



General Purposes Committee

Council Chambers, City Hall
6911 No. 3 Road

Monday, October 5, 2020
4:00 p.m.

Pg. # ITEM

MINUTES

- GP-5** *Motion to adopt the **minutes** of the meeting of the General Purposes Committee held on September 21, 2020.*



COUNCILLOR KELLY GREENE

1. **WOMEN'S ADVISORY COMMITTEE**
(File Ref. No.:)

GP-12 **See Page GP-12 for full report**

RECOMMENDATION

For staff to investigate and report back on the creation of a Women's Advisory Committee; and evaluate the additional strategy recommendations of the FCM Run, Win and Lead framework and report back.



ENGINEERING AND PUBLIC WORKS DIVISION

2. **UBCM COMMUNITY EMERGENCY PREPAREDNESS FUND
2020/2021 APPLICATION**
(File Ref. No. 10-6060-01) (REDMS No. 6526672)

GP-13 **See Page GP-13 for full report**

Designated Speaker: Jason Ho

STAFF RECOMMENDATION

- (1) *That the Box Culvert Repair project submission to the 2020 Union of BC Municipalities (UBCM) Community Emergency Preparedness Fund for Structural Flood Mitigation be endorsed; and*
- (2) *That, should the submission be successful, the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to negotiate and execute the funding agreement with UBCM.*



COMMUNITY SAFETY DIVISION

3. **SOIL USE FOR THE PLACEMENT OF FILL APPLICATION FOR THE PROPERTY LOCATED AT 8511 NO. 6 ROAD (JIANG)**

(File Ref. No. 12-8080-12-01) (REDMS No. 6506278 v. 7)

GP-16

See Page GP-16 for full report

Designated Speaker: Carli Williams

STAFF RECOMMENDATION

That the ‘Soil Use for the Placement of Fill’ application, submitted by Bohan Jiang (the “Applicant”), proposing to deposit soil on the property located at 8511 No. 6 Road for the purpose of remediating the property to develop a blueberry farm, be authorized for referral to the Agricultural Land Commission (ALC) for the ALC to review and determine the merits of the proposal from an agricultural perspective as the Applicant has satisfied all of the City’s current reporting requirements.



PLANNING AND DEVELOPMENT DIVISION

4. **AMENDMENTS TO OFFICIAL COMMUNITY PLAN BYLAW PREPARATION CONSULTATION POLICY 5043 (UPDATE TO REFERRALS TO THE BOARD OF EDUCATION OF SCHOOL DISTRICT NO. 38 (RICHMOND)) AND NEW POLICY ON INDEPENDENT SCHOOL REFERRAL TO THE BOARD OF EDUCATION OF SCHOOL DISTRICT NO. 38 (RICHMOND)**

(File Ref. No. 08-4045-00) (REDMS No. 6510818; 5374035; 6401251; 6487486)

GP-141

See Page GP-141 for full report

Designated Speaker: Barry Konkin

STAFF RECOMMENDATION

- (1) *That Council Policy 5043 “OCP Bylaw Preparation Consultation Policy” be amended to update the Board of Education of School District No. 38 (Richmond) referral process to lower the criteria for Richmond Official Community Plan Bylaw 9000 Amendment applications being forwarded to the Board of Education of School District No. 38 from 50 additional school-aged children to 25 additional school-aged children, and undertake minor administrative updates as outlined in the report dated September 14, 2020, from the Director of Policy Planning; and*
- (2) *That the new proposed Council Policy “Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools” be approved to address referring Independent School proposals requiring a development application to the Board of Education of School District No. 38 (Richmond) as outlined in the report dated September 14, 2020, from the Director of Policy Planning.*



5. **REFERRAL RESPONSE: REGULATING FENCING MATERIALS**
(File Ref. No. 08-4430-01) (REDMS No. 647103 v. 12; 6404835; 6399777; 6399778; 6360541; 6400503)

GP-151

[See Page GP-151 for full report](#)

Designated Speakers: James Cooper and Barry Konkin

STAFF RECOMMENDATION

- (1) *That Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, respecting changes to fence regulations (including the prohibition of masonry as a permitted fence material for lands regulated under Section 14.1 of the Agriculture Zone), be revised as outlined in this report;*
- (2) *That Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, respecting changes to fence regulations (including the prohibition of masonry as a permitted fence material for lands regulated under Section 14.1 of the Agriculture Zone), as revised, be given second reading; and*

- (3) *That staff be directed to maintain the current bylaw regulations for fence materials – including masonry – in all zones in urban areas that permit single detached residential uses.*



6. **APPLICATION BY KULBINDER DHESI, RAJBINDER AUJLA AND PAULVEER AUJLA FOR REZONING AT 10160 WILLIAMS ROAD FROM THE “SINGLE DETACHED (RS1/E)” ZONE TO THE “COMPACT SINGLE DETACHED (RC2)” ZONE**

(File Ref. No. RZ 19-881151) (REDMS No. 6525481 v. 4; 6511125; 6511133)

PLN-179

See Page PLN-179 for full report

Designated Speakers: Wayne Craig and Nathan Andrews

STAFF RECOMMENDATION

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10206, for the rezoning of 10160 Williams Road from the “Single Detached (RS1/E)” zone to the “Compact Single Detached (RC2)” zone, be introduced and given first reading.



