implementation of the following recommendations.

i. The footings for the proposed residences should be founded a minimum of 0.6 m below current ground surface. It is anticipated that the bearing subgrade soil would consist of intact, unweathered, natural, granular soil.

ii. Footings for decks and ancillary buildings may be located less than 18 m of the slope crest. The building setback recommended in the report applies only to the residences. Ancillary buildings and decks may be located within the setback area,

Schedule No. 4
Geotechnical Assessment
(Page 5 of 6)

provided that their foundations are completely separate from the residence foundations and they do not form an integral part of the residence structure. Buildings that are not intended to be occupied on a permanent basis may also be located within the setback area.

It should be noted, however, that structures within the setback area could be subject to the geotechnical hazard of slope crest regression. The Owner must be made aware of this potential for eventual damage to the structures constructed within the setback area. **We recommend re-vegetation on the foreshore slope crest and foreshore slope to stabilize the soil and reduce the rate of retrogression of the foreshore slope crest.**

iii. Drainage from the residence - including runoff from the roof and hard surfaced areas and perimeter drain effluent – should not be discharged near the slope crest or directly onto the slope surface. Drainage could be collected and conveyed to a rock pit, which should be located a minimum of 15 m from the crest of the foreshore slope.

iv. During construction, excavation spoil or debris should not be discharged or dumped onto the slope. Similarly, site development should not increase the elevation of the slope crest through placement of fill.

c. Septic fields must be located at least 15 m from the crest of the foreshore slope. As stated above, the assessment and design for the septic fields has been carried out by others.

Schedule No. 4
Geotechnical Assessment
(Page 6 of 6)

4. **Closure**

a. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report may be requested by the Building Inspector of the Regional District of Nanaimo as a precondition to the issuance of a building permit and that this report, or any conditions contained in this report may be included in a restrictive covenant under Section 699 of the Local Government Act and filed against the title to the subject property.

b. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report has been prepared for and at the expense of the Owner of the subject land. Lewkowich Geotechnical Engineering Ltd. has not acted for or as an agent of the Regional District of Nanaimo in the preparation of this report.

c. Lewkowich Geotechnical Engineering Ltd. trusts that the information presented above meets your current requirements. If you have any questions, or require further information, please do not hesitate to contact the undersigned.

Yours truly,
Lewkowich Geotechnical Engineering Ltd.

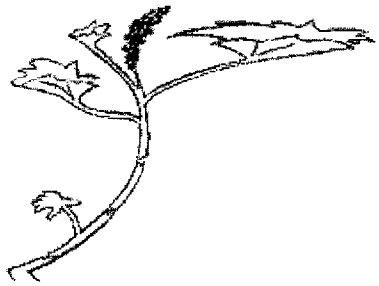
Chris Hudec, M.A.Sc., P.Eng.
Project Engineer

Reviewed By:

John Hessels, ASeT
Senior Technologist

Lewkowich Geotechnical Engineering Ltd.

Schedule No. 5
Landscape Plan
(Page 1 of 2)



Streamside Native Plants
RR # 1 Site 160 Comp 27 Bowser, B.C. V0R 1G0
Tel: 250-338-7509 Fax: 250-757-8767
Email: richard@streamsidenativeplants.com
www.streamsidenativeplants.com

November 7, 2008

Mark Cheesman
2275 Comox Avenue/409
Comox B C
V9M 1X6

Re: Your property on 2045 Widgeon Road in Qualicum Bay
Reference: Lewkowich Geotechnical Engineering Ltd file no. G6855.01 dated Oct 16 2008

Dear Mark,

This letter is intended to address section 3 b. ii of the geotechnical assessment carried out by Lewkowich Geotechnical Engineering Ltd. The following are recommendations for re-vegetating the slope above the seepage zone. Below this zone there is adequate vegetation with no obvious signs of slope failure. Invasive species were not detected on the slope. It should be noted here that plants cannot solely be relied upon to stabilize a slope.

Planting recommendations
The upper bank is steep and north facing. This limits the variety of plants available for re-vegetation. The plants present on the upper slope are

- Sword fern
- Big-leaf Maple
- Western Red Cedar
- Douglas Fir
- Ocean Spray (sporadic)
- Pacific Ninebark (on right side of slope only)
- Dull Oregon grape

Except for the trees these plants are generally not recognized to have slope stabilizing properties. The top portion of the slope is too dry to utilize plants traditionally used to reduce erosion and stabilize slopes. Therefore it is suggested that installing additional plants from the above list would help bind the soil and reduce surface erosion. Planting one plant per meter in companion groupings of five to seven plants will give a natural appearance.

Schedule No. 5
Landscape Plan
(Page 2 of 2)

Along the crest of the slope a two meter buffer should be planted with the objective to bind soils and reduce erosion. Drought resistant plants such as Thimble berry, Salal, Dull Oregon grape, Saskatoon, Kinnikinnick and Sword fern can be planted on one meter spacing. The use of these plants will not inhibit the view from the residence.

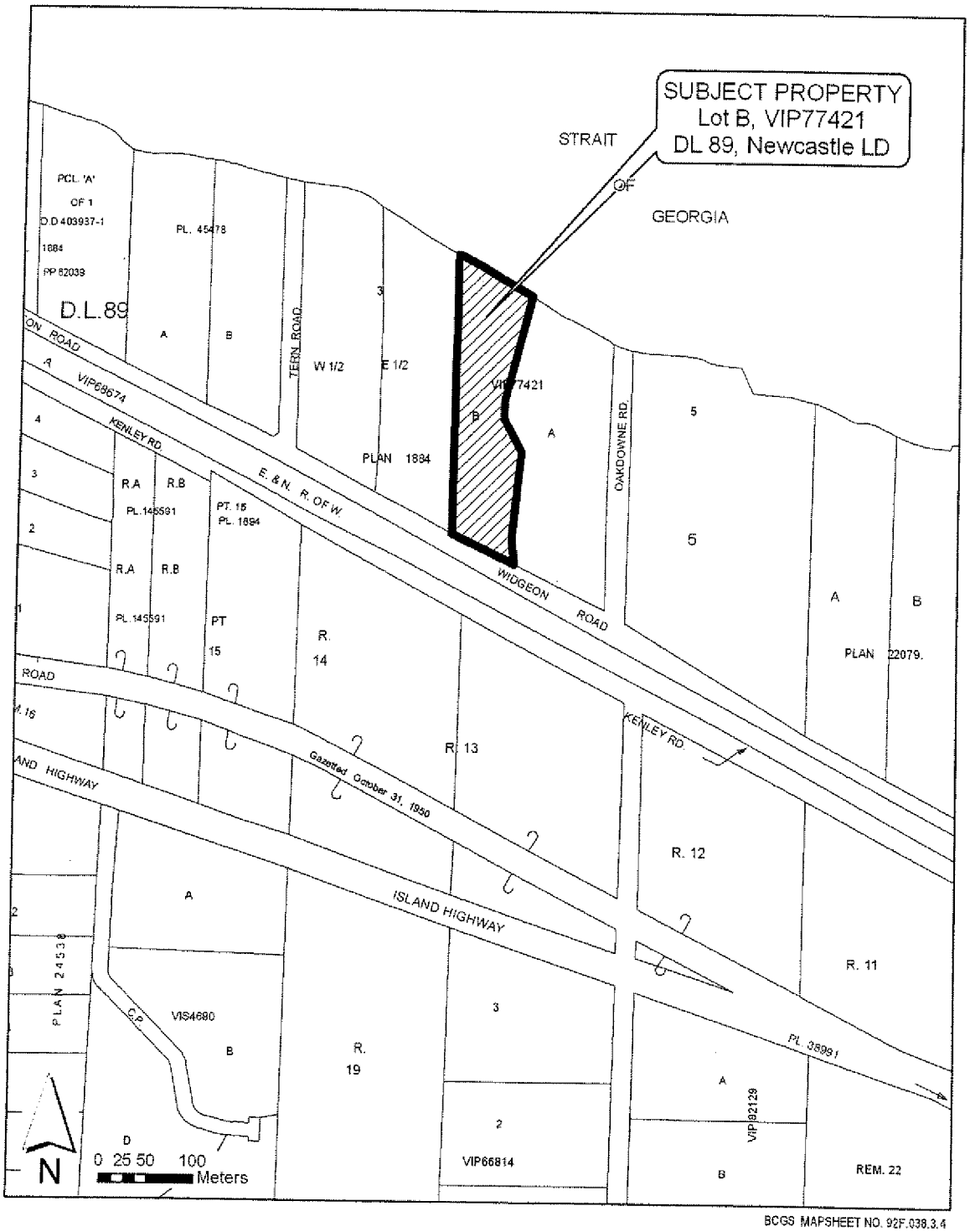
General observations.

- The soil is typical of soils found in understory forests that support drier plants such as sword ferns.
- Care needs to be taken when installing new plantings to not cause mechanical erosion.
- Watering during hot dry periods should be by a temporary drip irrigation system. This will allow water to penetrate the soils rather than running off the slope. The plants should be watered for two years to insure proper root development. After two years the irrigation system can be removed.
- An application of a time release fertilizer once during the spring will assist plant development.
- Remove the dead branches from the trees that were cut down.
- Do not dump garden waste on the slope.
- If erosion is detected during the winter or spring, spread straw to temporarily stabilize the area(s).
- Fall (till December 15) or early spring (mid-February to March) is ideal for planting.

Kindest regards,

Richard Wahlgren
Streamside Native Plants

Attachment No. 1
Location of Subject Property



BCGS MAPSHEET NO. 92F.038.3.4

REGIONAL DISTRICT OF NANAIMO

RDN REPORT		
CAO APPROVAL		
EAP	✓	Nov 25 '08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO: Geoff Garbutt
Manager of Current Planning

DATE: November 12, 2008

FROM: Kristy Marks
Planner

FILE: 3060 30 60839

SUBJECT: **Development Permit Application No. 60839 – Heck**
Strata Lot 1, District Lot 89, Newcastle District, Strata Plan 1253, together with an interest in the common property in proportion to the unit entitlement of the Strata Lot as shown on Form 1
Electoral Area 'H', Folio No. 769.12211.001

PURPOSE

To consider an application for a Development Permit to allow the construction of a residential dwelling and attached garage on a property located at 1885 Widgeon Road.

BACKGROUND

The subject property, legally described as Strata Lot 1, District Lot 89, Newcastle District, Strata Plan 1253, together with an interest in the common property in proportion to the unit entitlement of the Strata Lot as shown on Form 1 is a coastal property located on Widgeon Road in Electoral Area 'H' (*See Attachment No. 1 for location of subject property*). The property currently contains two residential dwellings, a detached garage, and a gazebo. The applicant is proposing to replace one of the existing residential dwellings with a new dwelling. The parcel slopes gently to the north, towards the sea and contains a steep bank immediately adjacent to the sea. The subject property is bordered by the sea to the north, developed residential parcels to the east and west and Widgeon Road to the south.

The subject property is designated within the Environmentally Sensitive Features for aquifer protection, Hazard Lands and Fish Habitat Protection Development Permit Areas (DPA) pursuant to "Regional District of Nanaimo Electoral Area 'H' Official Community Plan Bylaw No. 1335, 2003". The applicant has completed the Riparian Areas Regulation Property Declaration Form and as there are no streams on or within 30 metres of the subject property, the application is exempt from the requirements of the Fish Habitat Protection DPA.

The parcel is 2.75 ha in size and is currently zoned Rural 1 (RU1) pursuant to "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987". The applicant is requesting approval to construct an approximately 537m^2 residential dwelling and attached garage within the Hazard Lands DPA. In addition, the subject property is affected by two covenants held by the Ministry of Transportation and Infrastructure (MOTI).

Sustainability Implications

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist". This proposal represents the redevelopment of an existing residential parcel. The applicant is proposing to construct on a portion of the parcel that is already cleared and to

retain existing vegetation on the subject property. In addition, the applicant has provided a Geotechnical Evaluation of the slope conditions in order to ensure that the property is safe and suitable for residential use. From a sustainability perspective the applicant is proposing to redevelop an existing property, retain sensitive vegetation and utilize the cleared portion of the site in order to reduce potential impacts.

ALTERNATIVES

1. To approve Development Permit No. 60839 subject to the conditions outlined in Schedules No. 1-4.

2. To deny the requested development permit.

LAND USE AND DEVELOPMENT IMPLICATIONS

As outlined above, the applicant is requesting approval to redevelop an existing residential property at 1885 Widgeon Road. The location of the proposed residential dwelling and attached garage are outlined on *Schedule No. 2*. Building elevations for the proposed development are outlined on *Schedule No. 3*.

In keeping with the Hazard Lands DPA, the applicant has submitted a Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated September 5, 2008 which addresses the proposed development (*Schedule No. 4*). This report states that the proposed development is geotechnically safe and suitable for the intended purpose of residential development. As per board policy, staff recommends that the applicant be required to register a section 219 covenant that registers the Geotechnical Report prepared by Lewkowich Geotechnical Engineering Ltd., and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.

There are two restrictive covenants registered on the title of the subject property in favour of the Ministry of Transportation and Infrastructure (MOTI) (M17673 and J103099) which prohibit the siting of buildings or structures or the removal of vegetation within the covenant areas. The new dwelling and attached garage are proposed to be located within these covenant areas. The MOTI has confirmed that "the Provincial Approving Officer…is prepared to release the existing covenant and sign a new covenant document, with the September 5, 2008 report prepared by Lewkowich Geotechnical Engineering attached as Schedule A, for registration".

Given that the applicant has submitted a Geotechnical Evaluation which states that the site is geotechnically safe and suitable for the intended purpose, in staff's assessment, the guidelines of the Hazard Lands DPA have been addressed.

VOTING

Electoral Area Directors – one vote, except Electoral Area 'B'.

SUMMARY/CONCLUSIONS

This is an application for a Development Permit to allow the construction of a residential dwelling and attached garage at 1885 Widgeon Road in Electoral Area 'H'. Given that the applicant has submitted a Geotechnical Evaluation of the slope conditions consistent with the guidelines of the Hazard Lands DPA, staff recommends that the requested Development Permit be approved subject to the terms outlined in Schedules No. 1-4 of this report.

RECOMMENDATION

That Development Permit Application No. 60839, to permit the construction of a residential dwelling on the property legally described as Strata Lot 1, District Lot 89, Newcastle District, Strata Plan 1253, together with an interest in the common property in proportion to the unit entitlement of the Strata Lot as shown on Form 1, be approved subject to the conditions outlined in Schedule No. 1-4.

Report Writer

General Manager Concurrence

Manager Concurrence

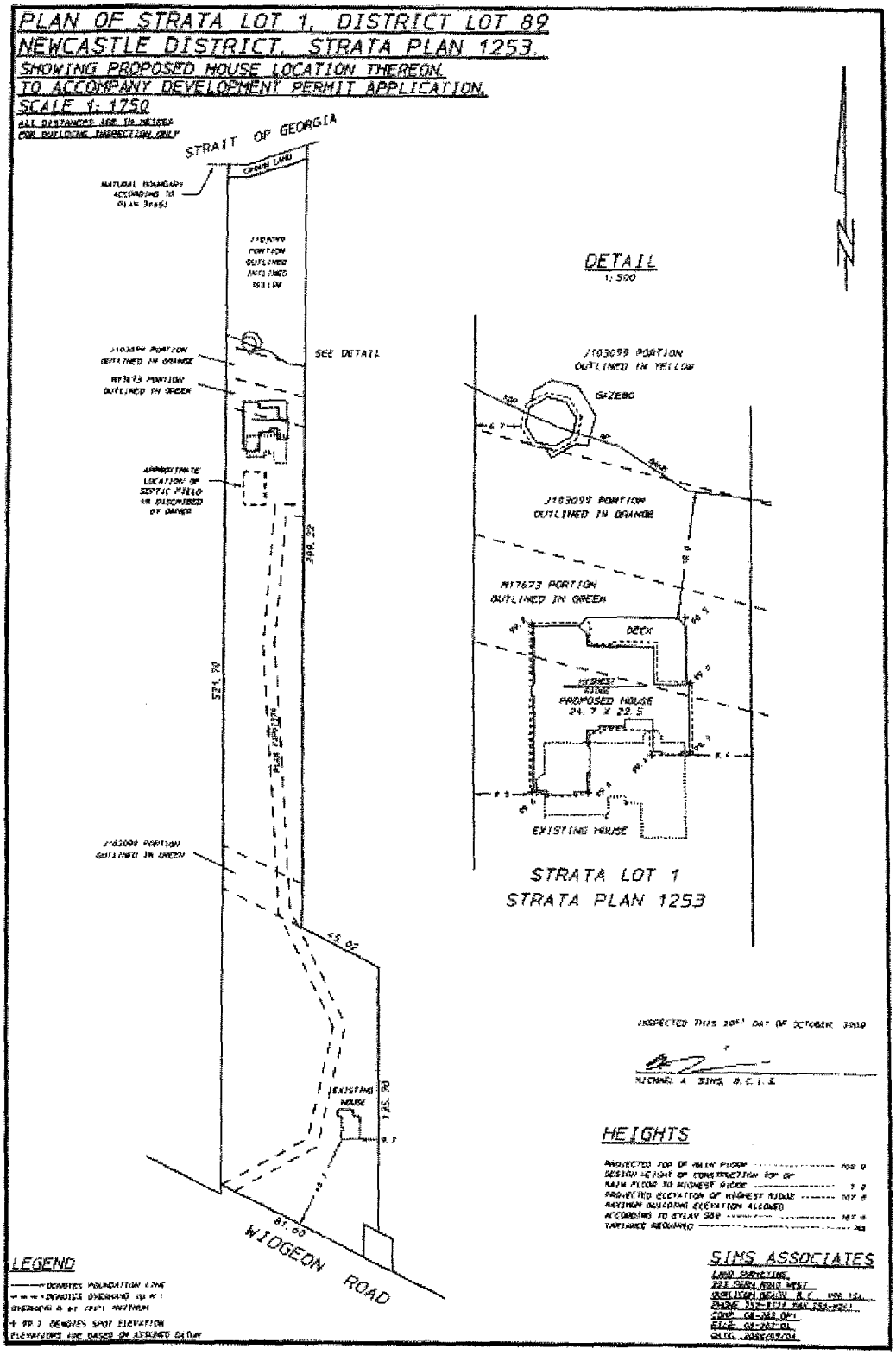
CAO Concurrence

Schedule No. 1
Terms of Development Permit No. 60839

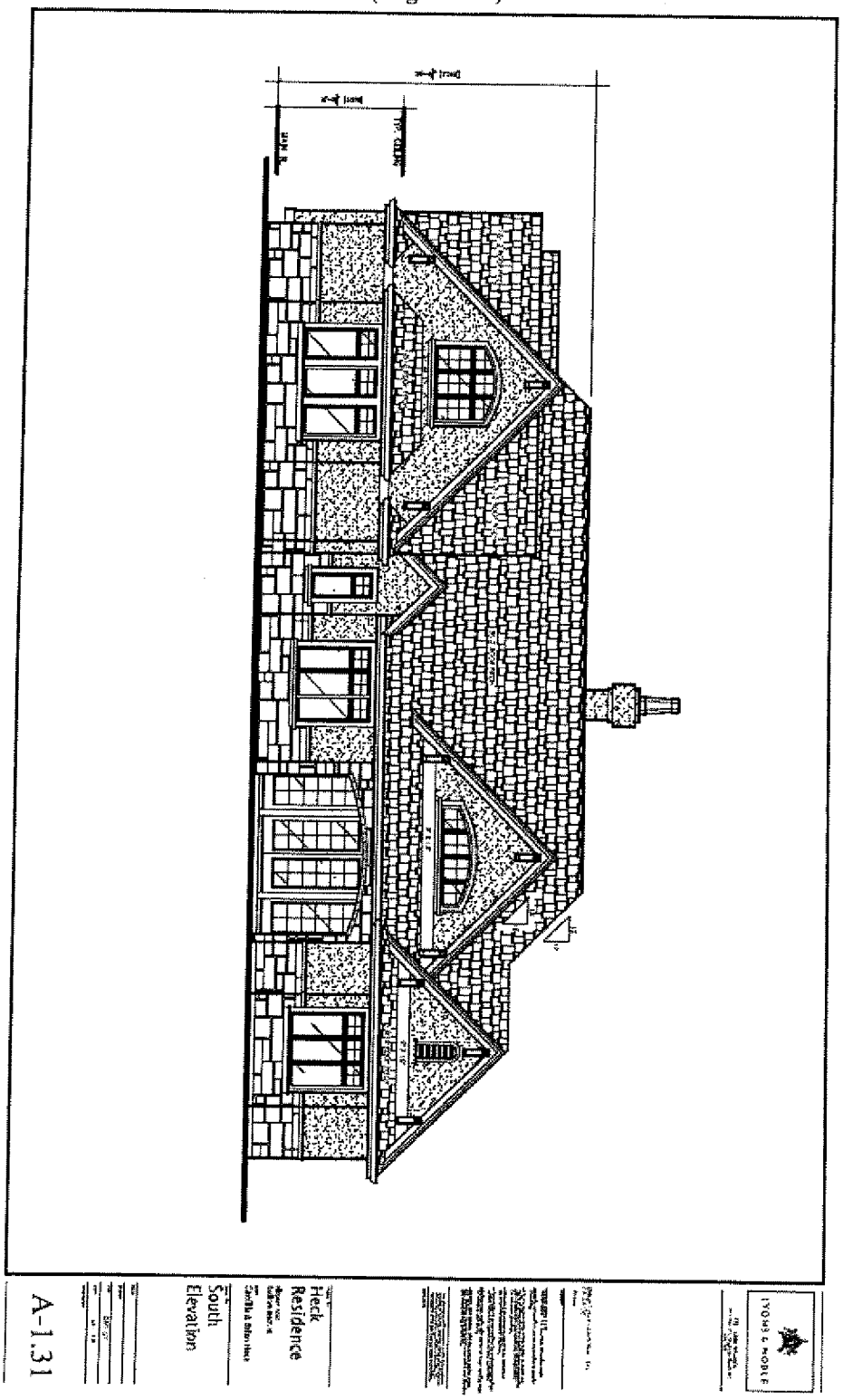
The following sets out the terms and conditions of Development Permit No. 60839.

1. The dwelling unit shall be sited in accordance with the site plan prepared by Sims Associates dated October 20, 2008 attached as *Schedule No. 2.*
2. The dwelling unit shall be developed in accordance with the building elevations prepared by Lyons & Noble Developments Ltd. dated January 7, 2008 attached as *Schedule No. 3.*
3. The dwelling unit shall be constructed in accordance with the Geotechnical Evaluation prepared by Lewkowich Geotechnical Engineering Ltd. dated September 5, 2008, attached as *Schedule No.4.*
4. Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a section 219 covenant that registers the Geotechnical Hazards Assessment prepared by Lewkowich Geotechnical Engineering Ltd. dated September 5, 2008 and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion and/or landslide.
5. The applicant is required to provide a building location certificate and confirmation of height prepared by a British Columbia Land Surveyor at framing stage of construction.
6. The applicant is required to provide confirmation from the Ministry of Transportation and Infrastructure (MOTI) that covenants (M17673 and J103099) have been released from the title of the subject property and a new covenant with the September 5, 2008 report prepared by Lewkowich Geotechnical Engineering attached has been registered on title.

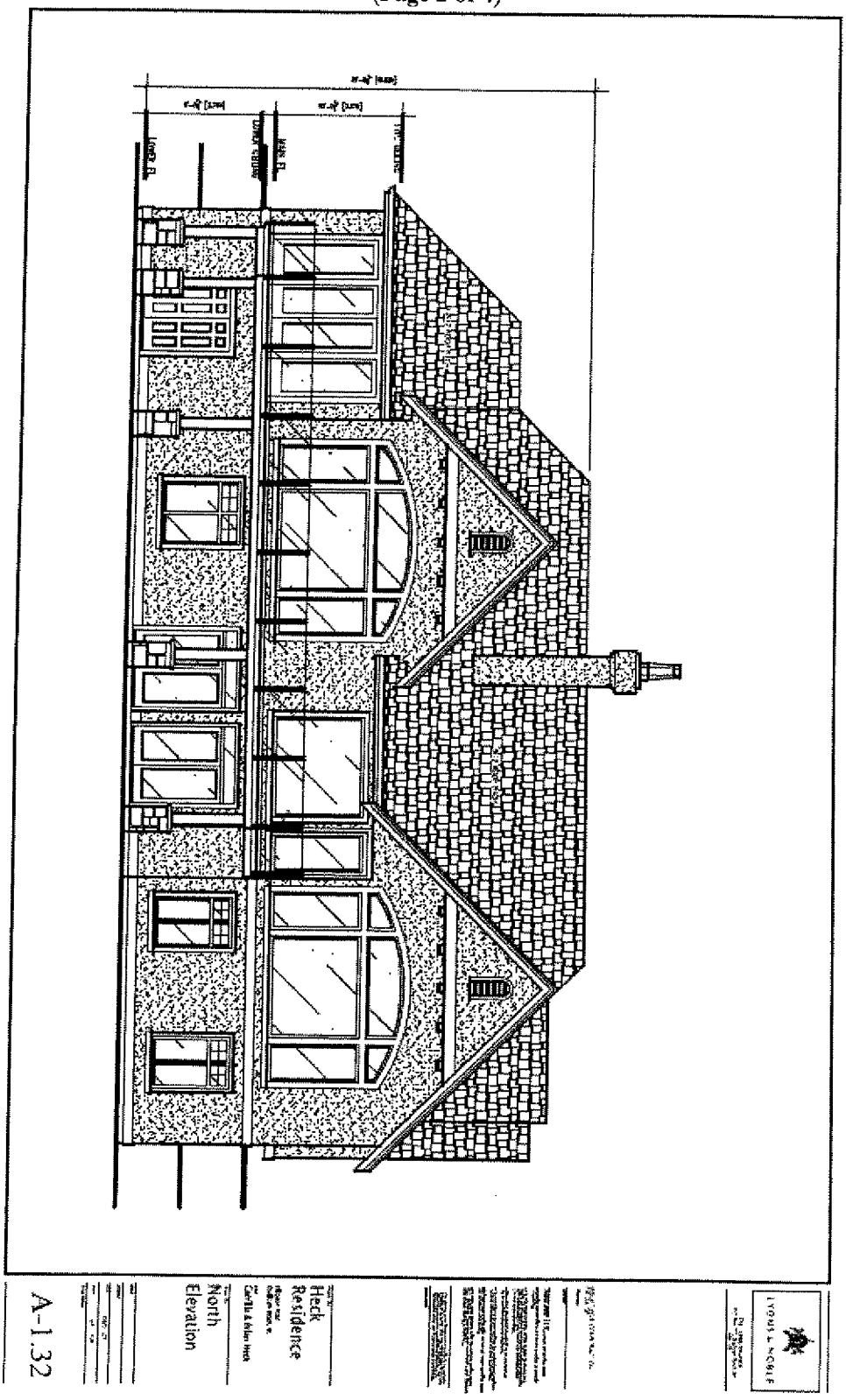
Schedule No. 2
Site Plan



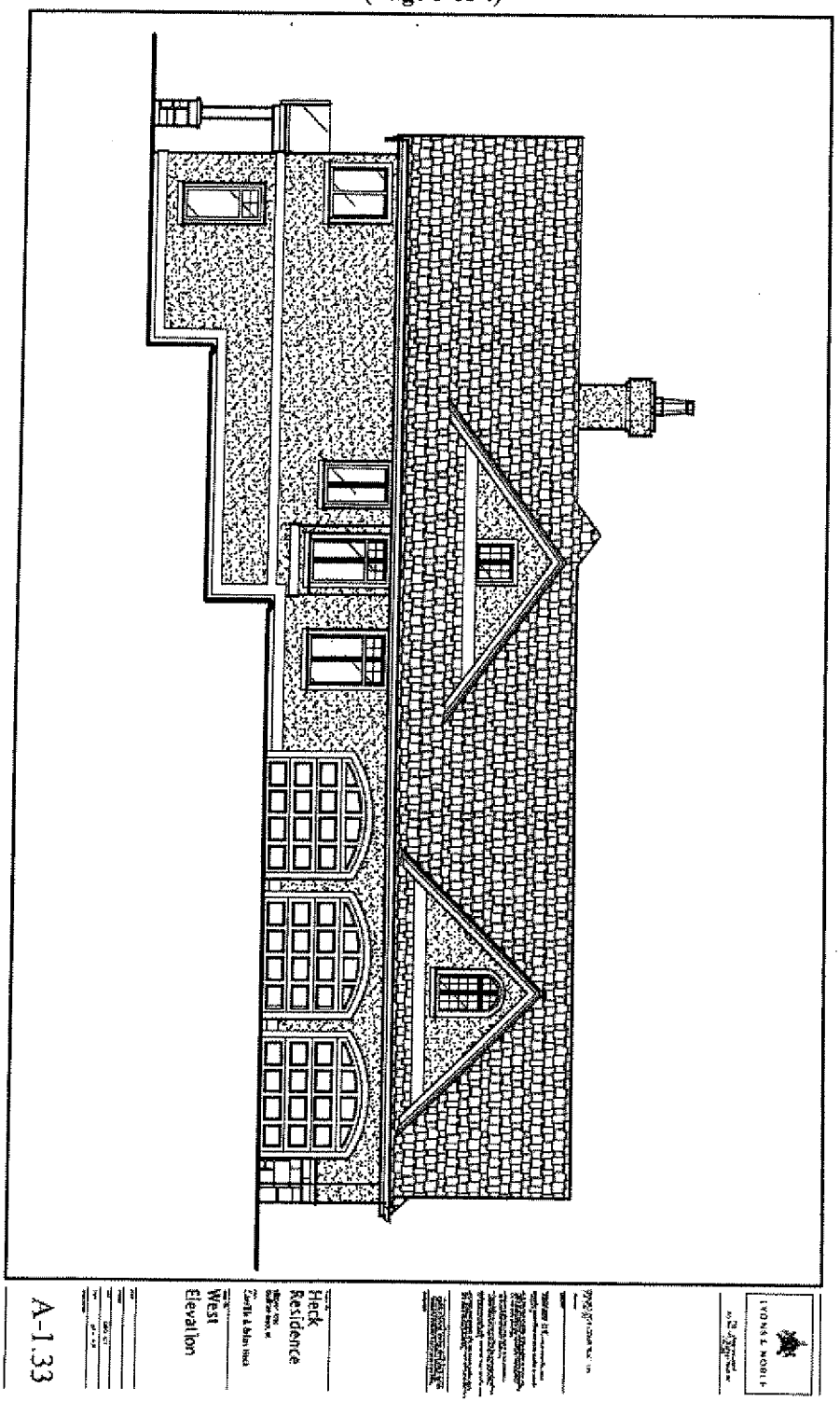
Schedule No. 3
Building Elevations
(Page 1 of 4)



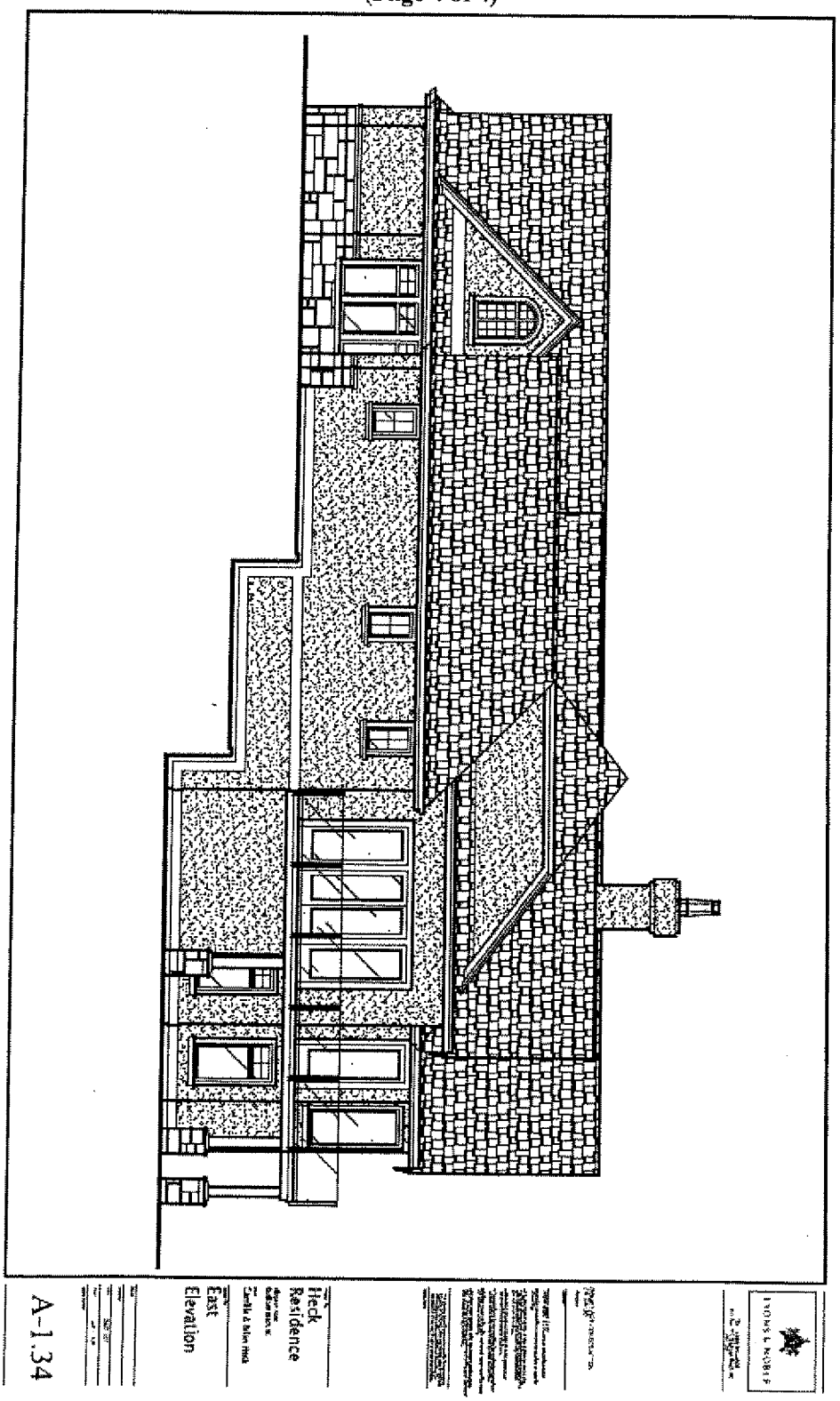
Schedule No. 3
Building Elevations
(Page 2 of 4)



Schedule No. 3
Building Elevations
(Page 3 of 4)



Schedule No. 3
Building Elevations
(Page 4 of 4)



Schedule No. 4
Geotechnical Evaluation
(Page 1 of 5)

Lewkowich Geotechnical Engineering Ltd.

File: G5575.01 (revised)
September 5, 2008

Lyons & Noble Developments Ltd.
P.O. Box 217
Qualicum Beach, B.C.
V9K 1S8

Attention: Mr. Sylvain Giroux

PROJECT: HECK RESIDENCE - 1885 WIDGEON ROAD, QUALICUM BEACH, B.C. (STRATA LOT 1, DISTRICT LOT 89, NEWCASTLE DISTRICT, STRATA PLAN 1253)

SUBJECT: GEOTECHNICAL EVALUATION

Dear Mr. Giroux:

1. Introduction

a. As requested by yourselves - on behalf of the Owners of the subject property - Lewkowich Geotechnical Engineering Ltd. evaluated the subject site to determine whether the property is geotechnically safe and suitable for the intended purpose of residential development. This letter summarizes our site observations, together with our comments, conclusions and recommendations.

b. We understand that you propose to construct a single family residential home within the northerly portion of the property. This new residence is to be in the vicinity of an existing residence, as shown on a Plot Plan prepared by yourselves from information provided by Sims & Associates Land Surveyors.

c. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report may be requested by the Building Inspector of the Regional District of Nanaimo as a precondition to the issuance of a Development Permit and that this report, or any conditions contained in this report may be included in a restrictive covenant under Section 699 of the Local Government Act and filed against the title to the subject property.

Suite A - 2569 Kenworth Road, Nanaimo, British Columbia, V9T 3M4
Telephone: (250) 756-0355 Facsimile: (250) 756-3831

Schedule No. 4
Geotechnical Evaluation
(Page 2 of 5)

d. Lewkowich Geotechnical Engineering Ltd. acknowledges that this report has been prepared for and at the expense of the Owner of the subject land. Lewkowich Geotechnical Engineering Ltd. has not acted for or as an agent of the Regional District of Nanaimo in the preparation of this report.

2. Site Conditions

a. The property is a long, relatively narrow property bounded by Wiigeon Road to the south, the Georgia Strait to the north, and other residential properties to the east and west. In general, the property consists of a smooth and relatively level upper plateau area within most of the property, and a moderately steep ocean-facing slope within the northern portion.

b. The upper plateau area is essentially level to gently sloping down to the north. This area includes mature trees as well as the currently developed portion of the lot. Development includes an existing residence and a gazebo. We understand that the existing house is to be demolished prior to construction of the currently proposed house.

c. The ocean-facing slope comprising the northern end of the property has relief visually estimated to be in the order of 50 to 60 metres high. The slope inclination varies somewhat, but averages about 30 to 34 degrees from horizontal. In general, slope vegetation consists of mature trees and light to moderate underbrush. There was no evidence of slope movement, and growth habit of the coniferous trees was straight suggesting relatively stable slope surface conditions. Soil exposures within the vicinity of the gazebo - which was constructed at the crest of the ocean-facing slope - consisted of a very dense mixture of silt, sand, gravel and cobbles interpreted to be an over-consolidated glacial till. There was no evidence of water seepage from within the slope at the time of our site observations.

Schedule No. 4
Geotechnical Evaluation
(Page 3 of 5)

d. We examined the condition of the shoreline. There was no indication of wave-induced slope toe erosion.

e. Soil conditions at this site, as inferred from our previous experience in the area combined with exposures noted during our site reconnaissance, are concluded to consist of a veneer of sand/gravel soils present within the upper plateau area, underlain by a very dense glacial till soil as noted above, in turn underlain by a uniformly graded pre-glacial outwash sand. This latter material was not observed from within the slope, but is inferred based on our experience on other properties in the vicinity of this site.

3. Comments, Conclusions and Recommendations

a. We conclude that the site is geotechnically safe and suitable for the intended purpose of support for a residential building provided recommendations outlined here are followed during development.

b. In general, shallow ground conditions within the upper plateau area are expected to be reasonably favourable, consisting of a veneer of granular soils (sand and gravel) overlying very dense glacial till soils. A conventional spread footing foundation system designed and built in accordance with the current B.C. Building Code should be suitable for building support, provided any fill, organic or disturbed soils are removed prior to construction.

c. the ocean-facing slope is concluded to currently be in a reasonably stable condition. There was no observed evidence of past or ongoing slope instability within the slope face, and the potential for instability due to wave action at the slope toe is considered to be relatively low.

Schedule No. 4
Geotechnical Evaluation
(Page 4 of 5)

d. However, because of the potential for slope degradation during a severe/design seismic event (using design parameters outlined in the current B.C. Building Code) and current state of knowledge as to the strength of soils inferred to be present at this site, we recommend that the proposed home be provided with a minimum setback distance from the crest of the ocean-facing slope. We understand that you propose to provide the residence with a setback distance of about 18 metres, which we consider to be acceptable from the geotechnical aspect. Please note that this setback can be relaxed for non-critical elements, such as non-habitable installations such as gazebos or garden sheds.

e. The intent of this setback is to provide a level of protection against loss of support for the proposed home, in the event of a severe/design seismic event, or erosion such as may occur from a severe storm event. Please note that we recommend that slope vegetation be maintained as a precautionary measure against slope face erosion. We have taken into account levels of risk of ten percent in fifty years for natural hazard events such as storms, and a level of risk of two percent in fifty years with respect to a seismic (earthquake) event in consonance with the current (2006) B.C. Building Code.

f. In general, slope vegetation should consist of mature indigenous tree growth as is currently present. We do not object - from the geotechnical aspect - to the removal of trees within a three metre vertical distance as measured from the slope crest since these trees could represent a surcharge. In this instance, however, stumps should be left in place. If enhancement of an ocean view is desired, it should be achieved by "crown thinning" by experienced pruning personnel, rather than by topping or removal of trees further down-slope.

Schedule No. 4
Geotechnical Evaluation
(Page 5 of 5)

g. Drainage from the house should be allowed to dissipate over the width of the house, rather than be collected into a drainage system that would then result in concentrated flows. This may be done through the use of down-spouts and splash-pads spread around the periphery of the house, or through the use of a ground infiltration system that is installed to distribute intercepted and/or gathered flows uniformly over the length of the house.

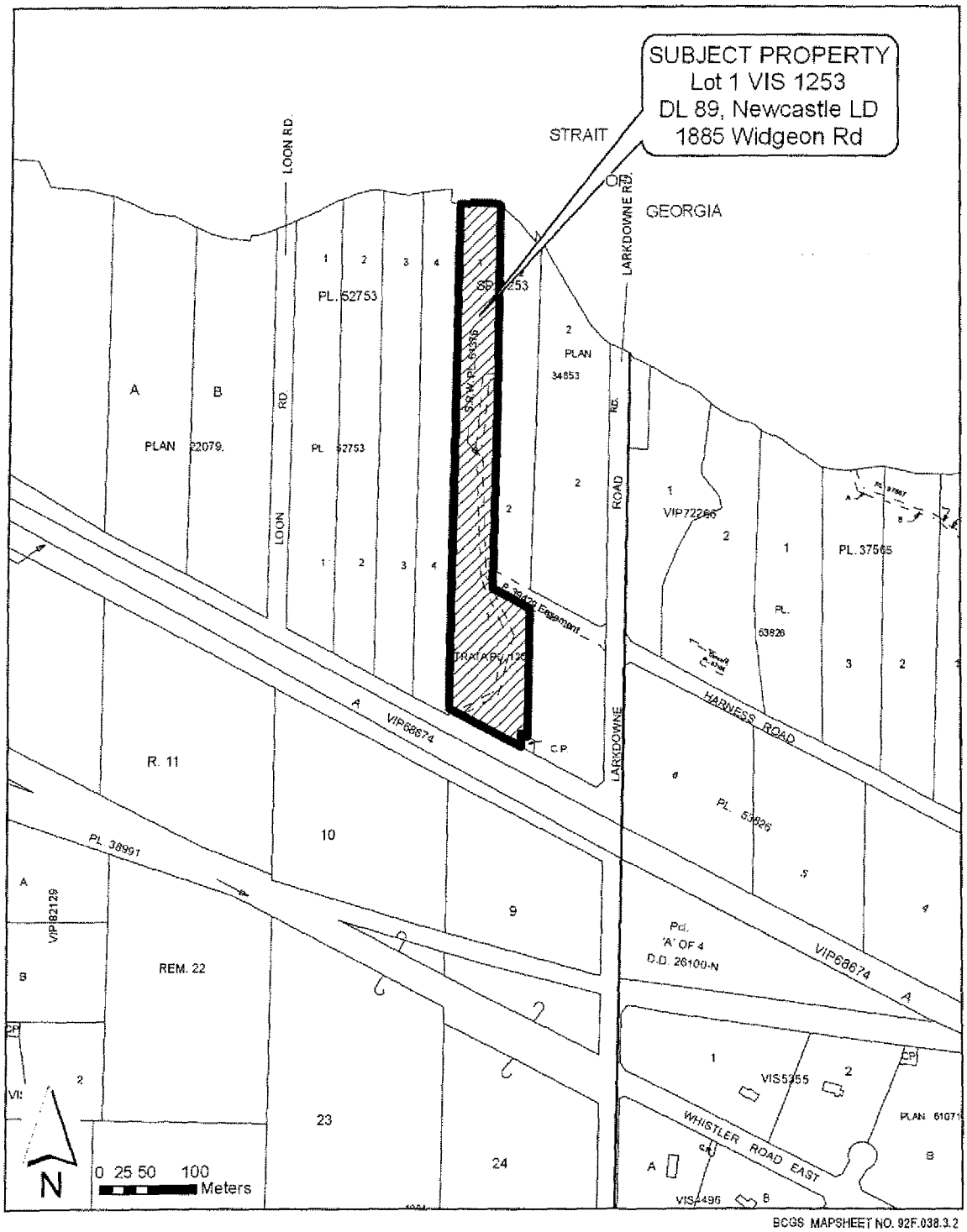
4. Closure

Lewkowich Geotechnical Engineering Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or if we can be of further service, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Geotechnical Engineering Ltd.

G.P. Lewkowich, P.Eng.
Principal

Attachment No. 1
Location of Subject Property



REGIONAL DISTRICT OF NANAIMO

RDN REPORT		
CAO APPROVAL		
EAP		
COW		
NOV 14 2008		
RHD		
BOARD	✓	Nov 25 '08

MEMORANDUM

TO: Geoff Garbutt
Manager, Current Planning

DATE: November 5, 2008

FROM: Elaine Leung
Planner

FILE: 3060 30 60840

SUBJECT: **Development Permit No. 60840**
Lot A, District Lot 182, Nanoose District, Plan VIP65017
Electoral Area 'F' – 2570 Peterson Road

PURPOSE

To consider an application for a development permit on property in Electoral Area 'F' in conjunction with the creation of a five lot subdivision in the Agriculture Land Reserve.

BACKGROUND

The subject property, legally described as Lot A, District Lot 182, Nanoose District, Plan VIP65017, known municipally as 2570 Peterson Road, is located in Electoral Area 'F' (*see Attachment No. 1 for location of subject property).*

The subject property, which is approximately 21.13 ha in size, is currently zoned site specific Agriculture 1 (A-1.7), which permits a commercial composting facility, specifically excluding waste disposal, within the Agricultural Land Reserve (ALR). The applicant is proposing to create a five lot subdivision; with four new lots at 4.24 ha in size, and the remaining proposed parcel at 4.17 ha in area. Each of the proposed parcels will have road frontage off Peterson Road, and will meet the minimum parcel size and frontage provisions pursuant to Bylaw No. 1285, 2002. *(see Schedule No. 2 for proposed subdivision layout).*

Surrounding uses include Rural (R-1) zoned lots to the east, and site specific Englishman River Comprehensive Development (CD14) zones to the north. Lands to the south and west are zoned agriculture, and designated in the Agriculture Land Reserve.

The property is subject to the Fish Habitat Protection Development Permit Area (DPA) pursuant to "Regional District of Nanaimo, Area 'F' Official Community Plan Bylaw No. 1152, 1999." Craig Creek flows through the property, as well as an associated ravine, which crosses the proposed lot boundary. As such, a Development Permit is required. The Watercourse Protection DPA is applicable to all land within the Riparian Assessment Area.

The applicant's proposed subdivision has received preliminary layout approval from the Ministry of Transportation, subject to conditions. RDN Staff note that one of the conditions is a covenant pursuant to Section 219 of the Title Act, which prohibits the construction of any buildings until such time that a geotechnical report can be done to address that the building site is safe from geotechnical hazards. Staff note that this will be addressed at the time of subdivision approval.

Sustainability Implications

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist." This is an application for a development permit required in conjunction with a subdivision, resulting in reduced parcel size within the ALR. However, the resulting parcel sizes will remain large enough to continue as agriculture parcels to be used as hobby farms etc. The RAR report prepared by Toth and Associates includes recommendations for the protection of the SPEA for Craig Creek with a setback of 15 metres from the top of the ravine bank.

ALTERNATIVES

1. To approve Development Permit Application No. 60840 as submitted, subject to the conditions outlined in Schedules No. 1 - 3.