7. **APPLICATION BY RAMAN KOONER FOR REZONING AT 3540 LOCKHART ROAD FROM THE “SINGLE DETACHED (RS1/E)” ZONE TO THE “SINGLE DETACHED (RS2/B)” ZONE**

(File Ref. No. RZ 20-898600) (REDMS No. 6522282 v. 4; 6526719; 6526711)

PLN-203

See Page PLN-203 for full report

Designated Speakers: Wayne Craig and Nathan Andrews

STAFF RECOMMENDATION

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10211, for the rezoning of 3540 Lockhart Road from the “Single Detached (RS1/E)” zone to the “Single Detached (RS2/B)” zone, be introduced and given first reading.



General Purposes Committee Agenda – Monday, October 5, 2020

Pg. # ITEM

COMMUNITY SERVICES DIVISION

ADDED	8. MASK WEARING IN CITY BUILDINGS (File Ref. No. 09-5125-01) (REDMS No. 6529829 v. 7)
GP-223	<div>See Page GP-223 for full report</div> <p><i>Designated Speakers: Lisa Fedoruk & Mandeep Bains</i></p> <p>STAFF RECOMMENDATION</p> <p><i>That the wearing of masks in City buildings be required as described in Option 3 in the staff report titled, “Mask Wearing in City Buildings,” dated September 27, 2020 from the General Manager, Community Services.</i></p>

☐

ADJOURNMENT

☐



General Purposes Committee

Date: Monday, September 21, 2020

Place: Council Chambers
Richmond City Hall

Present: Mayor Malcolm D. Brodie, Chair
Councillor Chak Au
Councillor Carol Day (entered by teleconference at 4:04 p.m.)
Councillor Kelly Greene (by teleconference)
Councillor Alexa Loo (by teleconference)
Councillor Bill McNulty (by teleconference)
Councillor Linda McPhail (by teleconference)
Councillor Harold Steves (by teleconference)
Councillor Michael Wolfe (by teleconference)

Call to Order: The Chair called the meeting to order at 4:03 p.m.

MINUTES

It was moved and seconded

That the minutes of the meeting of the General Purposes Committee held on September 8, 2020, be adopted as circulated.

CARRIED

Councillor Day entered the meeting by teleconference (4:04 p.m.)

COUNCILLOR KELLY GREENE

1. AT-HOME BUSINESS USE

(File Ref. No.)

Councillor Greene spoke to the need to analyze the City's current bylaws at they relate to permitted at-home business uses, stating that the City's regulations should not impoverish business owners during a pandemic.

Discussion took place and the following Committee comments were noted:

1.

General Purposes Committee

Monday, September 21, 2020

- the expansion of regulations to permit additional at-home businesses is concerning as it would potentially legitimize businesses who are currently in violation of the City's bylaws;
- the need for client parking, additional traffic, and an increase in unfamiliar persons would negatively impact residential neighbourhoods if additional types of at-home businesses were permitted;
- the City's regulations related to at-home business use are in need of a refresh; a staff referral could examine such uses and recommend new regulations in an effort to mitigate impacts to residential neighbourhoods such as options for limiting the number of clients per day, limiting operating hours, and requiring parking to be provided on the property as oppose to on the street;
- the Richmond Chamber of Commerce indicated that the matter of expanding in-home business use has not been an area of concern for its members;
- a primary concern with Airbnb was its traffic impacts on residential neighbourhoods; and
- a referral of this nature is complex and would ultimately alter the way in which the City is organized; the expansion of regulations to permit various types of businesses at-home compromises the City's Official Community Plan, which clearly defines commercial and residential sectors.

In reply to queries from Committee, Carli Williams, Manager, Business Licence and Bylaws, spoke to the City's current enforcement protocol as it relates to complaints on at-home businesses. Staff was requested to provide statistics on complaints regarding at-home businesses.

It was moved and seconded

To investigate and report back on feasibility and options for expanded at-home business use; for example, personal services, RMTs, etc. Not to include retail or other businesses that can be expected to generate traffic, noise, or odours.

The question on the referral motion was not called as Committee members expressed their rationale in favour and in opposition of the referral, citing (i) the City's regulations are out-dated, (ii) the expansion of at-home businesses may infringe on residents' quality of life, (iii) Airbnb was not favoured as many homes were not occupied by the home owner(s), and (iv) the expansion of at-home businesses may single out some types of businesses, which would provide an unequal playing field.

The question on the referral motion was then called and it was **DEFEATED** with Mayor Brodie, Cllrs. Au, Loo, McNulty and McPhail opposed.