2. To deny the Development Permit as submitted and provide staff with further direction.

LAND USE AND DEVELOPMENT IMPLICATIONS

The Agriculture Land Commission (ALC) has approved the proposed subdivision, concluding that the subdivision would not impact agricultural potential of the property, and could be improved for agriculture by clearing and seeding the properties. In further discussions with the ALC, they have indicated that the although the current site specific zoning permits a composting facility, the applicant would be required to provide additional details for further review and approval, before operation could commence.

A previously submitted geotechnical report in February 1996 provided an evaluation of the property. This included an examination of the condition of Craig Creek and its banks. The report concluded that the site was geotechnically safe and suitable for siting residential structures provided those structures were sited outside the 15 m setback from the creek. The report also recommended a minimum setback between the 'top of bank' and the foundation of permanent structures of 3 m.

Watercourse Protection Development Permit Area

The applicant has provided a Riparian Area Assessment (Schedule No. 3), prepared by a Qualified Environmental Professional, for Craig Creek and an associated forested ravine located along the west boundaries of the lots 4 and 5. This report establishes a Stream Protection and Enhancement Area (SPEA) of 10 metres for Craig Creek and 15 metres from the top of the ravine bank.

They have noted that a Development Permit is required for the proposed road crossing on Craig Creek. They recommend that a sediment mitigation and site restoration plan be included in the supporting documentation, and that fish salvage and environmental monitoring be conducted during the crossing's construction, and limited between July 1 and September 15. Further, the report recommends that the RDN consider making fencing of the top of the ravine bank boundary a requirement of future development on Lots 4 and 5 to prevent livestock from accessing the ravine area of Craig Creek.

In addition, the Ministry of Environment requires that all Riparian Area Regulation (RAR) reports include a schedule for environmental monitoring. As outlined above, staff recommends fencing or other similar barrier material be erected to protect the riparian area prior to any development of these parcels.

In further discussions with the Qualified Environmental Professional (QEP) from Toth and Associates Environmental Services, he has advised that proposed lots 1, 2 and 3 appear well beyond the 30 metres of the assessment RAR area.

Due to environmental implications with the SPEA and Craig Creek, Staff have requested that proposed lots 4 and 5 be restricted to the A-1 Zone, which does not permit commercial composting. The applicant has agreed to a covenant on the property which would restrict this ability, and would limit to agriculture uses only.

Site Servicing Implications

The applicant has applied to the Vancouver Island Health Authority for an application for septic disposal approval.

The Ministry of Transportation is responsible for the storm drainage. As part of the subdivision review process, the Regional Approving Officer will examine the storm water management of the parent parcel and impose conditions of development as required.

VOTING

Electoral Area Directors – one vote, except Electoral Area 'B'.

SUMMARY

This is an application for a development permit in conjunction with a subdivision application on property located at Lot A, District Lot 182, Nanoose District, Plan VIP65017.

The applicant has indicated that the current existing site specific agriculture (A1-.7) zone is to remain on proposed lots 1, 2 and 3 (west of Peterson Road). They have confirmed that they do *not* wish to carry over the zone to proposed lots 4 and 5 (east of Peterson Road), thus removing the commercial composting facility portion. Planning Staff recommend that a covenant be applied to restrict the composting use on proposed lots 4 and 5. Furthermore, Staff notes that with respect to lots 1, 2 and 3 and the ability to use the property for a composting facility on these lots, a Waste Stream Management License would be required prior to operation.

The Agricultural Land Commission has indicated that they have no concerns with the existing zoning at this time, as any proposal for a composting facility, more specifically an off site facility, would require their further review and approval.

Given the applicant has submitted a report prepared by a qualified environmental professional which includes measures to protect the SPEA, the requirements of the development permit guidelines have been addressed. They have confirmed that proposed lots 1, 2 and 3 is outside the assessment RAR area.

Staff recommend approval of the development permit as outlined in Schedules No. 1 - 3, of this staff report.

RECOMMENDATIONS

1. That Development Permit Application No. 60840 in conjunction with the subdivision on the parcel legally described as Lot A, District Lot 182, Nanoose District, Plan VIP65017 and designated within the Fish Habitat Protection Development Permit Area be approved subject to the conditions outlined in Schedules No. 1 - 3.

Report Writer

General Manager Concurrence

Manager Concurrence

CAO Concurrence

Schedule No. 1
Development Permit Application No. 60840
Conditions of Approval

The following sets out the conditions of approval:

1. Subdivision

a. The subdivision of the lands shall be in substantial compliance with Schedule No. 2 (to be attached to and forming part of this Permit).

2. Riparian Assessment

a. The Riparian Area Assessment No. 784 prepared by Steve Toth (Toth and Associates) and dated 2008-03-03 (to be attached to and forming part of the development permit as Schedule No. 3) shall be followed.
b. The applicant shall complete the recommendations concerning environmental monitoring and a post development survey as set out in Section 5 – Environmental Monitoring of the Riparian Area Assessment No. 784 to the satisfaction of a Qualified Environmental Professional.
c. The applicant's BCLS shall clearly mark the 30 metre riparian area which crosses proposed Lots 4 and 5 to the satisfaction of the Regional District of Nanaimo.

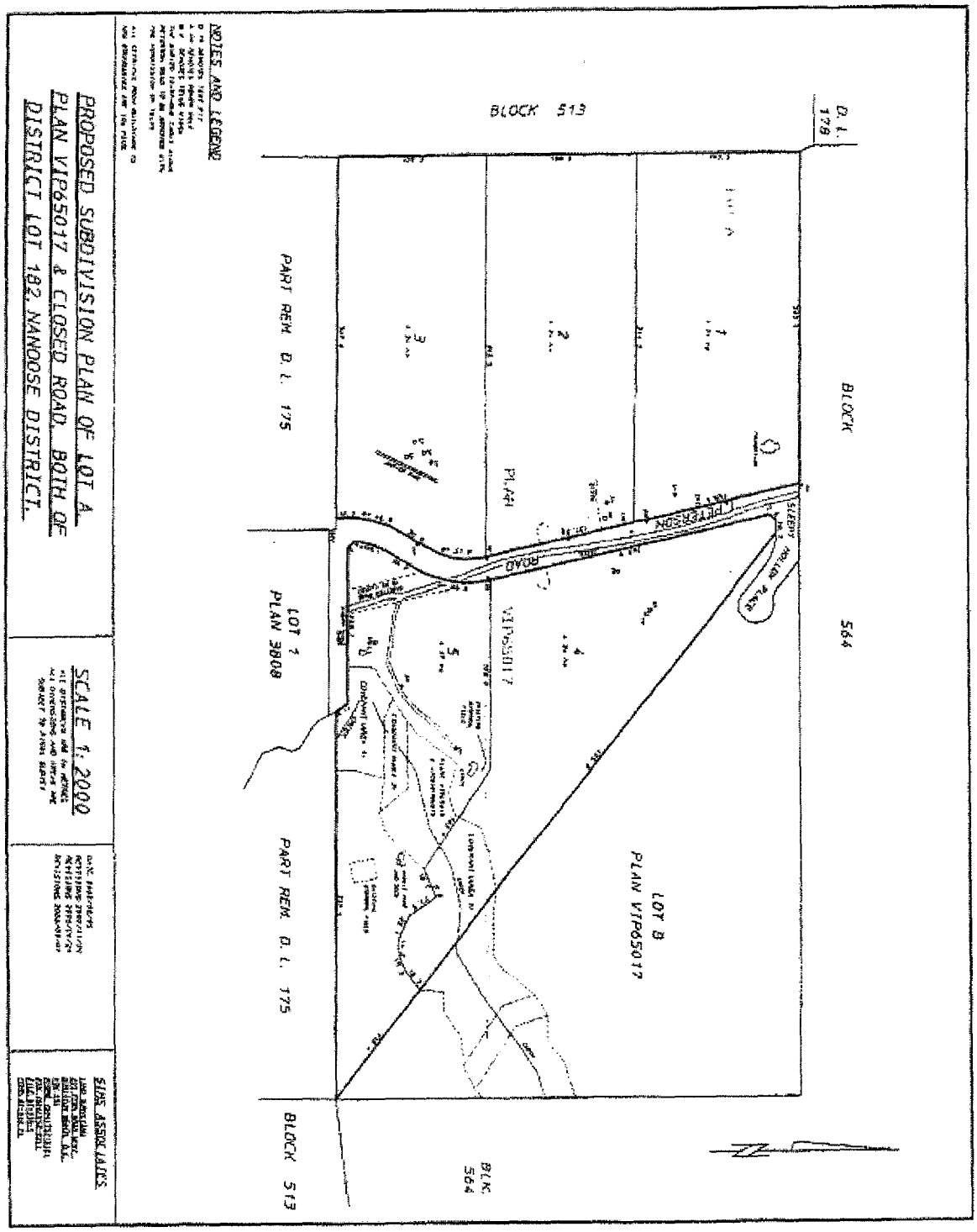
3. Fencing

a. The applicant shall install fencing at the top of the ravine bank along the eastern boundaries of Lots 4 and 5 to restrict animal intrusion in the SPEA.

4. Land Use Covenant

a. Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a section 219 covenant that restricts the uses on the subject property to uses limited to A-1 and does not permit commercial composting. Draft covenant document is to be forwarded to the RDN for review prior to registration.

Schedule No. 2
Development Permit Application No. 60840
Proposed Plan of Subdivision



Schedule No. 3
Development Permit Application No. 60840
Environmental Report

Riparian Area Assessment and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

Toth and Associates
Environmental Services

Environmental Report Continued
Page 2 of 37

Riparian Area Assessment and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

Prepared for:

H+F Ventures Ltd.
1080 Industrial Way
Parksville, B.C. V9P 2W8

Prepared by:

S.P. Toth, AScT, R.P.Bio.
Toth and Associates Environmental Services
6821 Harwood Drive
Lantzville, B.C. V0R 2H0

March 3, 2007

Toth and Associates
Environmental Services

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1.0 INTRODUCTION

A Riparian Area Assessment (RAA) was conducted of development proposed for Lots A and B, PIDs 023740868 and 025789350, D.L. 182, Nanoose Land District in the Regional District of Nanaimo (RDN) on February 1, 2007. Lot A is within the Agricultural Land Reserve (ALR); the Riparian Area Regulation (RAR) does not apply within the ALR. The following report provides a site quality survey for Lots A and B. A Riparian Area Assessment report for Lot B (PID 025789350) is included as a "stand alone" document in Appendix A.

Lot A is approximately 21.0 ha and is located west and east of the south end of Peterson Road. Lot B is approximately 9.9 ha and adjoins Lot A on the east side with access provided by Sleepy Hollow Place. Craig Creek runs roughly west to east through the two properties (Figure 1).

The surveys were conducted by Steve Toth, ASCT, R.P.Bio (Toth and Associates Environmental Services), on behalf of H+F Ventures Ltd. To date, Toth and Associates have conducted over 60 environmental assessments of land developments on Vancouver Island. The objectives of this survey were to provide detail about the present ecological features, functions and conditions of the property and include:

- Delineation of the natural boundaries for watercourses on the property;
- Conduct a Riparian Area Assessment for the subject properties;
- Document drainage patterns, site stability and flood issues or other factors affecting lot layout;
- Producing a Riparian Area Assessment report and study area map detailing the results of the study; and
- Providing recommendations for retention, mitigation and compensation of significant features and minimizing development impacts on sensitive sites.

1.1 STUDY AREA

Natural features on the property include Craig Creek and associated forested ravine. The ravine was identified as a Sensitive Ecosystem Inventory Riparian polygon (#N0474C) by the RDN. However, the Area F Official Community Plan (OCP) does not designate or provide specific guidelines or setbacks for Environmentally Sensitive Areas, other than watercourses. The east side of Lot B adjoins Riversedge Community Park.

The biogeoclimatic zone was identified as Coastal Douglas Fir moist maritime (CDFmm1) by the Ministry of Forests biogeoclimatic subzone / variant maps for the South Island Forest District.

Environmental Report Continued
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Figure 1. 1:10,000 Scale Orthophoto of subject properties.

Plan and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

Toth and Associates Environmental Services

Environmental Report Continued
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2.0 METHODS

The methods used to conduct the Riparian Area Assessment and Site Quality Survey included:

- *Fish Protection Act* – Riparian Area Regulations Assessment Methods (MOE 2006),
- Environmental Objectives, Best Management Practices and Requirements for Land Developments (MELP 2001);
- Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (MOE Draft 2005);
- Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia (MWLAP, November 2004);

2.1 Background Information Review

Maps of the study area were obtained from the Regional District of Nanaimo's RDNMap website and the Sensitive Habitat Inventory Map (SHIM) website. The B.C. Conservation Data Centre Internet Mapping Framework (IMF) map site (http://maps.gov.bc.ca/imf36/imf.jsp?site=cdc) was queried to determine the documented presence of threatened or endangered vertebrate and plant species on or adjacent to the property. The Regional District of Nanaimo (RDN) website was visited to review the Area F Official Community Plan (OCP), determine zoning (Figure 2), and Watercourse Protection Development Permit Areas (Figure 3). The Community Mapping Network's website (http://www.shim.bc.ca/) was visited to view recent orthophotos, stream locations, and determine if any documented wildlife trees occur within or nearby the study area.

Searches for fisheries information pertaining to Craig Creek included the Fisheries Information Summary System (FISS), Habitat Wizard, Mapster Version 2.0, the South Coast Cutthroat Atlas, and the Sensitive Habitat Inventory and Mapping (SHIM) Atlas.

H-F Ventures Ltd. provided proposed development plan / lot layout schematics for the property (Figure 4).

2.2 Field Assessment

The field surveys were conducted on February 1, 2006. 2007

A Riparian Area Assessment was conducted on Lot B for determination of Streamside Protection and Enhancement Area (SPEA) widths using the Simple Assessment methodologies.

Environmental Report Continued
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Figure 2. Land Use Designations – Lot B (orange) indicated as Rural Lands

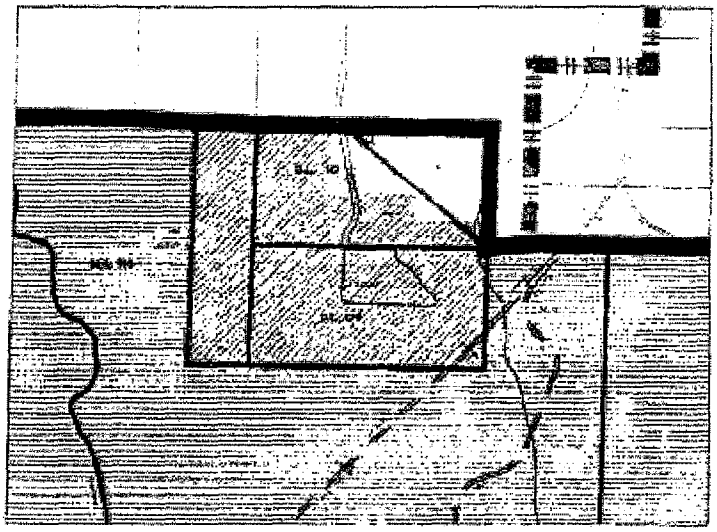
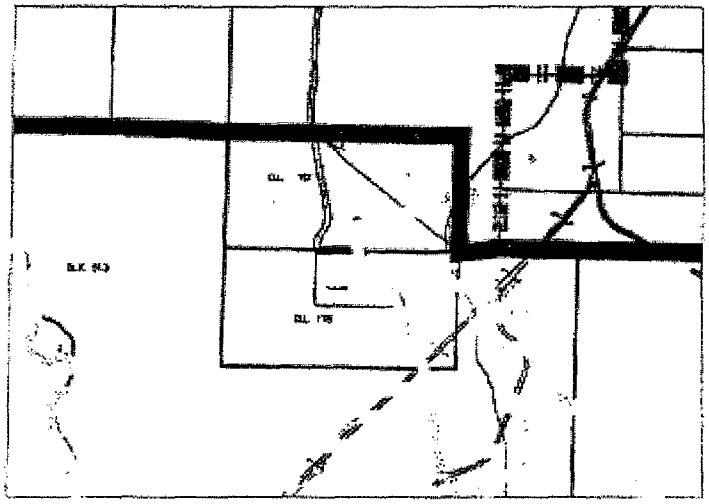


Figure 3. Watercourse Protection DPA through Lots A+B



Environmental Report Continued
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3.0 RESULTS

The Riparian Area Assessment report is included as a "stand alone" document in Appendix A. This RAA report is one of the Regional District of Nanaimo's (RDN) requirements for the development's proposed amendments to Electoral Area F Official Community Plan Bylaw No. 1152, 1999 and Zoning and Subdivision Bylaw No. 1285, 2002.

Site photos are included in this report, with additional photos included in Appendix A.

3.1 Background Information Review

A search of the B.C. Conservation Data Centre IMF map site indicated no identified rare element occurrences for the subject property.

The BC Wildlife Tree Stewardship Atlas (http://www.shim.bc.ca/atlases/atlas.html#wildlifetree) did not indicate any raptor or heron nests on or immediately adjacent to the property. The nearest nest site occurrences were for two bald eagle nests (#E105-096, E105-097) located at the east end of Matuka Drive.

Craig Creek supports populations of coho salmon and cutthroat trout (FISS). Coho distribution is indicated by DFO's OGC Mapster Version 2.0 as limited to the lower reaches of the stream, downstream of the Island Highway.

Currently Lot B is a 9.9 ha, 8 lot strata subdivision located on Sleepy Hollow Place, which the developer is proposing to convert to a 15 lot bareland strata. The development plan would include a road crossing on Craig Creek to access proposed lots 13 and 14. The grade for this road crossing was already in place at the time of survey (Photograph 7). Lot 15 is proposed as parkland (Figure 4). Development proposed for the 21 ha Lot A includes a 5 lot subdivision.

Land Use Designations provided on Map No. 2 of the Area F OCP (Bylaw 1152, 1999) indicated that Lot B is within the Rural Lands designation, while Lot A is designated Resource Lands within the Agricultural Land Reserve. Craig Creek through the property is indicated as a Watercourse Protection Development Permit Area (DPA) on Map No. 3 of the Electoral Area F OCP. Appendix A of the Area F OCP provides the requirements of the Watercourse Protection DPA. Sections of Appendix A pertaining to the development proposal for Lot B are included below.

2.1.3 For all specified watercourses on Map 3 except for the Little Qualicum River, French Creek (defined as that portion north of Highway 4) and the Englishman River, all lands within the following setback are within a Watercourse Protection Development Permit Area:

a) 15 metres of the natural boundary; and

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b) Where there is a bank within 15 metres of the natural boundary, 15 metres from the top of a bank.

2.2 Unless all development activity will be clearly outside the Watercourse Protection Development Permit Area, the proposed location of development relative to the Development Permit Area boundary is required to be determined by a BC Land Surveyor (BCLS) and incorporated into a BCLS certified site plan.

2.3 The natural boundary is defined as the visible high water mark of any lake, river, stream or other body of water where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark on the soil of the bed of the body of water a character distinct from that of its banks, in vegetation, as well as in the nature of the soil itself.

2.4 A bank is defined as a continuous slope of 3 to 1 or more, with no significant and regular break of 15 metres or more, measured horizontally.

4.0 GUIDELINES

4.1 The following are exempt from the requirement to apply for a Development Permit:

4.1.1 Fencing and other farm operations as defined under the Farm Practices Protection (Right to Farm) Act on lands which Section 2(2) of that Act applies;

4.1.2 Where in the case of a subdivision of land:
a) All parcels on which development is to occur are located on land outside of the Watercourse Protection Development Permit Area; and
b) No development activities such as grading, clearing, trenching, installation of utilities in relation to the subdivision or development of the parcels to be created as a result of the subdivision will occur within the Development Permit Area.

4.1.3 Emergency procedures to prevent, control, or reduce flooding, erosion, or other immediate threats to life and property including:
a) Emergency flood or erosion protection of works, or
b) Clearing of an obstruction from a bridge, culvert, or drainage flow; or
c) Repairs to bridges and safety fences where emergency actions by a person other than the Regional District or the Province have been reported to the Regional District and the applicable provincial ministry having jurisdiction for the work.

4.1.4 The cutting down of hazardous trees.

4.2 For a proposed development within the Watercourse Development Permit Area, the following guidelines apply:

4.2.1 Written rationale and assessment of the potential impacts on aquatic habitat and/or neighbouring land uses that may be affected by the proposed development is required.

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4.2.2 Criteria in the written rationale shall include the following and be prepared by the applicant's registered biologist, engineer or professional in another relevant discipline:
a) The impact of the proposed development on soil stability, natural vegetation and ground cover;
b) The impact of the proposed development on the quality and quantity of groundwater and surface water;
c) The impact of the proposed development on wildlife and fisheries sensitive areas; and
d) The impact of the proposed development on environmentally sensitive areas on adjacent lands.

3.2 Previous Studies

Lewkowich Geotechnical Engineering Ltd. provided a geotechnical evaluation of the property for 459985 B.C. Ltd in February 1996. The evaluation included an examination of the condition of Craig Creek and its banks on Lots A and B. The report revealed that at the time of survey all portions of the properties beyond the top of ravine bank had been recently logged.

The report indicated that Craig Creek flows within a ravine having vertical relief of 5 – 7 m from creek level to top of bank (we believe it to be > 10 m at the downstream end of the property), and mentions that a survey plan for the properties showing top of slope was prepared by Sims and Associates. The report's description of the ravine states that the ravine has a broad, essentially flat bottom with low relief from the creek to the base of the ravine walls. Lewkowich's measurements of the ravine side slope measured between 15 – 40 degrees. The report concluded that the site was geotechnically safe and suitable for siting residential structures provided those structures were sited outside the 15 m setback "from the creek". The report recommended a minimum setback between the "top of bank" (likely meaning top of ravine bank) and the foundation of permanent structures of 3.0 metres.

A Water Act Section 9 Notification was submitted by H+F Ventures Ltd. to the Ministry of Environment, Lands and Parks in July 1998 for the installation of culverts in Craig Creek on Lot A. The Notification was reviewed by Eileen Wright, MELP Designated Habitat Officer and accepted with the conditions that the work be undertaken in compliance with Regulation 204/88, Part 7, and a request that the Environmental Monitor contact the MELP Nanaimo office for a copy of "A User's Guide to Working in and Around Water".

3.3 Field Assessment

3.3.1 Stream Habitat

The stream on the property and on adjacent properties upstream and downstream was contained within a relatively shallow, steep sided ravine (slope gradient varied from 33 – 90%) with mixed

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mature forest cover (Photograph 3). Four Gee traps baited with salmon roe were set in large pools (Photograph 4) at waypoint 248 for 4.5 hours; no fish were captured. Air temperature was 0.0 ^{o}C and water temperature measured 2.4 ^{o}C. Representative site photographs are included in Section 6 of Appendix A.

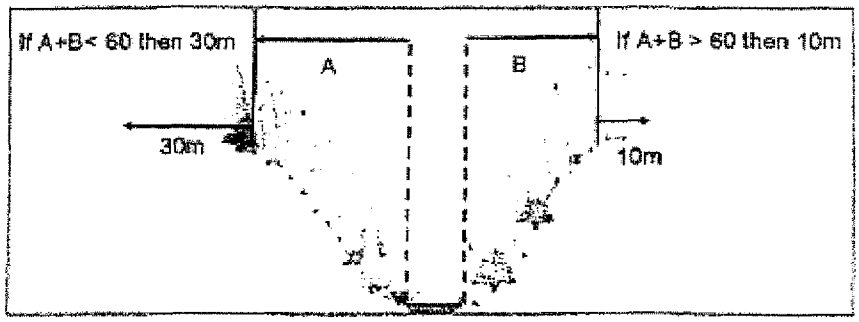
Stream habitat observed on the property and adjacent properties included riffle / run habitat with good pool distribution and an abundance of quality spawning gravels (Photographs 1 and 2). Large woody debris and other forms of cover were abundant. Some small woody debris jams were noted. Some evidence of recent flooding was noted, which was not surprising considering that many of the local streams had experienced at least the 1:50 year flood event in November, 2006. Two fish; presumed to be cutthroat based on size and coloration, were observed in Craig Creek on the property.

3.3.2 RAR Assessment and SPEA setbacks

The RAR Simple Assessment methods require that an assessment area include a minimum 400 m of stream length. In situations where the stream is contained within a ravine, the width of the assessment area is determined on the basis of ravine width (not including stream channel width) as indicated below and depicted in Figure 4:

- for a ravine less than 60 meters wide, a strip on both sides of the stream measured from the high water mark to a point that is 30 meters beyond the top of the ravine bank, and
- for a ravine 60 meters wide or greater, a strip on both sides of the stream measured from the high water mark to a point that is 10 meters beyond the top of the ravine bank"

Figure 4. Determination of Assessment Area width



However, the RAR Assessment Methods do not indicate how, and at what scale (i.e. acceptable measurement methods, how many transects) the width measurement of a ravine is established. Toth and Associates sent three requests for clarification on this matter to the RAR Project Manager. The response we received indicated that the ravine width is established from field

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measurements (not maps), that it is not an average width based on the lengths of multiple transects, and that we would have to establish each instance where, on any subject property the width changed from < 60 m to > 60 m, or vice-versa. No method or level of scale was provided. According to this instruction a property could theoretically end up with an infinite number (depending on measurement scale) top of ravine bank setbacks varying in depth from 10 – 30 m, and < 1m in width.

The top of ravine bank was flagged with orange flagging tape marked TOB (top of bank), at approximately 15 m intervals. The flagged sites were geo-referenced with a Garmin 12XL GPS system. GPS reception was excellent on the date of survey with a minimum of 8 satellites collected at each waypoint. The Riparian Assessment Area measured 511 m in length. The average potential vegetation width was > 15 m, or Category 1.

In the absence of RAR criteria, we measured six ravine transects and channel widths. The channel widths of Craig Creek were measured at each ravine transect location. The ravine transects were measured between top of ravine bank GPS waypoints. The results indicate that the ravine measures >60 m in width and therefore has a Streamside Protection and Enhancement Area (SPEA or "setback") requirement of 10 m (horizontal distance) from the top of ravine bank according to the Simple Assessment methods. The ravine transect distances and associated stream channel widths are provided in Table 1.

A 2005 colour orthophoto of the property was downloaded from the Sensitive Habitat Inventory Mapping (SHIM) website and calibrated in OzzieExplorer software with UTM co-ordinates (NAD83) downloaded from the Regional District of Nanaimo's RDN Map website. Waypoints gathered from the field survey were downloaded from the Garmin GPS to OzzieExplorer to produce a map of the survey waypoints (Figure 5). The calibrated "fit" of the waypoints was excellent and appears to be within approximately 1-2 m accuracy.

Table 1. Results of RAA ravine transects

Transect #	Transect Waypoints	Distance (m)	Channel Width (m)	Total (Dist – CW = m)
1	281 – 264	65	3.9	61.1
2	291 – 253	66	4.0	62
3	288 – 258	71	4.8	66.2
4	287 – 260	73	4.2	68.8
5	294 – 309	68	5.2	62.8
6	292 - 314	78	6.5	71.5

The results of the RAR Assessment indicate that the SPEA setbacks should measure 10 m horizontal distance from the top of ravine bank. However, the minimum watercourse setbacks

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required by the RDN's Area F OCP Watercourse Protection DPA are 15 m horizontal distance from the top of ravine bank. Therefore the setback requirements are 15 m. The site plan with the riparian assessment area and SPEA setbacks is included as Figure 6.

3.3.3 Wildlife Habitat

Raptor or heron nests were not found on the properties. Wetlands were not observed on the properties. Evidence of black-tailed deer and Roosevelt elk use of the ravine and south side of the property was frequently observed. It appeared that a small herd of elk was frequenting the property and high use game trails were noted (waypoints 252, 256, and 313). Eastern cottontail, red-breasted sapsucker, pileated woodpecker, and black bear sign was noted on the property. Course woody debris and snags were common within the ravine.

3.3.4 Forest Cover

The forest cover within the ravine was comprised of young-forest aged mixed canopy with a high deciduous component. Tree species included coastal western redcedar, western hemlock, grand fir, Douglas fir, western yew, bigleaf maple, red alder, black cottonwood, pacific dogwood and cascara. Shrub species consisted of red huckleberry, salmonberry, thimble berry, red-osier dogwood, red elderberry, Himalayan blackberry, baldhip rose, Nootka rose and salal. Most of the herbaceous species had died back by the date of survey, but sword fern, trailing blackberry, common rush, and slough sedge were noted. A stand of mature western redcedar and western hemlock with one old growth Douglas fir (Photograph 5) was located adjacent to the east side of Lot B within Riversedge Community Park.

Logging in the mid-1990s occurred on both sides of the ravine, to the top of ravine in most places on the property. These areas consisted of young regenerative forests comprised of shrub stage red alder, bitter cherry, grand fir, and Douglas fir, with relatively diverse shrub and herb layers typical of recent cleared areas. Scotch broom was prevalent throughout the cleared areas (Photograph 9).

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Figure 5. Top of ravine bank waypoints and ravine width transects

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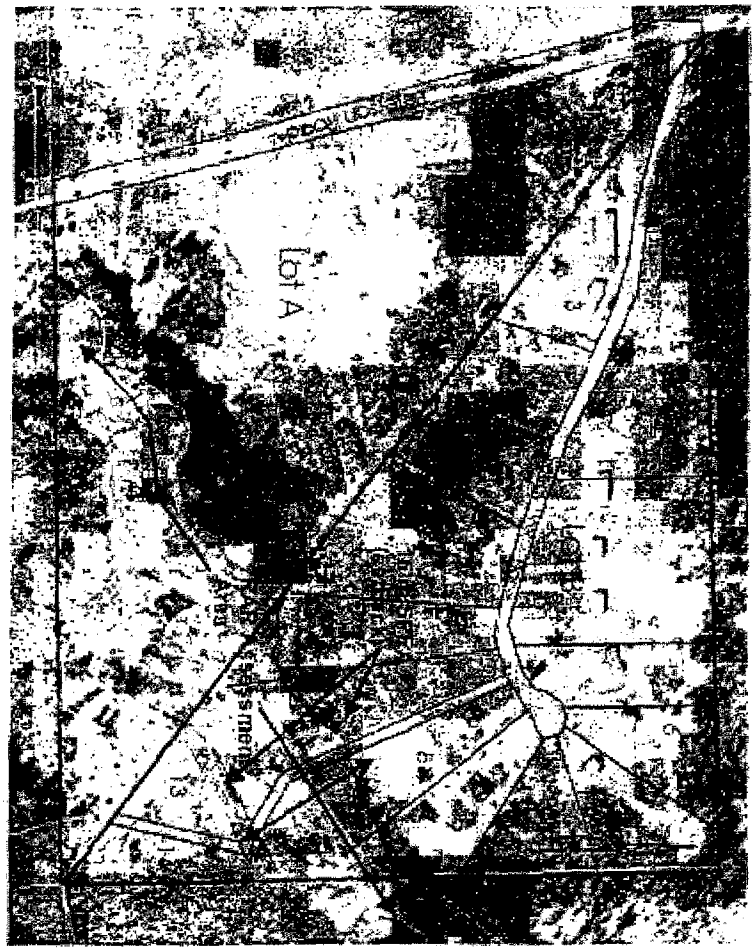

Figure 6. Site plan for Lot B with assessment area and setbacks from top of ravine bank.

Real and Site Quality Survey of Lots A + B D.L. 182, Nanaimo Land District

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4.0 DISCUSSION AND RECOMMENDATIONS

The results of the Riparian Area Assessment indicated that the SPEA setbacks should measure 10 m horizontal distance from the top of ravine bank on Lot B. However, the minimum watercourse setbacks required by the RDN's Area F OCP Watercourse Protection DPA are 15 m horizontal distance from the top of ravine bank. **Therefore the RDN Area F watercourse setback requirements of 15 m are shown to meet or exceed the requirements of the RAR.**

A shed on Lot 9 was within approximately 17 - 18 m from the top of ravine bank, which would put it outside both the RAR setback and the Area F Watercourse Protection setback. However, this measurement will need to be confirmed by legal survey.

A small mobile home and cabin are located on Lot A, which we understand to be within the ALR and the proposed development plan does not include removal of this land from the ALR. The Area F Watercourse Protection Guidelines are not very clear on when a Development Permit is required on ALR lands. It states that normal farm practices do not require a development permit, but "development" proposed within the 15 m setback does require a DP. The Area F OCP does not appear to provide a definition of "development" - the *Municipal Act* definition of "development" includes the act of subdivision. The mobile was not on a foundation and therefore would not be considered a Permanent Structure. The cabin would likely be considered a "grandfathered" structure.

The proposed stream crossing location appears to represent the best location on Lot B for crossing the ravine and already had a road grade in place. While it would be environmentally preferable to simply extend access to Lots 13 and 14 from the existing bridge on Lot A, and thereby avoid construction of another crossing on Craig Creek, this route may not be supported by the ALC or Ministry of Transportation (H. Heringa, P. Eng. H+F Ventures *pers. comm.*). Alternatively, we thought it may be easier to develop Lot 15 (the proposed parkland) and designate Lots 13 and 14 as parkland, but Lot 15 is proposed as parkland as it provides the best access to the existing Riversedge Community Park located on the east side of Lot B (H. Heringa, P. Eng. H+F Ventures *pers. comm.*).

The culvert sizing, type and crossing design will need to be determined by a professional engineer or hydrologist with experience in stream crossings. We recommend an open bottom arch style culvert be used to allow for fish passage and bedload movement. A Development Permit, supporting documentation and *Water Act* Section 9 Notification will be required for the proposed road crossing on Craig Creek. We recommend that a sediment mitigation and site restoration plan be included in the supporting documentation, and that fish salvage and environmental monitoring be conducted during the crossing's

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construction. Construction timing will likely be restricted to the fisheries instream works window of July 1 - September 15.

We could not find any RDN Area F setback requirements for lands within the ALR. However, according to Appendix A (Legislation and Enforcement) of the BC Environmental Farm Plan (http://www.beac.bc.ca/documents/EFP_Reference_Guide_March_2005_part_12.pdf) Reference Guide, local government may regulate setback distances from watercourses to minimize negative impacts of runoff, to preserve water quality and protect fish and wildlife habitat. We recommend that the RDN consider making fencing of the top of ravine bank boundary a requirement of future development on Lots 4 and 5 of Lot A to prevent livestock from accessing the ravine area of Craig Creek.

We recommend that the setbacks on Lot B of Craig Creek be protected with a conservation covenant that would allow only fish and wildlife habitat restoration, introduced invasive / noxious plant species, and hazard tree removal to occur within the setback area. Mitigative measures are to be taken to avoid sediment or debris being discharged into the covenant area during these activities and the disturbed areas are to be replanted with a native grass seed mixture. The RAR does not allow trail building within the Watercourse Protection (SPEA) setback area.

Development occurring on the properties should incorporate mitigative / environmental protection measures as outlined in the *Land Development Guidelines* (DFO, 1993). Ensure exposed soils are seeded prior to the onset of fall rains. Temporary sediment filtration ponds, constructed from straw bales and filter cloth can be used to treat any sediment laden water arising from construction activities. Upon completion of construction activities and grass seeding, the hay bales can be broken apart and spread over disturbed areas to act as mulch for grass seed and to reduce rain splash erosion of exposed soils.

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Photograph 1. View of forest cover in ravine on Lot B.

Photograph 2. View of Craig Creek road crossing on Lot A.

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Photograph 3. View of Craig Creek upstream of bridge crossing on Lot A.

5.0 REFERENCES

B.C. Ministry of Environment, Lands and Parks, 2001. Environmental Objectives, Best Management Practices and Requirements for Land Developments.

B.C. Ministry of Environment, Draft 2005. Environmental Best Management Practices for Urban and Rural Land Development in British Columbia.

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Appendix A.

Riparian Areas Regulation: Assessment Report

Date: 2007-02-07

I. PRIMARY QEP INFORMATION

First Name	Steve	Middle Name	
Last Name	Toth		
Designation	ASCT, R.P.Bio	Company	Toth and Associates Environmental Services
Registration #	29057 1788	Email	stoth@shaw.ca
Address	6831 Harwood Drive		
City	Lantzville	Postal/Zip V0R 2H0	Phone # 250-390-7602
Prov/state	BC	Country Canada	

III. DEVELOPER INFORMATION

First Name	Rick	Middle Name	
Last Name	Sing		
Company	H+F Ventures Ltd.		
Phone #	250-248-8155	Email	hancon@shawcable.com
Address	1080 Industrial Way		
City	Parksville	Postal/Zip V9P 2W8	
Prov/state	BC	Country Canada	

IV. DEVELOPMENT INFORMATION

Development Type	Strata Development		
Area of Development (ha)	9.9	Riparian Length (m)	176
Lot Area (ha)	9.9	Nature of Development	New
Proposed Start Date	2007-03-01	Proposed End Date	2008-12-31

V. LOCATION OF PROPOSED DEVELOPMENT

Street Address (or nearest town)	1057 SLEEPY HOLLOW PL		
Local Government	Regional District of Nanaimo	City	
Stream Name	Craig Creek		
Legal Description (PID)	025789350	Region	Vancouver Island
Stream/River Type	Stream	DFO Area	South Coast
Watershed Code	920-457100		
Latitude	49 16 7	Longitude	124 16 8

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Table of Contents for Assessment Report

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SECTION 1. DESCRIPTION OF FISHERIES RESOURCES VALUES AND A DESCRIPTION OF THE DEVELOPMENT PROPOSAL

Introduction
A Riparian Area Assessment (RAA) was conducted of development proposed for Lots A and B, PIDs 023740868 and 025789350, D.L. 182 of the Nanoose Land District on February 1, 2007. Lot A is within the Agricultural Land Reserve (ALR); the Riparian Area Regulation (RAR) does not apply within the ALR. The following RAR report is for Lot B (PID 025789350) with some surveyed features located on Lot A.

Fish and Fish Habitat
Craig Creek supports populations of coho salmon and cutthroat trout (FISS). Coho distribution is indicated by DFO's OGC Mapster Version 2.0 as limited to the lower reaches of the stream, downstream of the Island Highway.

Habitat observed on the property and adjacent properties included riffle / run habitat with good pool distribution and an abundance of quality spawning gravels (Photographs 1 and 2). Large woody debris and other forms of cover were abundant. Some small woody debris jams were noted. Some evidence of recent flooding was noted, which was not surprising considering that many of the local streams had experienced at least the 1:50 year flood event in November, 2006. Two fish; presumed to be cutthroat based on size and coloration, were observed in Craig Creek on the property.

Development Plan
Currently Lot B is a 9.9 ha, 8 lot strata subdivision located on Sleepy Hollow Place, which the developer is proposing to convert to a 15 lot bareland strata. The development plan would include a road crossing on Craig Creek to access proposed lots 13 and 14. The grade for this road crossing was already in place at the time of survey (Photograph 7). Lot 15 is proposed as parkland (Figure 1). Development proposed for the 21 ha Lot A includes a 5 lot subdivision.

This RAA report is one of the Regional District of Nanaimo's (RDN) requirements for the development's proposed amendments to Electoral Area F Official Community Plan Bylaw No. 1152, 1999 and Zoning and Subdivision Bylaw No. 1285, 2002.

Background Information
Land Use Designations provided on Map No. 2 of the Area F OCP (Bylaw 1152, 1999) indicated that Lot B is within the Rural Lands designation, while Lot A is designated Resource Lands within the Agricultural Land Reserve (Figure 2). Craig Creek through the property is indicated as a Watercourse Protection Development Permit Area (DPA) on Map No. 3 of the Electoral Area F OCP (Figure 3). Appendix A of the Area F OCP provides the requirements of the Watercourse Protection DPA.

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Figure 7. 2003 Orthophoto with Site Plan Outline and RPEA

RAR and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

Toth and Associates Environmental Services

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Figure 8. Land Use Designations – Lot B (orange) indicated as Rural Lands

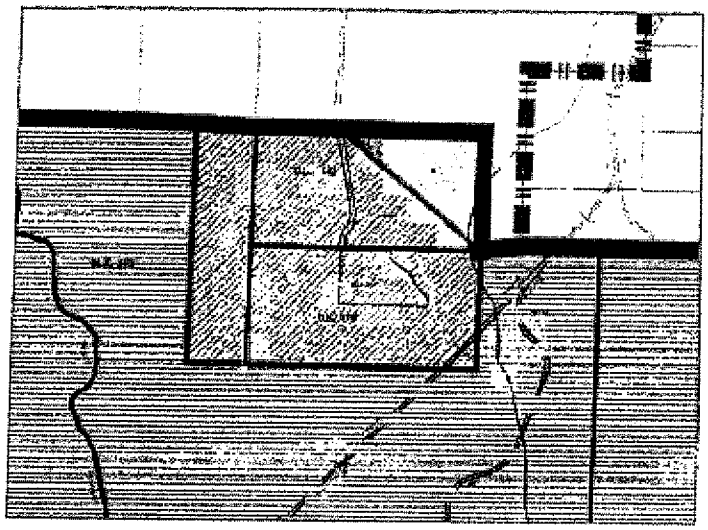
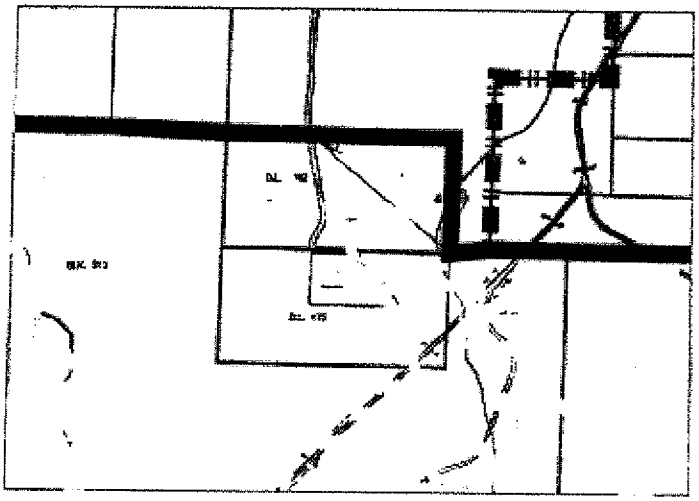


Figure 9. Watercourse Protection DPA through Lots A+B



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Previous Studies

Lewkowich Geotechnical Engineering Ltd. provided a geotechnical evaluation of the property for 459985 B.C. Ltd in February 1996. The evaluation included an examination of the condition of Craig Creek and its banks on Lots A and B. The report revealed that at the time of survey all portions of the properties beyond the top of ravine bank had been recently logged.

The report indicated that Craig Creek flows within a ravine having vertical relief of 5 – 7 m from creek level to top of bank (we believe it to be > 10 m at the downstream end of the property), and mentions that a survey plan for the properties showing top of slope was prepared by Sims and Associates. The report's description of the ravine states that the ravine has a broad, essentially flat bottom with low relief from the creek to the base of the ravine walls. Lewkowich's measurements of the ravine side slope measured between 15 – 40 degrees. The report concluded that the site was geotechnically safe and suitable for siting residential structures provided those structures were sited outside the 15 m setback "from the creek". The report recommended a minimum setback between the "top of bank" (likely meaning top of ravine bank) and the foundation of permanent structures of 3.0 metres.

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Field Assessment

The stream on the property and on adjacent properties upstream and downstream was contained within a relatively shallow, steep sided ravine (slope gradient varied from 33 – 90%) with mixed mature forest cover (Photograph 3). Four Gee traps baited with salmon roe were set in large pools (Photograph 4) at waypoint 248 for 4.5 hours; no fish were captured. Air temperature was 0.0 °C and water temperature measured 2.4 °C. Representative site photographs are included in Section 6.

The top of ravine bank was flagged with orange flagging tape marked TOB (top of bank), at approximately 15 m intervals. The flagged sites were geo-referenced with a Garmin 12XL GPS system. GPS reception was excellent on the date of survey with a minimum of 8 satellites collected at each waypoint. The Riparian Assessment Area measured 511 m in length. The average potential vegetation width was > 15 m, or Category 1.

In the absence of RAR ravine width determination criteria, we measured six ravine transects and channel widths. The channel widths of Craig Creek were measured at each ravine transect location. The ravine transects were measured between top of ravine bank GPS waypoints. The results indicate that the ravine measures >60 m in width on Lot B and therefore has a Streamside

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Protection and Enhancement Area (SPEA or "setback") requirement of 10 m (horizontal distance) from the top of ravine bank according to the Simple Assessment methods. The ravine transect distances and associated stream channel widths are provided in Table 1.

A 2005 colour orthophoto of the property was downloaded from the Sensitive Habitat Inventory Mapping (SHIM) website and calibrated in OzzieExplorer software with UTM co-ordinates (NAD83) downloaded from the Regional District of Nanaimo's RDN Map website. Waypoints gathered from the field survey were downloaded from the Garmin GPS to OzzieExplorer to produce a map of the survey waypoints (Figure 5). The calibrated "fit" of the waypoints was excellent and appears to be within approximately 1-2 m accuracy.

Table 2. Results of RAA ravine transects

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The results of the RAR Assessment indicate that the SPEA setbacks should measure 10 m horizontal distance from the top of ravine bank. However, the minimum watercourse setbacks required by the RDN's Area F OCP Watercourse Protection DPA are 15 m horizontal distance from the top of ravine bank. Therefore **the setback requirements are 15 m**. The site plan with the riparian assessment area and SPEA setbacks is included as Figure 5.

Figure 10. Waypoints and Ravine Transects collected on Craig Creek, Lots A+B

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Figure 11. 1995 orthophoto with plan outline and SPEA

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Wildlife

Raptor or heron nests were not found on the properties. Wetlands were not observed on the properties. Evidence of black-tailed deer and Roosevelt elk use of the ravine and south side of the property was frequently observed. It appeared that a small herd of elk was frequenting the property and high use game trails were noted (waypoints 252, 256, and 313). Eastern cottontail, red-breasted sapsucker, pileated woodpecker, and black bear sign was noted on the property. Coarse woody debris and snags were common within the ravine.

Forest Cover

The forest cover within the ravine was comprised of young-forest aged mixed canopy with a high deciduous component. Tree species included coastal western redcedar, western hemlock, grand fir, Douglas fir, western yew, bigleaf maple, red alder, black cottonwood, pacific dogwood and cascara. Shrub species consisted of red huckleberry, salmonberry, thimble berry, red-osier dogwood, red elderberry, Himalayan blackberry, baldhip rose, Nootka rose and salal. Most of the herbaceous species had died back by the date of survey, but sword fern, trailing blackberry, common rush, and slough sedge were noted. A stand of mature western redcedar and western hemlock with one old growth Douglas fir (Photograph 5) was located adjacent to the east side of Lot B within Riversedge Community Park.

Logging in the mid-1990s occurred on both sides of the ravine, to the top of ravine in most places on the property. These areas consisted of young regenerative forests comprised of shrub stage red alder, bitter cherry, grand fir, and Douglas fir, with relatively diverse shrub and herb layers typical of recent cleared areas. Scotch broom was prevalent throughout the cleared areas (Photograph 9).

DISCUSSION AND RECOMMENDATIONS

The results of the Riparian Area Assessment indicated that the SPEA setbacks should measure 10 m horizontal distance from the top of ravine bank on Lot B. However, the minimum watercourse setbacks required by the RDN's Area F OCP Watercourse Protection DPA are 15 m horizontal distance from the top of ravine bank. **Therefore the RDN Area F watercourse setback requirements of 15 m are shown to meet or exceed the requirements of the RAR.**

The proposed stream crossing location appears to represent the best location on Lot B for crossing the ravine and already had a road grade in place. While it would be environmentally preferable to simply extend access to Lots 13 and 14 from the existing bridge on Lot A, and thereby avoid construction of another crossing on Craig Creek, this route may not be supported by the ALC or Ministry of Transportation (H. Heringa, P.

Environmental Report Continued
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Eng. H+F Ventures *pers. comm.*). Alternatively, we thought it may be easier to develop Lot 15 (the proposed parkland) and designate Lots 13 and 14 as parkland, but Lot 15 is proposed as parkland as it provides the best access to the existing Riversedge Community Park located on the east side of Lot B (H. Heringa, P. Eng. H+F Ventures *pers. comm.*).

The culvert sizing, type and crossing design will need to be determined by a professional engineer or hydrologist with experience in stream crossings. We recommend an open bottom arch style culvert be used to allow for fish passage and bedload movement. A Development Permit, supporting documentation and *Water Act* Section 9 Notification will be required for the proposed road crossing on Craig Creek. We recommend that a sediment mitigation and site restoration plan be included in the supporting documentation, and that fish salvage and environmental monitoring be conducted during the crossing's construction. Construction timing will likely be restricted to the fisheries instream works window of July 1 - September 15.

We recommend that the setbacks on Lot B of Craig Creek be protected with a conservation covenant that would allow only fish and wildlife habitat restoration, introduced invasive / noxious plant species, and hazard tree removal to occur within the setback area. Mitigative measures are to be taken to avoid sediment or debris being discharged into the covenant area during these activities and the disturbed areas are to be replanted with a native grass seed mixture. The RAR does not allow trail building within the Watercourse Protection (SPEA) setback area.

Development occurring on the properties should incorporate mitigative / environmental protection measures as outlined in the *Land Development Guidelines* (DFO, 1993). Ensure exposed soils are seeded prior to the onset of fall rains. Temporary sediment filtration ponds, constructed from straw bales and filter cloth can be used to treat any sediment laden water arising from construction activities. Upon completion of construction activities and grass seeding, the hay bales can be broken apart and spread over disturbed areas to act as mulch for grass seed and to reduce rain splash erosion of exposed soils.

Environmental Report Continued
Page 30 of 37

RAA and Site Quality Survey of Lots A + B, D.L. 187, Nanoose Land District

Section 2. Results of Simple Riparian Assessment

Date: 2007-02-07

Stream	X
Wetland	
Lake	
Area	

Potential Riparian Width (m)

30
30
30
30
30
30
30
30
30
30
30
Average 30

I Trent Tosh (name of qualified environmental professional) hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of assessment of the development proposal made by the developer H+F Ventures Ltd. (name of developer);
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 Regulation.

Existing or Potential Vegetation Category: 1

	Yes	No**
Fish bearing	X	

I Trent Tosh (name of qualified environmental professional) hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer H+F Ventures Ltd. (name of developer);
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 Regulation.

	Permanent	Non Permanent*
Stream Flow	X	

*If non permanent flow, indicate how this was determined?

I Trent Tosh (name of qualified environmental professional) hereby certify that:
a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
b) I am qualified to carry out this part of the assessment of the development proposal made by the developer H+F Ventures Ltd. (name of developer);
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 Regulation.

SPEA Width (m): 10

Comments:

See Discussion Section for explanation of setback distance.

Environmental Report Continued
Page 31 of 37

RAA and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

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.

We recommend that a Sediment Management Plan and site restoration plan be developed for the road crossing proposed for Craig Creek and implemented during construction of the road crossing by a Qualified Environmental Professional. Monitoring, sediment management and site restoration are likely also to be a requirement of the Section 9 Notification Authorization. The monitoring should include assessment and documentation of the post development conditions of the road crossing and the rest of the SPEA lands on Lot B in a post development report to the RDN via the Electronic Notification System in accordance with Section 5(a) of the RAR.

Environmental Report Continued
Page 32 of 37

Section 6. Photos

Photograph 1. View stream substrates at waypoint 248

Photograph 2. View of vegetation and stream morphology at waypoint 271.

Environmental Report Continued
Page 34 of 37

Photograph 3. View from south to northwest across the ravine from waypoint 265.

Photograph 4. View of minnow trap in pool at waypoint 248.

Environmental Report Continued
Page 35 of 37

Photograph 5. View of veteran Douglas fir at waypoint 300.

Photograph 6. View of channel width measurement at waypoint 302.

Photograph 7. View of existing road grade into ravine on Lot B at waypoint 248.

Environmental Report Continued
Page 36 of 37

Photograph 8. View downstream from bridge crossing on Lot A at waypoint 271.

Photograph 9. View from waypoint 313 to waypoint 254 of cleared area.

Environmental Report Continued
Page 37 of 37

RAA and Site Quality Survey of Lots A + B, D.L. 182, Nanoose Land District

Section 7. Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date 2007-02-20

I,/We Steve Toth

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

hereby certify that:

a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

f) I am/We are qualified to carry out the assessment of the proposal made by the developer H+F Ventures Ltd. *(name of developer)*, which proposal is described in section 3 of this Assessment Report (the "development proposal").

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

h) ** In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation, AND

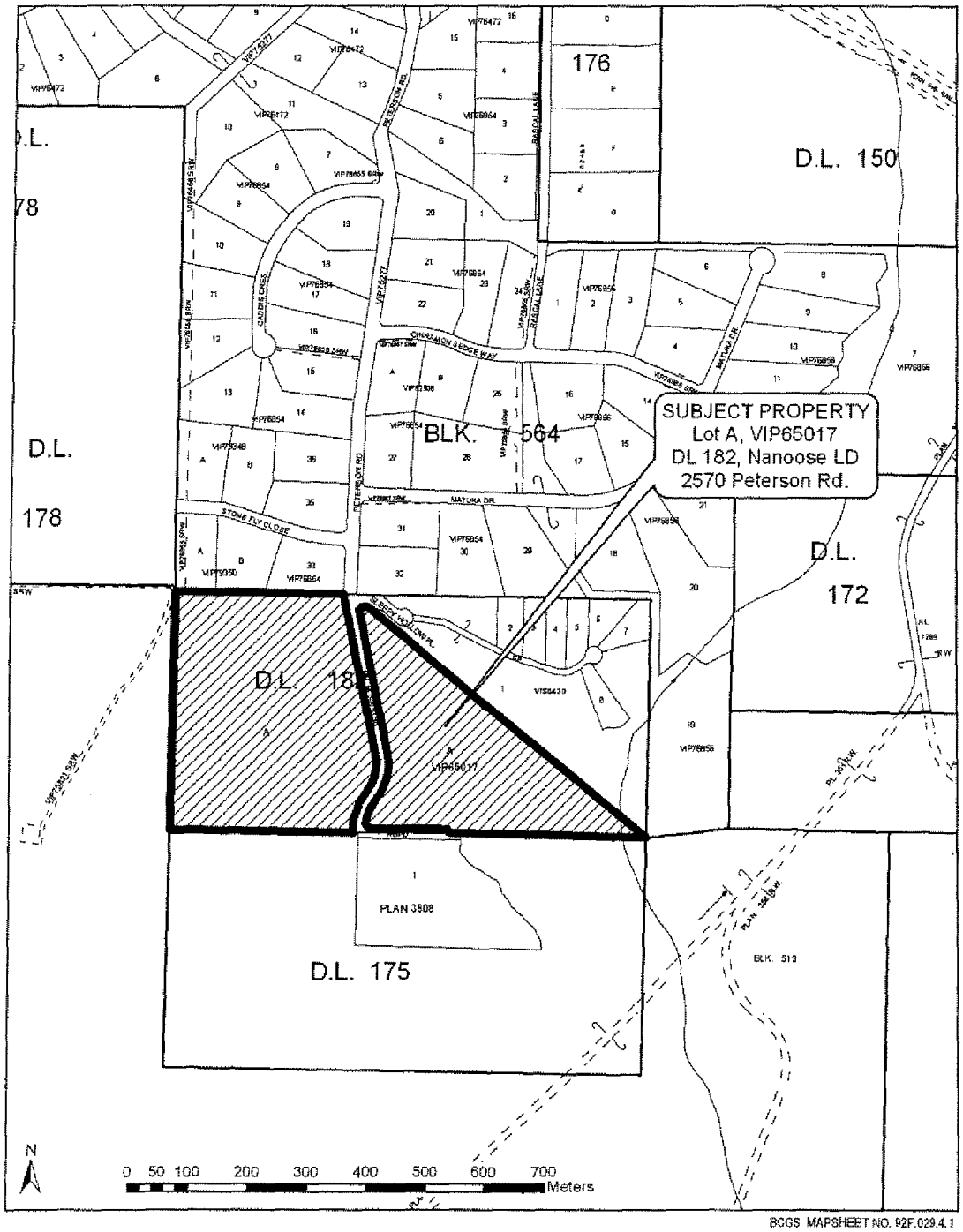
2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

a) ☐ if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, OR
(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)

b) ☒ if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

**Note: Methods are not provided within the RAR Assessment Methods for the determination of ravine width. The methods we have employed for the determination of ravine width should provide a sufficient level of accuracy for evaluation of SPEA setback requirements on the subject property. However, Toth and Associates accepts no liability for any future determinations of ravine width that may or may not agree with our findings.

Attachment No. 1
Location of Subject Property



BCGS MAPSHEET NO. 92F.029.4.1

REGIONAL DISTRICT OF NANAIMO

CAO APPROVAL		
S. EAP		Nov 25 '08
COW		
NOV 14 2008		
RHD		
BOARD	~~✓~~	~~Nov 25 '08~~

MEMORANDUM

TO:	Geoff Garbutt Manager of Current Planning	**DATE:**	November 3, 2008
FROM:	Elaine Leung Planner	**FILE:**	3060 30 60842
SUBJECT:	**Development Permit Application No. 60842 – Allix Lot 9, District Lot 181, Nanoose District, Plan 13008 Electoral Area 'G' – Mariner Way**		

PURPOSE

To consider an application for a Development Permit to construct a residential dwelling on a vacant property legally described as Lot 9, District Lot 181, Nanoose District, Plan 13008, located on Mariner Way.

BACKGROUND

The subject property is approximately 1197 m^2 in size and is surrounded by residential lots to the east, south and west, with Mariner Way to the north (*see Attachment No. 1 for location of the subject property).*

The subject property is zoned Residential 1 (RS1) pursuant to "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987". There are no variances required pursuant to Bylaw No. 500, 1987.

Pursuant to "Regional District of Nanaimo Electoral 'G' Official Community Plan Bylaw No. 1540, 2008" the subject property is within the Environmentally Sensitive Features Development Permit Area for Aquifer, Hazard Lands Development Permit Area due to flooding hazards, Farm Land Protection Development Permit Area, and Fish Habitat Protection Area. This application is exempt from the provisions of the Aquifer Development Permit Areas as this is an application to construct a single residential dwelling. The subject land is not adjacent to farm lands, and is therefore exempt from the Farm Land Protection DPA. With respect to the Fish Habitat Protection Development Permit Area, the applicants have indicated on the Riparian Areas Regulation property declaration form that there are no watercourses located on the subject property, and is therefore exempt from this DPA.

Planning Staff note that the southeast corner of the property appears to lie within a possible exposed archaeological site. As the province (Archaeology Branch) may require an Archaeological Impact Assessment (AIA), Staff require the applicant to contact the Province for their comments. In addition, Staff note that this will be addressed in the building permit application process.

Sustainability Implications

The applicant has completed the "Sustainable Community Builder Checklist", as per Board policy. Staff note that the proposed application is an infill development on a developed street. It will be constructed to current building code standards which reflect reduced environmental impact and energy efficient design elements.

ALTERNATIVES

1. To approve the Development Permit as requested subject to the conditions outlined in *Schedules No. 1-4.*

2. To deny the Development Permit as requested.

LAND USE AND DEVELOPMENT IMPLICATIONS

Land Use Implications

The location of the proposed dwelling within the lot is outlined on *Schedule No. 2.* Building elevations for the proposed dwelling are shown on *Schedule No. 3.*

A geotechnical foundation assessment has been submitted by EBA Engineering Consultants Ltd. dated October 28, 2008, in support of the application *(Schedule No. 4).* They confirm that the subject property can be safely developed and is considered suitable for residential structures. Additionally, they recommend structurally connecting all footings together to minimize the potential for spreading of the footings. EBA recommends contacting a structural engineer to observe the foundation soils, and for input at that time. Given the recommendation of the Geotechnical Engineer and the location of the subject property with the Englishman River Floodplain, staff recommend that a section 219 covenant which 'saves harmless' the RDN be registered on title as a condition of the Development Permit.

The proposed building as showed at 4.2 meters meets the flood plain elevation. Staff note that any further flood plain issues will be addressed through the building permit process.

Given that the applicant has submitted a geotechnical report confirming the land is safe and suitable for construction, Staff recommend approval of the development permit as outlined in Schedules No. 1-3, of this Staff report.

VOTING

Electoral Area Directors – one vote, except Electoral Area 'B.'

SUMMARY/CONCLUSIONS

This is an application for a Development Permit to permit the construction of a residential dwelling on vacant property located on Mariner Way. Staff note that further flood plain issues as well as addressing potential archaeological significance on the property will be addressed through the building permit process.

In staff's assessment, this proposal is consistent with the "Electoral Area 'G' Official Community Plan Bylaw No. 1540, 2008" and meets the guidelines of the Hazards Lands Development Permit Area. As there does not appear to be any negative impact on adjacent properties, and given the recommendations of the and Geotechnical Site Report and s. 219 covenant, staff recommends approval of this application subject to the conditions outlined in *Schedules No. 1-4.*

RECOMMENDATION

That Development Permit Application No. 60842, to permit the construction of a residential dwelling on the property legally described as Lot 9, District Lot 181, Nanoose District, Plan 13008, and designated within the Environmentally Sensitive Features for Watercourse Protection and Fish Habitat Protection Development Permit Areas pursuant to "Regional District of Nanaimo Electoral 'G' Official Community Plan Bylaw No. 1540, 2008", be approved subject to the conditions outlined in *Schedules No. 1-4.*

Report Writer

General Manager Concurrence

Manager Concurrence

CAO Concurrence

Schedule No. 1
Terms of Development Permit No. 60842

The following sets out the terms of Development Permit No. 60842.

Conditions of Approval:

1. The dwelling unit shall be sited in accordance with the site plan prepared by Sims & Associates attached as *Schedule No. 2*.

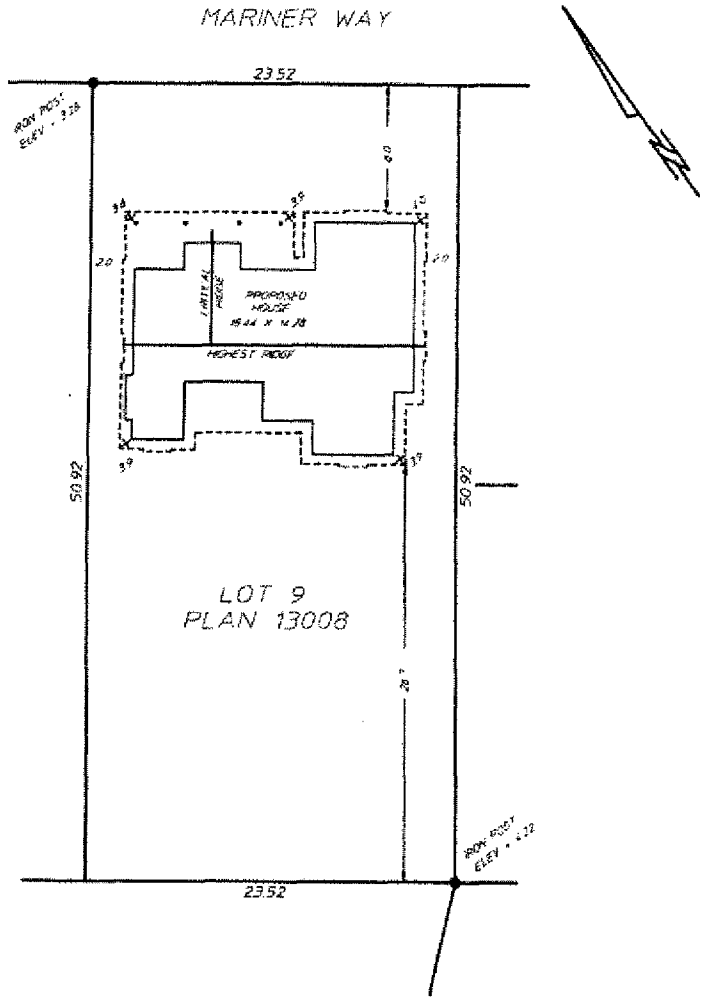
2. The dwelling unit elevations shall be developed in accordance with the Building Elevations prepared by Palladian Developments dated September 24, 2008 attached as *Schedule No. 3*.

3. The applicant shall develop the subject property in accordance with the recommendations established in the geotechnical engineer's report dated October 28, 2008 prepared by EBA Engineering Consultants Ltd. attached as *Schedule No. 4*.

4. Staff shall withhold the issuance of this permit until the applicant, at the applicant's expense, registers a Section 219 covenant that registers the Geotechnical Report prepared by EBA Engineering Consultants Ltd. dated October 28, 2008 and includes a save harmless clause that releases the Regional District of Nanaimo from all losses and damages as a result of erosion.

Schedule No. 2
Location of Dwelling

PLAN OF LOT 9, DISTRICT LOT 181, NANOOSE DISTRICT, PLAN 13008
SHOWING PROPOSED HOUSE LOCATION THEREON
(TO ACCOMPANY DEVELOPMENT PERMIT APPLICATION)
SCALE 1:300
ALL DISTANCES ARE IN METRES



HEIGHTS

PROJECTED UNDERSIDE OF MAIN FLOOR JOIST	8.2
DESIGN HEIGHT OF CONSTRUCTION UNDERSIDE OF MAIN FLOOR JOIST TO HIGHEST RIDGE	9.7
PROJECTED ELEVATION OF HIGHEST RIDGE	9.9
MAXIMUM BUILDING ELEVATION ALLOWED	
ACCORDING TO BYLAW 500	11.8
VARIANCE REQUIRED	N/A

LEGEND

——— DENOTES FOUNDATION LINE
– – – DENOTES OVERHANG (0.4m)

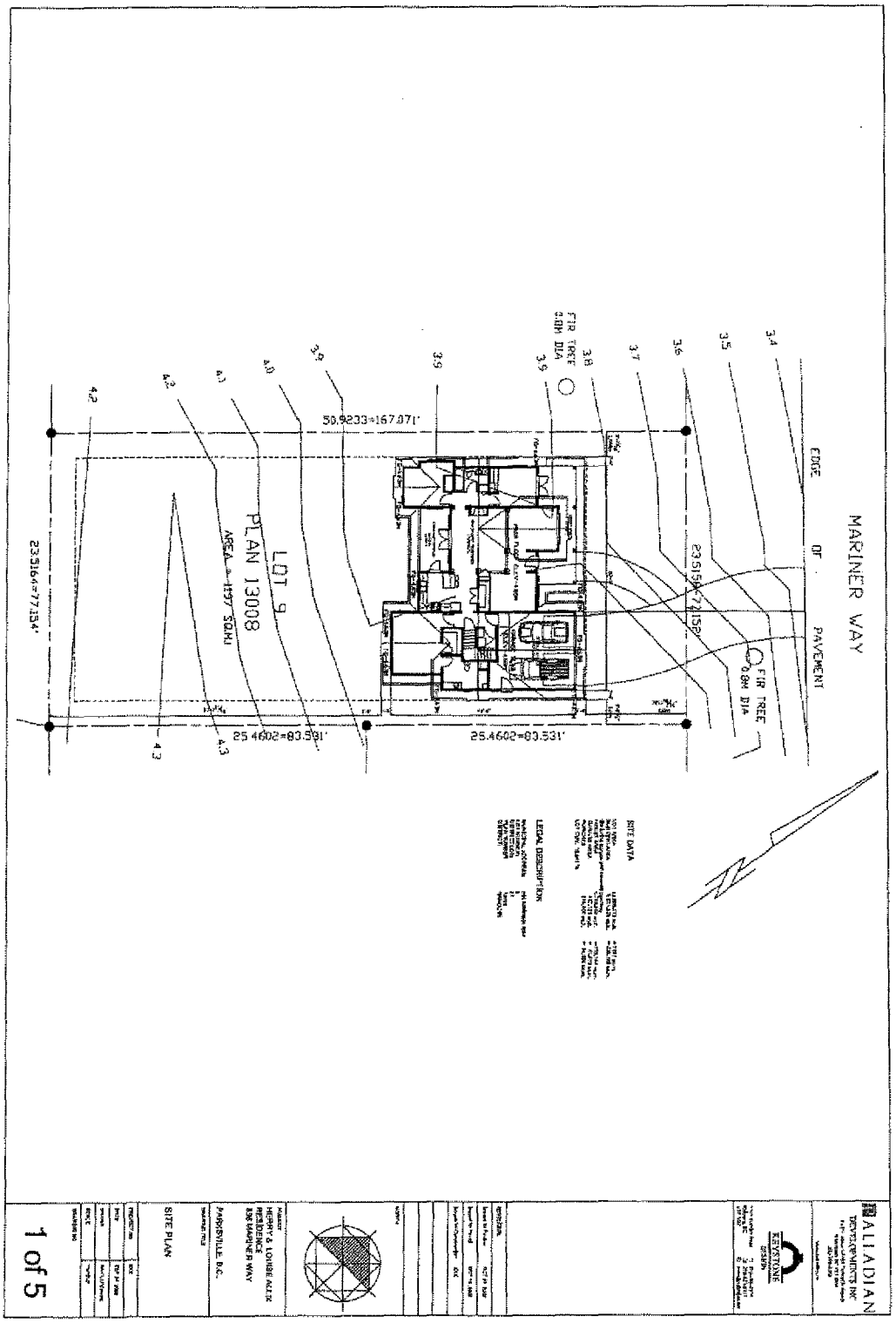
+ 4.6 DENOTES SPOT ELEVATION
ELEVATIONS ARE GEODETIC

INSPECTED THIS 29 TH DAY OF SEPTEMBER 2008

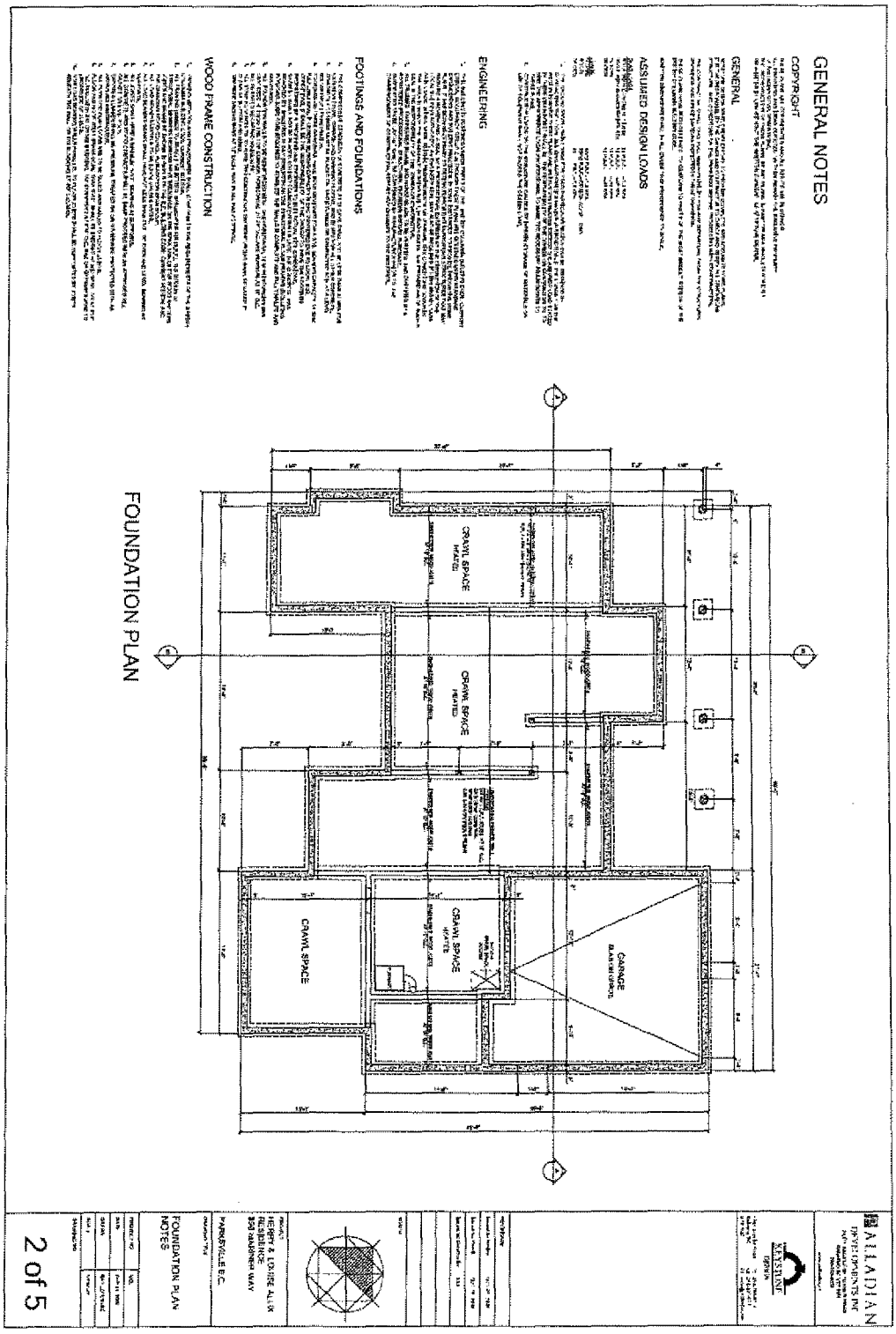
MICHAEL A. SIMS, B.C.L.S.

SIMS ASSOCIATES
LAND SURVEYING
244 CERVI ROAD WEST
QUALICUM BEACH, B.C. V9K 1K4
PHONE 752-9311 FAX 752-9251
JOB No. 08-112-01
FILE 08-112-BL
DATE 2008/09/29

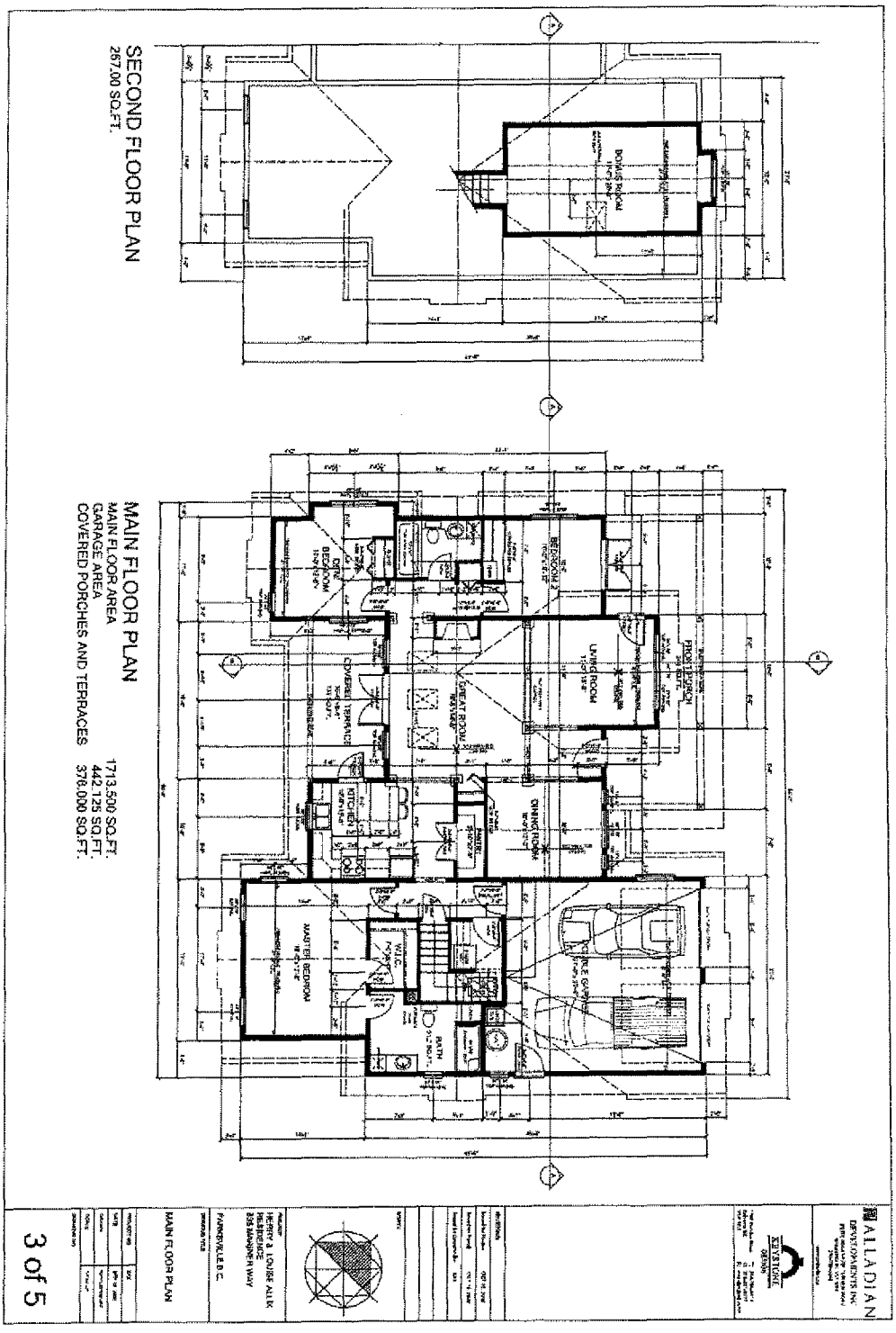
Schedule No. 3
Building Elevations (1 of 5)



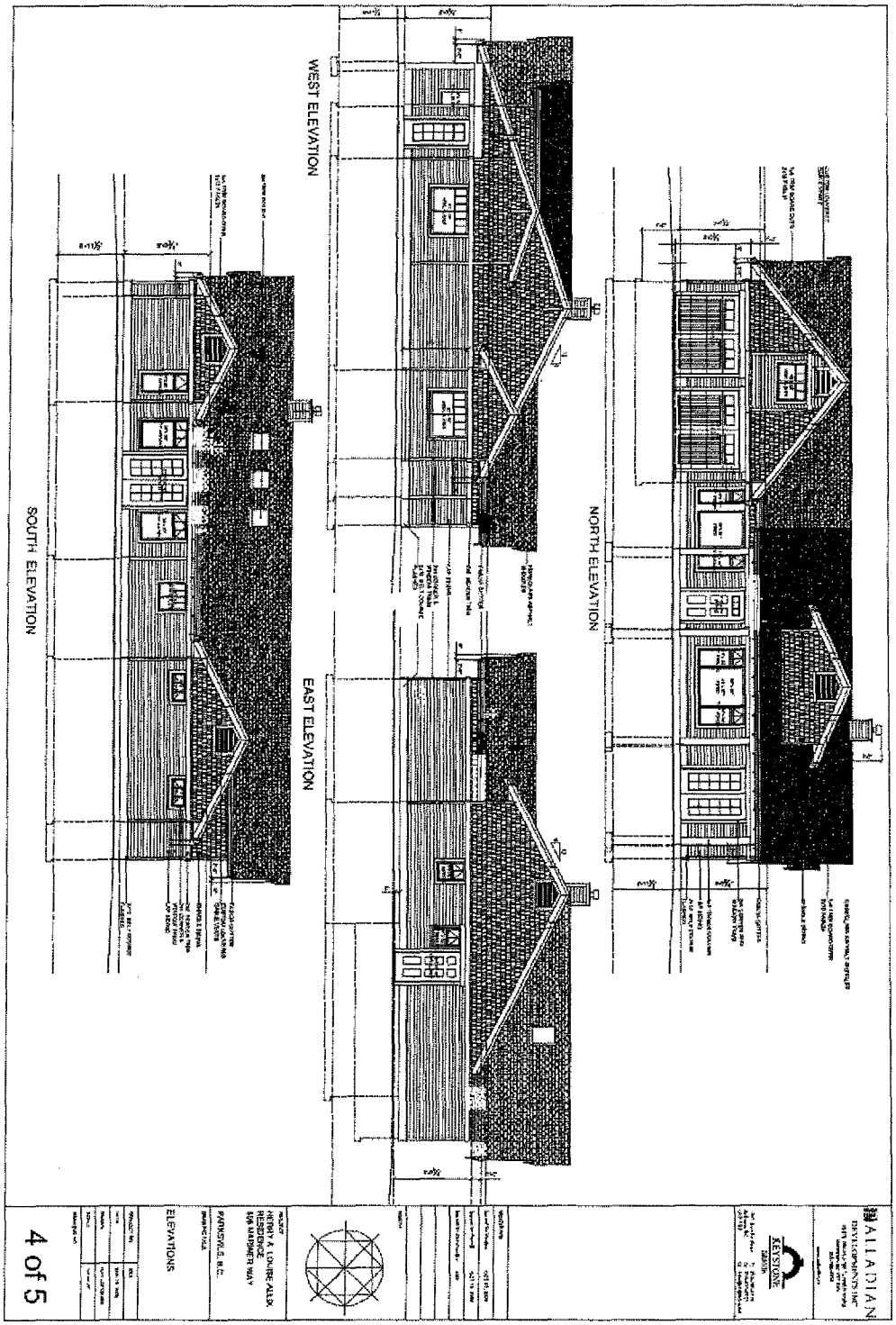
Schedule No. 3
Building Elevations (2 of 5)



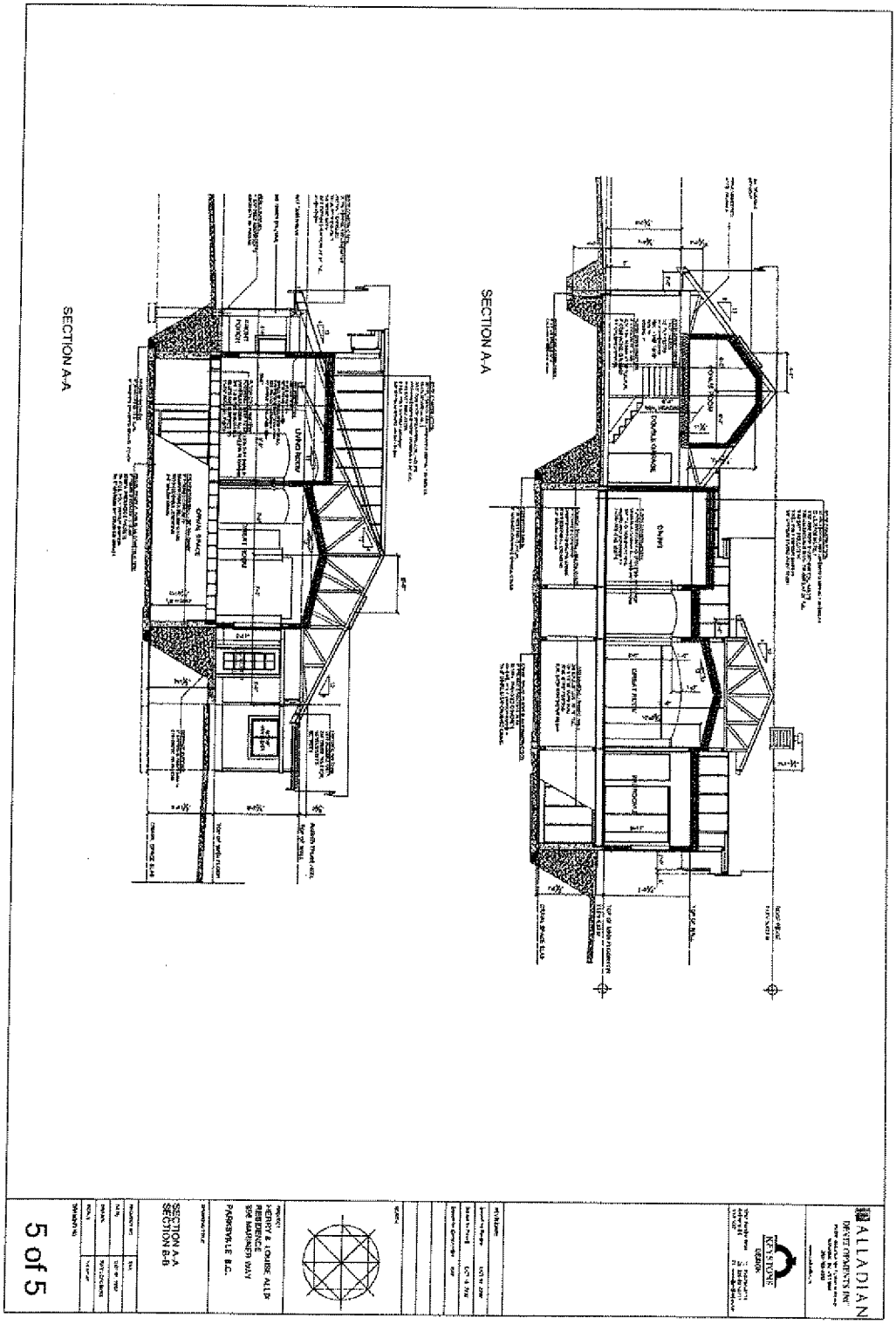
Schedule No. 3
Building Elevations Continued (3 of 5)



Schedule No. 3
Building Elevations Continued (4 of 5)



Schedule No. 3
Building Elevations Continued (5 of 5)



Schedule No. 4
Geotechnical Report

ISSUED FOR USE

CREATING AND DELIVERING BETTER SOLUTIONS

www.eba.ca

October 28, 2008 EBA File: N13101233

Palladian Developments Inc.
404, #1-5765 Turner Road,
Nanaimo, BC V9T 6M4

Attention: Mr. Mike Hamilton, Manager

Regarding: Geotechnical Foundation Investigation – 896 Mariner Way, Parksville BC

1.0 INTRODUCTION

EBA Engineering Consultants Ltd. (EBA) was retained by Palladian Developments Inc. (Palladian) to carry out a limited foundation study for a proposed house to be constructed at 896 Mariner Way, Parksville BC. The site location is shown on Figure 1.

EBA's scope of work included:

- A site visit by a geotechnical engineer to make notes of features of geotechnical significance, including possible evidence of instability and/or evidence of obvious damage to buildings that may be caused by ground movement, and to describe the subsurface conditions encountered within testpits to be excavated outside the proposed perimeter;
- Providing a brief letter report (this document) outlining aspects of geotechnical concern providing foundation design parameters including minimum foundation depth and allowable bearing pressure; and
- Preparing British Columbia Building Code (2006) (BCBC) Schedules B1 and B2 (previously submitted).

Authorization to proceed with this assignment was received on September 24, 2008 from Mr. Hamilton. This study is limited to foundation issues only. Other issues such as erosion control, etc. are beyond the scope of this study.

2.0 SITE AND PROJECT DESCRIPTION

The site is located in central Vancouver Island, in the east end of Parksville on the east side of the mouth of the Englishman River (Figure 1) on the south side of Mariner Way, between Arlette Road and Shorewood Drive.

The property and neighbouring properties are generally flat with a slight slope down, northwards to the shoreline.

EBA Engineering Consultants Ltd.
p. 250.756.2256 • f. 250.756.2686
1 - 4376 Boban Drive • Nanaimo, British Columbia V9T 6A7 • CANADA

Geotechnical Report Continued
Page 2 of 16

Based on the information you provided, EBA understands that the proposed building will be a wood-frame structure with a crawlspace that will be about 2 m below the ground surface as observed on October 7, 2008.

3.0 GEOLOGY

Reference to published geology maps indicate that the site is underlain by fluvial sediments (sand and gravel), which in turn overlies sedimentary rocks of the Nanaimo Group.

Available data indicate that no coal has been mined beneath the site.

4.0 FIELD INVESTIGATION

Two testpits (TP01 and TP02) were completed on October 7, 2008 using an excavator, at the locations shown on Figure 2. Testpit depths were 3.7 m and 2.4 m respectively. The testpit logs are attached in Appendix A.

The soil was visually classified in the field. The individual soil strata and the interfaces between them were noted. Disturbed soil samples were collected for laboratory classification testing. Details of the stratigraphy encountered are presented on the testpit logs in Appendix A.

5.0 SUBSURFACE CONDITIONS

Two testpits (TP01 and TP02) were excavated on October 7, 2008 at locations as shown on Figure 2. The soils conditions encountered generally consisted of:

- Topsoil (0.3 m to 0.5 m thick); overlying
- Compact sand and gravel in bedded layers of varying sand and gravel content to the bottom of each testpit.

The soil encountered was dry and the testpit excavations experienced significant sloughing.

No seepage was encountered during our investigation on October 7, 2008. However, EBA measured the groundwater at 3.7 m below the surface in a well on the adjacent property shown on Figure 2 (same property owner). Groundwater elevations and flows can vary with precipitation, site grading, seasons and other salient factors. Reported groundwater observations may not reflect the groundwater elevation at the time excavation work is completed. Higher groundwater levels should be expected following periods of increased precipitation.

6.0 DISCUSSION AND RECOMMENDATIONS

6.1 GENERAL

All foundation design recommendations presented in this report are based on the assumption that an adequate level of construction monitoring during foundation excavation and installation will be provided, and that all construction will be completed by a suitably qualified and experienced contractor.

An adequate level of construction monitoring for shallow foundations includes observation of all bearing surfaces by a qualified geotechnical engineer prior to concrete placement. Suitably qualified persons independent of the contractor should complete the monitoring. One of the purposes of providing an adequate level of monitoring is to check that the recommendations, which are based on data obtained at discrete testpits, are relevant to other areas of the site.

Based on the conditions encountered this site is considered to be suitable for the proposed foundation development. Appropriate foundation soils were encountered at relatively shallow depths (approximately 1.0 m below the ground surface) as observed on October 7, 2008, on this site.

6.2 SEISMICITY

The British Columbia Building Code (2006) (BCBC) requires that any building must consider the effects of a seismic event that would have a 2% probability of occurring within 50 years. Seismic data for the Nanaimo area are given in Table 2. Data for these tables were obtained from the Natural Resources Canada and the BCBC.

TABLE 2: SEISMIC FACTORS	
Probability of Exceedance per Annum	0.0004
Probability of Exceedance in 50 Years (%)	2
Peak Horizontal Ground Acceleration (PGA)	0.4g

6.2.1 Liquefaction Potential

Liquefaction, and the corresponding decrease in soil strength due to increased pore water pressure in response to seismic shaking, will generally only occur under saturated conditions. Any loose zone in granular soils that may exist below the groundwater table has the potential to liquefy during the design seismic event.

Based on the granular soil (deltaic deposits) encountered and relatively shallow groundwater table at this site, EBA considers the potential for liquefaction from the 1:2475 design earthquake to be moderate.

The consequences of liquefaction may include settlement and lateral spreading. To prevent collapse of the propose structure, the structural design must consider the potential effects of liquefaction.

EBA recommends structurally connecting all footings together or using a thickened edge slab to minimize the potential for lateral spreading of the footings should the site liquefy during the 1:2475 design seismic event. EBA recommends contacting a structural engineer for input regarding the required reinforcement.

A detailed engineering analysis of liquefaction or seismic settlements was beyond the scope of this study.

6.2.2 Seismic Site Classification

The site classification for seismic site response at this site is Site Class F due to the possible presence of liquefiable soils. Further refinement of this site classification would only be possible by completing a drilling investigation to determine the soil stratigraphy for the top 30 m of soil/rock at this site. Further site-specific geotechnical investigation and dynamic site response analysis are required to determine the acceleration-based site coefficient (F_a) and the velocity-based site coefficient (F_v) for this site. Such a detailed investigation is beyond EBA's scope of work.

6.3 FOUNDATION PREPARATION

Structures should not be placed on topsoil, loose, disturbed, or soft soil. These materials should be completely removed from beneath any foundation or development that is settlement sensitive. The following foundation preparation measures are suggested as a guide for construction:

- Strip topsoil, fill and deleterious materials and remove to spoil, or stockpile for landscaping purposes;
- Excavate to the design footing elevation and compact the base of the excavation (diesel plate packer or vibrating roller). Proper moisture conditioning will be required;
- Request an EBA geotechnical engineer to observe the foundation soils, to confirm the design recommendations. It is expected, based on the two testpits completed, that sand and gravel will be exposed at the base of the excavation. This material may be sensitive to mechanical disturbances and weathering; and
- Over-excavate any loose zones that exist at the design footing elevation. Over-excavated areas must be replaced with a structural fill.

Structural fill shall consist of 25 mm minus, well-graded, base-aggregate with less than 5% fines, where fines are defined as soil passing through the No. 200 sieve. The fill should be

placed in lifts not exceeding 150 mm and compacted to a minimum 98% of Standard Proctor Maximum Dry Density (SPMDD).

Quality assurance testing of the structural fill should be conducted using in-situ density testing throughout any fill placement. All foundation systems will require inspection by a geotechnical engineer. EBA should be given advance notice of when the inspection is required.

EBA provides the following comments and recommendations to minimize the potential for loosening of the foundation soil:

- Form and cast footing as quickly as possible after the excavation has been completed. Some hand work to remove loose soil will likely be required prior to placing the concrete for the footings;

Therefore, based on the proposed 2 m deep foundation excavation and the observed depth to the groundwater at the time of our investigation, 3.7 m below the ground surface, EBA does not expect significant seepage in the excavation.

6.4 FOUNDATION DESIGN PARAMETERS

6.4.1 Shallow Footings

The bearing stratum (sand and gravel) was found to be compact at the design footing elevation (approximately 2 m below the existing ground surface). The upper approximately 1 m of native soil is considered to be loose and no footings should be constructed at a depth of less than 1 m below the ground surface as observed on October 7, 2008.

Footings should be constructed directly on the compact native sand and gravel, on structural fill, or on a mud slab. No footings should be constructed on topsoil, organics, fill or very loose soils. Properly constructed footings can be designed based on an allowable bearing pressure of 100 kPa using working stress design.

Some settlement of the footings will occur (the ground would be expected to respond rapidly i.e. during construction due to its granular nature) but if the foundation soils are well-prepared and designed in accordance with EBA's recommendations settlements should be within normal design tolerances. Based on the allowable bearing pressures provided expected settlements would be as follows:

- Total settlements of less than 25 mm, the majority of which should take place during construction;
- Differential settlements along the foundation of about one-half of the total settlement as given above

Larger settlements and lateral spreading are possible as a result seismic shaking. To prevent damage to the structure during the 1:475 design seismic event or collapse of the structure

during the 1:2475 seismic event, EBA recommends structurally connecting all footing together or using a thickened edge slab foundation as described in Section 6.4.2.

6.4.2 Thickened Edge Slab

A structural thickened edge slab would be expected to perform satisfactorily provided that the following recommendations regarding foundation preparation, sub-excavation and structural fill placement, and design considerations are incorporated into the floor slab design. A thickened edge slab is cast as a single unit with continuous steel reinforcement through the slab. Additional reinforcing and concrete are placed at the outside edge of the slab which acts as the footing. A structural engineer should be contacted regarding the design of the slab.

The foundation soil should be prepared as outlined in Section 6.4.

Settlements of the thickened edge slab would be similar to shallow footings as described in Section 6.4.1.

6.5 DRAINAGE

Drainage for the proposed building addition should include perimeter drains comprising a rigid, perforated pipe surrounded with drain rock to a minimum of 150 mm beyond the pipe. Collected water should have positive drainage away from the structure and preferably to a municipal stormwater system.

EBA recommends that the final site grading should fall away from the proposed development (to promote surface drainage).

Geotechnical Report Continued
Page 7 of 16

7.0 CLOSURE

From a foundation support and soil perspective, no conditions have been found which would preclude the proposed development. EBA considers this land will provide proper support for the proposed building provided the recommendations in this letter are followed.

The recommendations presented herein are based on a geotechnical evaluation of the findings in two testpits and a review of readily available geotechnical information. If conditions other than those reported are noted during construction of the project, EBA should be notified and given the opportunity to review our recommendations in light of new findings.

The scope of this assignment did not include an investigation for contaminated soils or flooding. For further limitations, reference should be made to the Geotechnical Report – General Conditions included in Appendix B.

Should any parts of this require clarification, please do not hesitate to call the writer. As well, should you have any suggestions that would improve the repair program, and assist in completion of this work in a safe and timely manner, please feel free to call or email.

Respectfully Submitted;

EBA Engineering Consultants Ltd.

Paul Murchison, E.I.T.
Geotechnical Engineer

Jerry Schmidt, P.Eng.
Senior Geotechnical Engineer

Attachments:

Figure 1 Property Location Plan
Figure 2 Testpit Location Plan

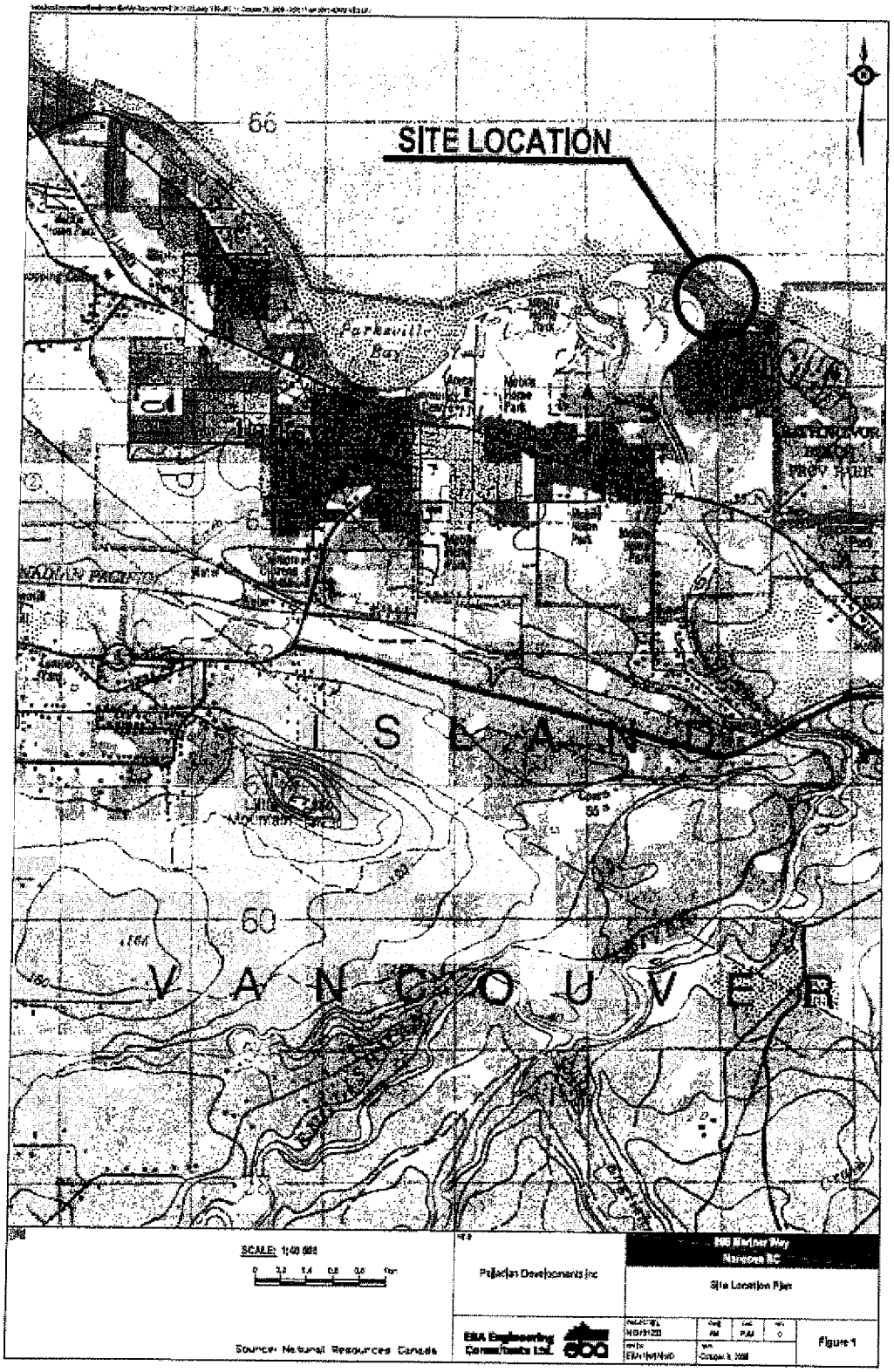
Appendix A Testpit logs
Appendix B Geotechnical Report – General Condition

Geotechnical Report Continued
Page 8 of 16

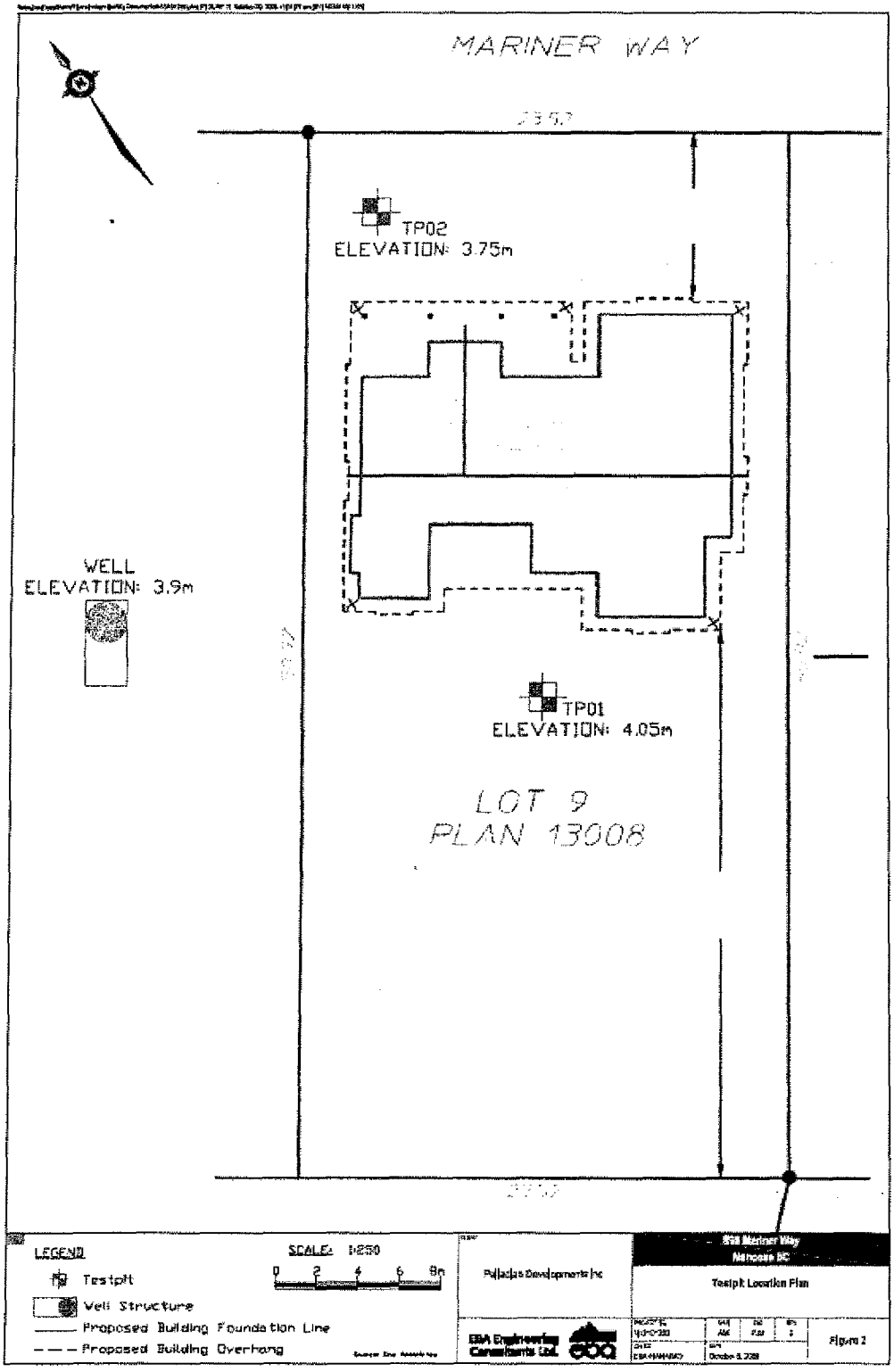
ISSUED FOR USE

FIGURES

Geotechnical Reports Continued
Page 9 of 16



Geotechnical Report Continued
Page 10 of 16



ISSUED FOR USE

APPENDIX

APPENDIX A TESTPIT LOGS

Geotechnical Report Continued
Page 12 of 16

896 Mariner Way, Nanoose BC	Palladian Developments Inc	PROJECT NO. - TESTPIT NO.
Lot 9, DL 161, Nanoose District, Plan 13008		N13101233 - TP01
		ELEVATION: 4.05m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	USC	SOIL SYMBOL	MOISTURE CONTENT (PLASTIC / M.C. / LIQUID)	STANDARD PENETRATION (N) / UNCONFINED (kPa) / POCKET PEN. (kPa)	Elevation (m)
0	SAND (TOPSOIL) - trace silt, fine to medium sand, loose, organics, dry, dark brown			TOPSOIL				4.0
1	SAND - gravelly, trace silt, well-graded, rounded, compact, 75mm max size, damp, brown -Bedded in layers of variable gravel and sand content							3.0
2			01-1	SW				2.0
3	GRAVEL AND SAND - trace silt, fine sand, rounded, compact, 50mm max size, damp to moist, brown-grey		01-2	GWS				1.0
4	END OF TESTPIT (3.7m) -Water level in well adjacent to site at 12ft below ground surface -No seepage observed at completion -Backfilled and bucket tamped at completion							0.0
5								

eba

LOGGED BY: AM	COMPLETION DEPTH: 3.66m
REVIEWED BY: PJM	COMPLETE: 8/10/2007
DRAWING NO: 1	Page 1 of 1

GEOTECH-RECAL N13101233.GPJ EBA.GDT 08/10/23

Geotechnical Report Continued
Page 13 of 16

896 Mariner Way, Nanoose BC	Palladian Developments Inc	PROJECT NO. - TESTPIT NO.
Lot 9, DL 181, Nanoose District, Plan 13008		N13101233 - TP02
		ELEVATION: 3.75m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	USC	SOIL SYMBOL	MOISTURE CONTENT (PLASTIC / M.C. / LIQUID)	STANDARD PENETRATION (N) / UNCONFINED (kPa) / POCKET PEN. (kPa)	Elevation (m)
0	SAND (TOPSOIL) - trace silt, fine to medium sand, loose, organics, dry, dark brown		TOPSOIL				3.0
	SAND AND GRAVEL - trace silt, rounded, compact, 50mm max size, dry, grey -Bedded in layers of variable gravel and sand content		SWG				
1	GRAVEL - sandy, trace silt, well-graded, rounded, compact, 75mm max size, dry, brown-grey -Bedded in layers of variable gravel and sand content -Trace rootlets More significant layer of rootlets, 50mm thick at 1.2m		GW				2.0
2							
	END OF TESTPIT (2.4m) -Trace rootlets to end of testpit -No seepage observed at completion -Backfilled and bucket tamped at completion						1.0
3							
							0.0
4							
							-1.0
5							

ebo

LOGGED BY: AM | COMPLETION DEPTH: 2.44m
REVIEWED BY: PJM | COMPLETE: 8/10/2007
DRAWING NO: 2 | Page 1 of 1

GEOTECHNICAL N13101233.GPJ EBA.GDT 08/10/23

ISSUED FOR USE

APPENDIX

APPENDIX B GEOTECHNICAL REPORT – GENERAL CONDITIONS

GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

3.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

4.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

5.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgmental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

6.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

7.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

Geotechnical Report Continued
Page 16 of 16

8.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

9.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

10.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

11.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

12.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the client's expense upon written request, otherwise samples will be discarded.

13.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practising under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

14.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

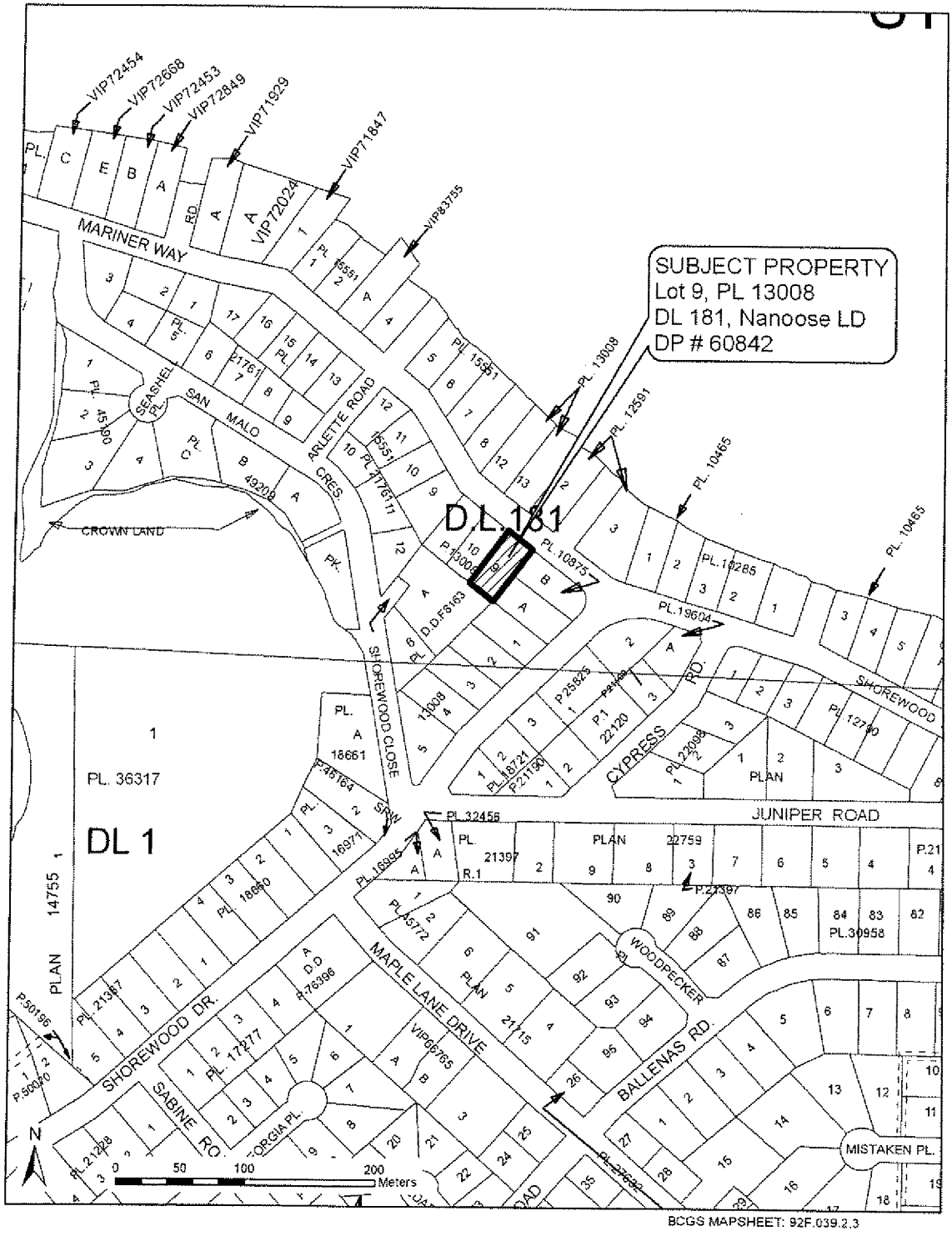
15.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA'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 EBA shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, 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 EBA shall be deemed to be the overall original for the Project.

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

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

Attachment No. 1
Location of Subject Property



REGIONAL DISTRICT OF NANAIMO

RDN REPORT		
CAO APPROVAL		
S. EAP	✓	Nov 25 '08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO: Geoff Garbutt, Manager, Current Planning

DATE: November 13, 2008

FROM: Angela Mays, Planning Technician

FILE: 3060 30 60847 c/r 3320 20 27975

SUBJECT: **Development Permit Application No. 60847**
Owner / Agent: Daryl James Heinrich / Peter T. Mason, BCLS
Electoral Area 'H' – 3330 Kym Road

PURPOSE

To consider a Development Permit for parcels in conjunction with a 2-lot subdivision application on a property located in Electoral Area 'H'.

BACKGROUND

The parent parcel, which is 4455 m^2 in size and legally described as Lot 8, District Lot 20, Newcastle District, Plan 11520, is located adjacent to Welch and Kym Roads in Electoral Area 'H' *(see Attachment No. 1 for location of subject property).*

The parent parcel is zoned Residential 2 (RS2) and is within Subdivision District 'M' pursuant to the "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987". The applicant is proposing to create a 2-lot subdivision. *(see Schedule No. 2 for proposed subdivision layout).*

The parent parcel is designated within the following development permits areas pursuant to the "Regional District of Nanaimo Electoral Area 'H' Official Community Plan Bylaw No. 1335, 2003":

- The Village Centres Development Permit Area for the form and character of commercial, intensive residential and industrial or multi-family residential development. As this is an application to subdivide the application will meet the exemption provisions of the development permit area;
- The Environmentally Sensitive Features Development Permit Area for the protection of the aquifer. As this is an application to subdivide where no land alteration related to the creation of the proposed parcels will occur, this application will meet the exemption provisions of the development permit area;
- The Natural Hazard Development Permit Area, for the protection of development from the possibility of flooding. As this is an application to subdivide where no land alteration related to the creation of the proposed parcels will occur, this application will meet the exemption provisions of the development permit area;
- The Fish Habitat Protection Development Permit Area for the purposes of protecting riparian areas for the protection of fish habitat, in this case Rootspring Creek; as this development is within 30 meters of the watercourse, this application will not meet the exemption provisions.

Two single dwelling units are located on the subject property which is in keeping with the RS2 zoning. The proposed lots have buildable site areas and will be able to support the intended uses under the Residential 2 zone. The dwelling units are serviced by local community water service provider and septic disposal systems. The parent parcel is outside an RDN Building Services Area.

Sustainability Implications

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist". This subdivision involves the protection of Rootspring Creek which is connected to fish habitat located adjacent to the parent parcel, thus promoting a healthy and productive ecosystem.

ALTERNATIVES

1. To approve Development Permit Application No. 60847, as submitted, subject to the conditions outlined in Schedules No. 1 and 2

2. To deny the Development Permit as submitted and provide staff with further direction

DEVELOPMENT IMPLICATIONS

Development Permit/Environmental Permit Implications

With respect to the Fish Habitat protection Development Permit Area Guidelines the applicant has provided a Riparian Area Assessment prepared by a Qualified Environmental Professional which has been accepted by the Ministry of Environment for the portion of the stream which crosses Welch Road adjacent to the parent parcel. This report establishes a Stream Protection and Enhancement Area (SPEA) of 10.0 metres. The existing driveway is partially located within the SPEA and is grandfathered under the ***Riparian Area Regulation*** *(RAR).* The report provides a number of measures to protect and maintain the SPEA including the following:

- Prior to commencing any development on this property the SPEA boundary must be flagged.
- The $20m^2$ area of salmonberry to be replaced with western red cedar must also be flagged
- A qualified environmental monitor must be contacted to conduct a site visit and attend a pre-work meeting with the contractor conducting the work.

In addition, as the Ministry of Environment requires that all *RAR* reports include a schedule for environmental monitoring, this report recommends initial meetings, post construction site visit, and additional site visits as required. These requirements are included in the Conditions of Approval set out in *Schedule No. 1*

Site Servicing Implications

The applicant has applied for septic disposal approval to the Central Vancouver Island Health Authority.

The applicants' agent has indicated that community water service will be provided by Qualicum Bay Horne Lake Water Works District.

The Ministry of Transportation and Infrastructure (MOTI) is responsible for the storm drainage. As part of the subdivision review process, the Regional Approving Officer will examine stormwater management of the parent parcel and impose conditions of development as required. In addition, MOTI has required

that Kym Road at the Northern portion of Lot 2, be extended across the rear of Lot 2 as dedicated road. It is noted that this road will not be required to be constructed as part of the subdivision approval process.

VOTING

Electoral Area Directors – one vote, except Electoral Area 'B'.

SUMMARY

This is a 2-lot subdivision application involving a Development Permit for the protection of the riparian area of Rootspring Creek, a tributary to Big Qualicum River for the property located at 3330 Kym Road in Electoral Area 'H'.

The subject property is within the Fish Habitat Protection Development Permit Areas (DPA) pursuant to the Electoral Area 'H' OCP, in this case for the purposes of ensuring protection of the riparian area adjacent to Rootspring Creek. The applicant has submitted a Riparian Area Assessment which includes measures and monitoring to protect the Stream Protection and Enhancement Area (SPEA). These requirements will be included in the Conditions of Approval *(see Schedule No. 1 for Conditions of Approval).*

Given that the applicant has provided an accepted Riparian Area Assessment; there are adequate building site areas on the proposed lots for intended uses outside the SPEA; and the development permit guidelines have been addressed. Staff recommends approval of the development permit subject to the conditions outlined in *Schedules No. 1 and 2* of the staff report.

RECOMMENDATION

That Development Permit Application No. 60847, submitted by Peter T. Mason in conjunction with the subdivision of the parcel legally described as Lot 8, District Lot 20, Newcastle District, Plan 11520 and designated within the Fish Habitat Protection Development Permit Area, be approved subject to the conditions outlined in Schedules No. 1 and 2 of the corresponding staff report.

Report Writer

General Manager Concurrence

Manager Concurrence

CAO Concurrence

COMMENTS:

Schedule No. 1
Development Permit No. 60847 / Subdivision File 27975
Conditions of Approval

The following sets out the conditions of approval in conjunction with Development Permit No. 60847:

1. Subdivision

The subdivision shall be in substantial compliance with the Proposed Plan of Subdivision prepared by the applicant as shown on Schedule No. 2 (to be attached to and forming part of the permit).

2. Measures to Protect and Maintain the SPEA

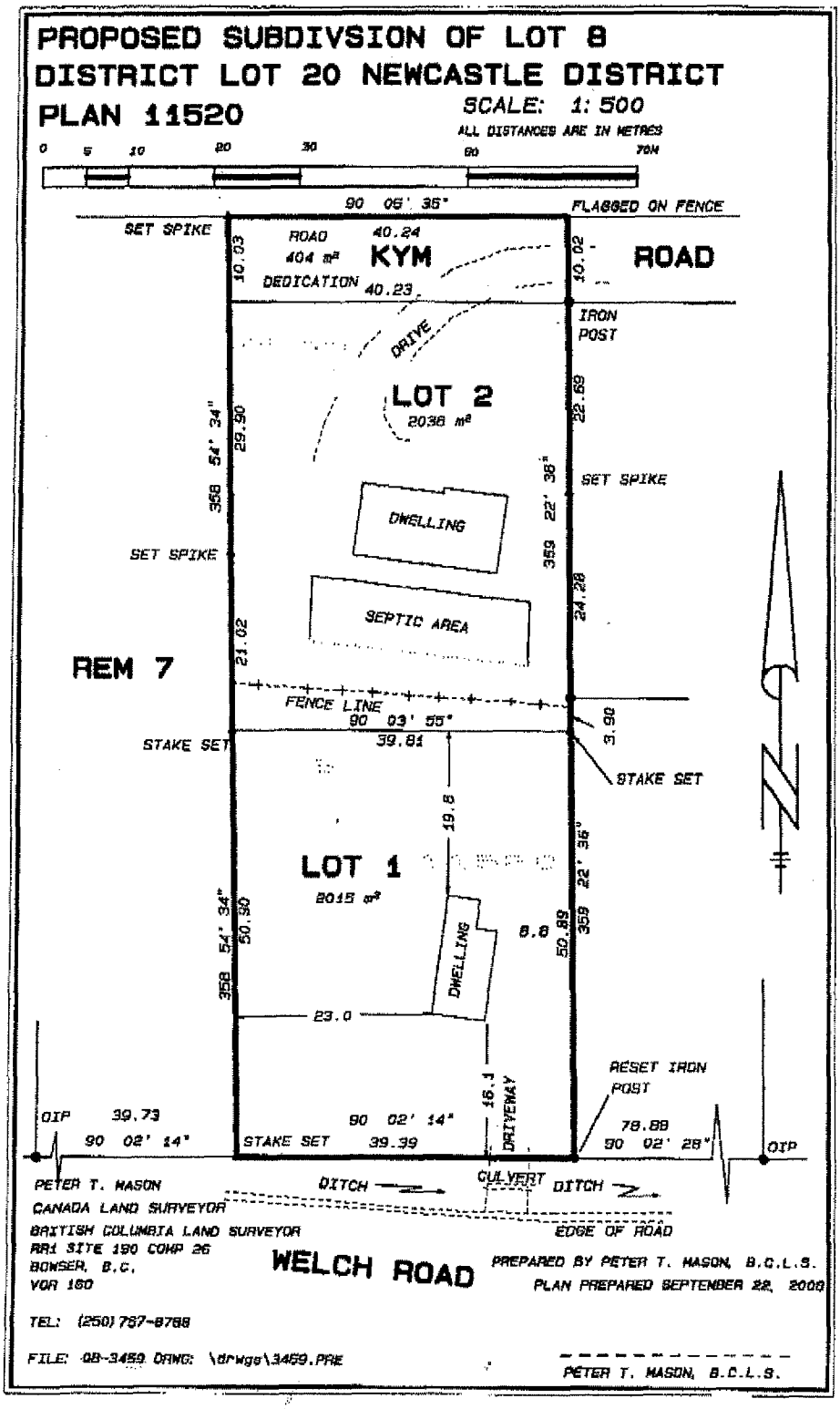
a. No development associated with this subdivision shall occur with the SPEA unless indicated in the Riparian Area Assessment No. 1014 prepared by Adam Compton and dated 2008-07-25 (to be attached to and forming part of the permit as Schedule No. 3).

b. The applicant shall complete the recommendations set out in Section 4 – Measures to Protect and Maintain the SPEA of the Riparian Area Assessment No. 1014 to the satisfaction of a Qualified Environmental Professional (QEP) with the QEP submitting written confirmation of completion of these measures to the Regional District of Nanaimo.

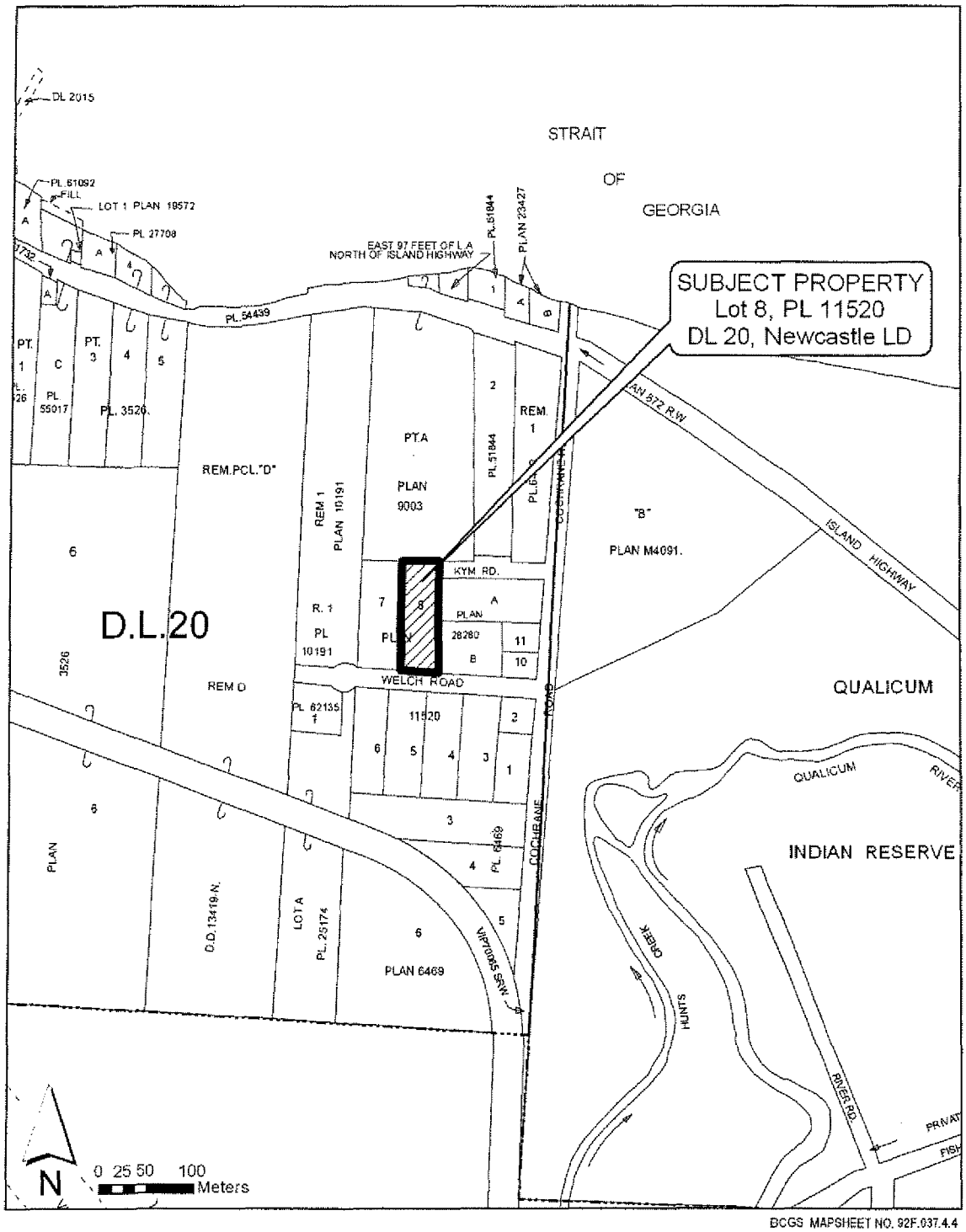
3. Environmental Monitoring

The applicant shall complete the requirements as set out in Section 5 – Environmental Monitoring of the Riparian Area Assessment No. 1014 to the satisfaction of a Qualified Environmental Professional (QEP) with the QEP submitting written confirmation of completion of the environmental monitoring to the Regional District of Nanaimo.

Schedule No. 2
Development Permit No. 60847 / Subdivision File 27975
Proposed Plan of Subdivision



Attachment No. 1
Development Permit No. 60847/ Subdivision File 27975
Location of Subject Property



REGIONAL DISTRICT OF NANAIMO

CAO APPROVAL		
S. EAP	✓	Nov 25 08
COW		
NOV 13 2008		
RHD		
BOARD		

MEMORANDUM

TO:	Geoff Garbutt Manager of Community Planning	**DATE:**	November 12, 2008
FROM:	Lainya Rowett Planner	**FILE:**	3090 30 90820
SUBJECT:	**Development Variance Permit Application No. 90820 – Rob Roine & Jerine Stauffer Lot A, Section 5, Range 5, Cedar District, Plan VIP82644 Electoral Area 'A'**		

PURPOSE

To consider an application for a Development Variance Permit to vary the maximum height requirement in order to facilitate the construction of a second dwelling on an existing residential lot.

BACKGROUND

This is an application to vary the maximum height requirement in order to facilitate the construction of a second dwelling on a residential property located at 2780 Yellow Point Road in Electoral Area 'A,' legally described as Lot A, Section 5, Range 5, Cedar District, Plan VIP82644 (see *Attachment No. 1 for Subject Property Map*).

The subject property (2.008 ha) is zoned Rural 4 (RU4) pursuant to "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987," and is designated "Rural" in the "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Bylaw No. 1240, 2001." The property is located within the Fish Habitat Protection Development Permit Area (DPA) of this OCP; however, the applicant has declared that there are no fish habitat areas on or adjacent to the property, so a Development Permit is not required.

The applicant proposes to construct a second dwelling, approximately 457.5 m^2 (4,924 ft^2) in floor area including a basement, in the rear portion of the property with access from an existing driveway off Yellow Point Road. The maximum height for buildings and structures in the RU4 Zone is 9.0 metres. The proposed building height is approximately 9.4 metres. The applicant proposes a Development Variance Permit to increase the maximum allowable height from 9.0 metres to 9.4 metres (see *Schedules No. 2 and 3* for Survey Plan and Building Elevations).

ALTERNATIVES

1. To approve the Development Variance Permit as submitted subject to the conditions outlined in Schedules No. 1 to 3.
2. To deny the Development Variance Permit.

LAND USE AND DEVELOPMENT IMPLICATIONS

The proposed dwelling generally suits the natural topography of the property. The proposed height variance of 0.4 metre would apply only to the roof peak on the south elevation where the design

incorporates a walk-out basement (see *Schedule No. 2*). All other portions of the building comply with the zoning requirements.

The building envelope would be set back significantly from Yellow Point Road, and would be well screened from the neighbors at the rear of the property by existing trees and vegetation to be retained or planted near the dwelling. The new dwelling would, therefore, have minimal visual intrusion on neighboring properties. In staff's assessment, the proposed variance is reasonable and the proposed building would not negatively impact the subject property or adjacent properties.

SUSTAINABILITY IMPLICATIONS

In keeping with Regional District of Nanaimo Board policy, the applicant has completed the "Sustainable Community Builder Checklist." The proposed dwelling incorporates a high quality of design, including green building elements such as minimized waste practices; avoidance of harmful solvents; the use of local builders and materials; maximized solar gain, and; energy efficient windows, doors and heating system. The new dwelling would also be located within an existing building envelope that was previously cleared, and would use an existing driveway access. The applicant proposes to plant native landscaping, and utilize rain barrels for watering. Storm water will also be collected to maintain water levels in a man-made pond.

PUBLIC CONSULTATION IMPLICATIONS

As part of the required public notification process, pursuant to the ***Local Government Act***, property owners located within a 50 metre radius, must receive notice of the proposal and will have an opportunity to comment on the proposed variance, prior to the Board's consideration of the permit.

SUMMARY/CONCLUSIONS

This is an application to vary the height requirement of the RU4 Zone to facilitate the construction of a second dwelling unit on an existing residential property. The RU4 Zone limits the height of buildings to 9.0 m, but the proposed dwelling requires a maximum height of 9.4 m. Given the lack of negative impacts on the subject property or adjoining lots staff recommends approval of the Development Variance Permit as submitted.

RECOMMENDATION

That Development Variance Permit application No. 90820 submitted by Rob Roine and Jerine Stauffer for the property legally described as Lot A, Section 5, Range 5, Cedar District, Plan VIP82644 be approved subject to *Schedules No. 1 to 3* of the staff report and the notification requirements pursuant to the *Local Government Act.*

Report Writer

General Manager Concurrence

Manager Concurrence

CAO Concurrence

Schedule No. 1
Conditions of Development Variance Permit No. 90820
2780 Yellow Point Road

The following sets out the terms of Development Variance Permit No. 90820:

Bylaw No. 500, 1987 – Variance

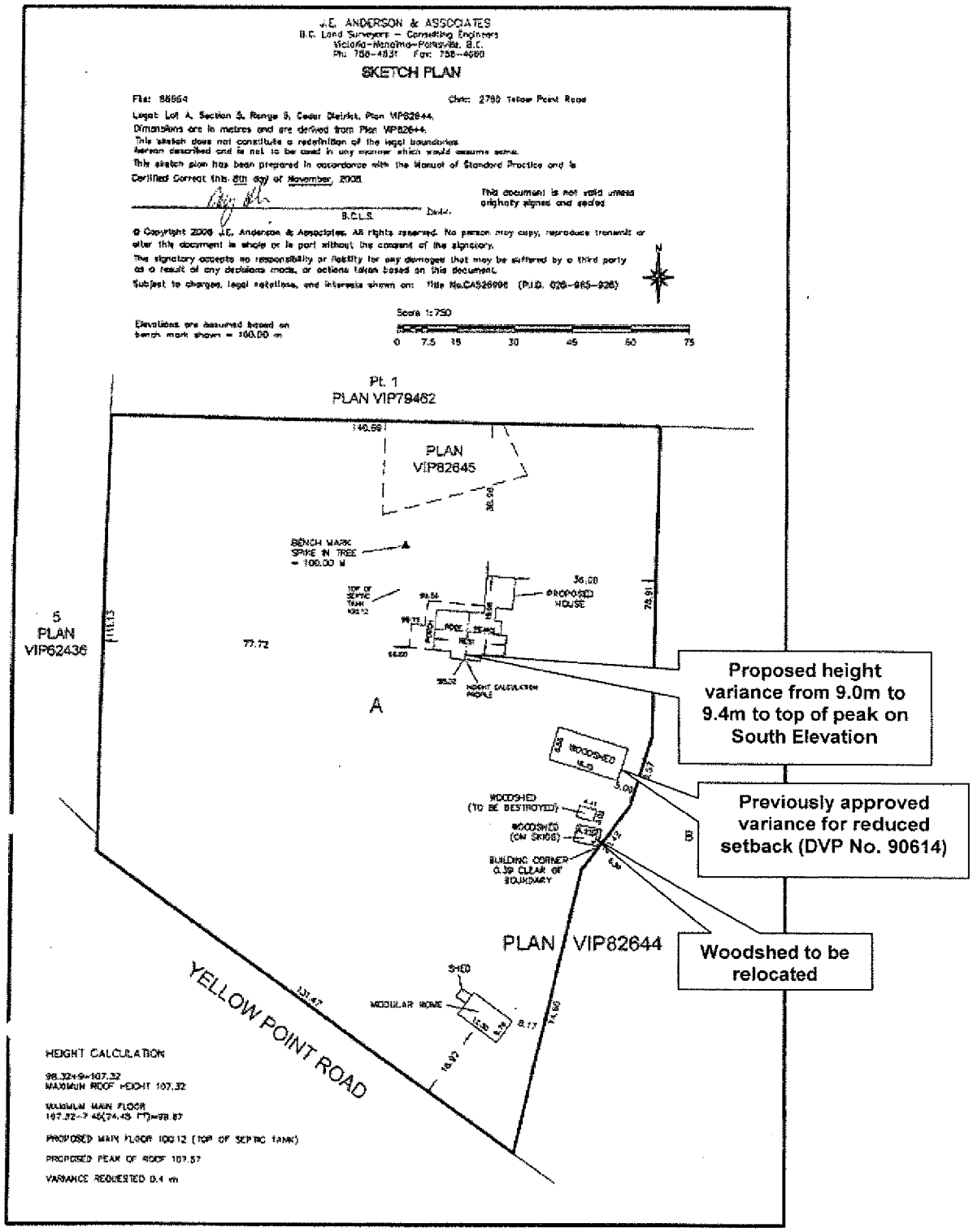
With respect to the lands, "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987," is varied as follows:

1. **Section 3.4.84, Maximum Number and Size of Buildings and Structures** is hereby varied by increasing the maximum height for the proposed dwelling, located on Lot A, Section 5, Range 5, Cedar District, Plan VIP82644, from 9.0 m to 9.4 m as shown on *Schedule No. 2.*

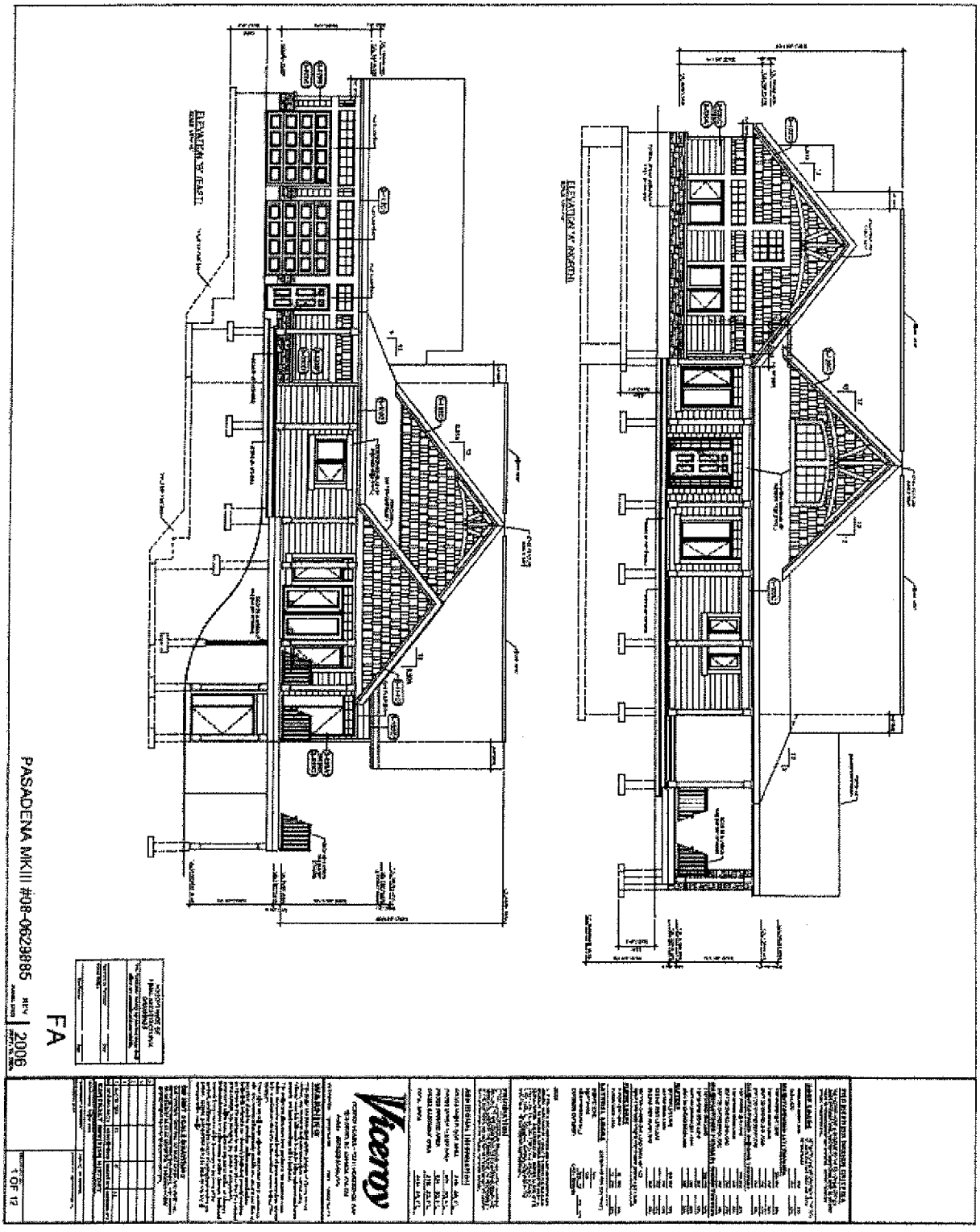
Conditions of Permit

1. The proposed dwelling shall be sited in accordance with the survey prepared by J.E. Anderson and Associates dated September 27, 2008 attached as *Schedule No. 2.*
2. The proposed dwelling shall be developed in accordance with the building elevations prepared by Viceroy Homes attached as *Schedule No.3.*
3. All other buildings on the property shall comply with the requirements of the Rural 4 Zone, pursuant to the "Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987," unless otherwise varied.

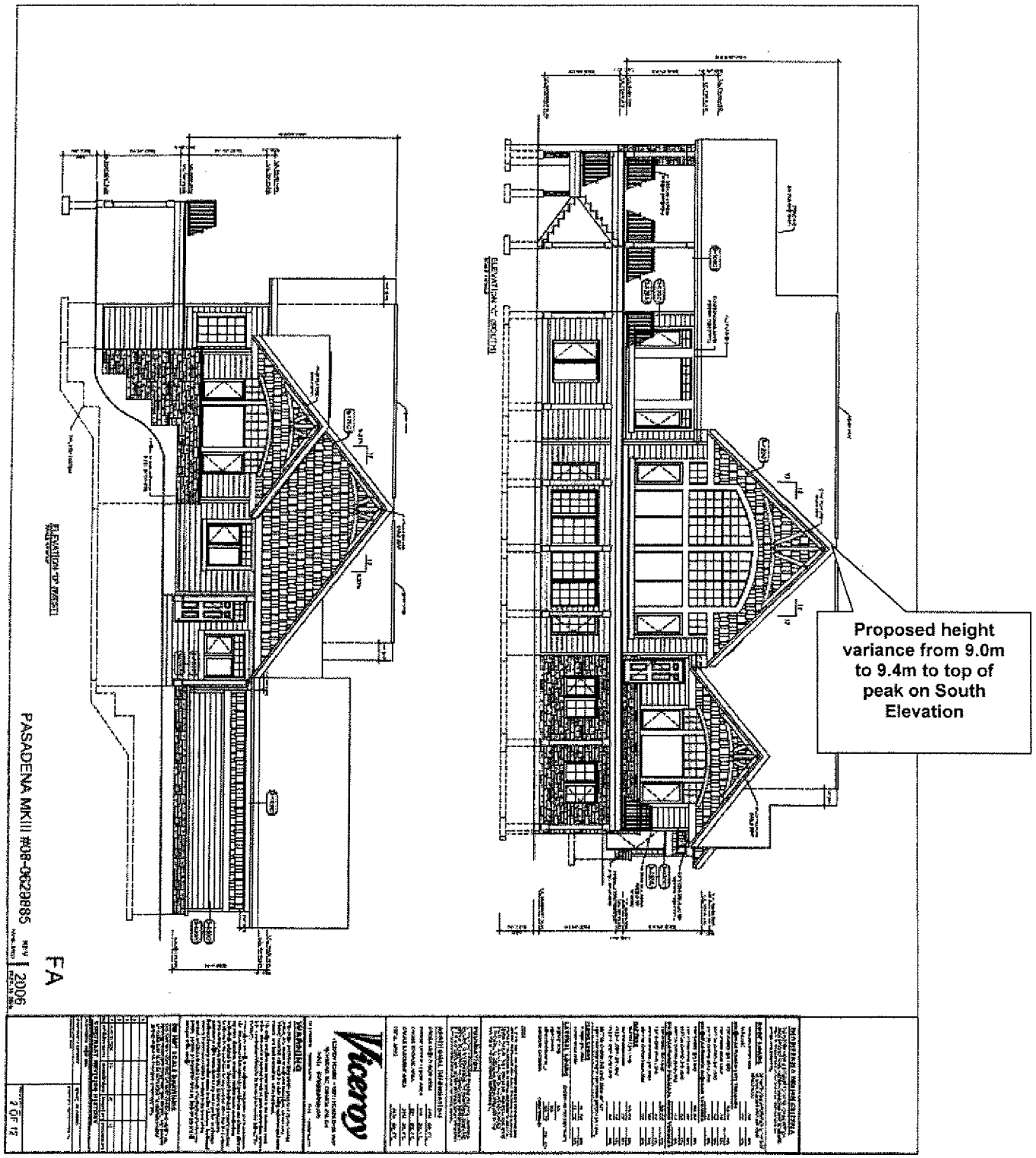
Schedule No. 2
Survey Plan for 2780 Yellow Point Road



Schedule No. 3 (Page 1 of 2)
Proposed Building Elevations for 2780 Yellow Point Road



Schedule No. 3 (Page 2 of 2)
Proposed Building Elevations for 2780 Yellow Point Road



Attachment No. 1
Location of Subject Property