General Purposes Committee
Monday, September 21, 2020

COMMUNITY SAFETY DIVISION

2. PARKING FEES FOR 8620 AND 8660 BECKWITH ROAD

(File Ref. No. 12-8060-01) (REDMS No. 6423459 v. 7)

It was moved and seconded

- (1) That Option 1 as outlined in the staff report titled "Parking Fees for 8620 and 8660 Beckwith Road, dated August 31, 2020, from the General Manager, Community Safety, be approved and implemented; and*
- (2) That the neighbouring businesses be consulted for feedback on the potential impact of enforcement of time-limited street parking.*

The question on the motion was not called as in reply to queries from Committee, Susan Lloyd, Program Manager, Administration, Parking Enforcement and Animal Control, advised that (i) \$46,000 represents the total investment for the parking lot, (ii) the proposed daily rate can be changed with an amendment to Consolidated Fees Bylaw No. 8636, (iii) the proposed lot would be pay-by-plate, and (iv) there are approximately 200 free parking stalls in the Beckwith / Sexsmith area.

The question on the motion was then called and it was **CARRIED**.

COMMUNITY SERVICES DIVISION

3. REVISED PUBLIC ART PROGRAM POLICY

(File Ref. No. 11-7000-09-00) (REDMS No. 6489154 v. 4)

Serena Lusk, General Manager, Community Services, provided background information and reviewed the proposed options for Council consideration as it relates to the City's Public Art Program, specifically (i) the approval of Terms of References for public art on private property, (ii) the allocation of voluntary developer public art contributions, and (iii) opportunities for local and emerging artists.

Council Approval of Terms of Reference for Public Art on Private Property

Discussion took place on the proposed options set out in Table 1 of the staff report titled "Revised Public Art Program Policy" and the following Committee comments were noted:

- the role of the Richmond Public Art Advisory Committee is diminished if Council begins to require approval of Terms of References for public art on private property; and
- Options 2 and 3 provide Council the flexibility to decline public art that does not meet their liking.

General Purposes Committee

Monday, September 21, 2020

In reply to queries from Committee, Ms. Lusk and Biliana Velkova, Public Art Planner, provided the following information:

- the Richmond Public Art Advisory Committee's membership is comprised of art professionals;
- the Public Art Program (Policy 8703) was adopted by Council in 2010 with the goal of improving the public realm; as such, the City commits an amount of funds equivalent to a minimum of 1% of each Capital Project Budget whereas the public art contribution rate for the private sector was set as the equivalent to a minimum value of 0.5% of the estimated total project construction cost; and
- the value of \$250,000 as set out in Option 3 represents a single piece of public art on a private property.

As a result of the discussion, the following **motion** was introduced:

It was moved and seconded

That Option 3, revised to reflect a cumulative budget of \$250,000 or greater than, as set out in Table 1 of the staff report titled "Revised Public Art Program Policy" dated August 20, 2020 from the Director, Arts, Culture and Heritage Services, be approved as the preferred option for the approval of the Terms of Reference for public art on private property and Policy 8703 – Public Art Program be revised accordingly.

CARRIED

Opposed: Cllr. McPhail

The Chair directed staff to provide Council with a memorandum on the history of the varying public art contribution percentages between the City and private developers, and comment on phased developments with respect to the cumulative public art budget of \$250,000 or greater than.

Allocations of Voluntary Developer Public Art Contributions

Discussion took place on the proposed options set out in Table 2 of the staff report titled "Revised Public Art Program Policy" and Committee commented that Option 4 provides Council the flexibility to move funds around, while Option 1 (status quo) allows Council to examine projects on a prioritized list, which provides an overall glimpse of the City needs.

In reply to a query from Committee, Jerry Chong, Acting General Manager, Finance and Corporate Services, advised that the City collected approximately \$387,000 in public art contributions in 2019 and \$178,000 thus far in 2020.

Discussion took place on the need for additional information on funds received historically for public art contributions and alternatives to raise funding for arts and related facilities. As a result of the discussion, the following **referral motion** was introduced:

General Purposes Committee

Monday, September 21, 2020

It was moved and seconded

That Options for Allocations of Voluntary Developer Public Art Contributions, as set out in Table 2 of the staff report titled "Revised Public Art Program Policy" dated August 20, 2020 from the Director, Arts, Culture and Heritage Services, be referred back to staff for additional information related to funds received historically for each component of the public art fund and alternatives to raise funding for arts and related facilities.

CARRIED

Opposed: Cllrs. Day

Greene

Wolfe

PLANNING AND DEVELOPMENT DIVISION

4. **APPLICATION BY RICHMOND SCHOOL DISTRICT NO. 38 FOR A HERITAGE ALTERATION PERMIT AT 8220 GENERAL CURRIE ROAD (GENERAL CURRIE SCHOOL)**

(File Ref. No. HA 20-909844) (REDMS No. 6513637)

It was moved and seconded

That a Heritage Alteration Permit be issued that would permit the following work on the General Currie School at 8220 General Currie Road:

- (a) Construction of a wooden accessible ramp;*
- (b) Enlargement of the existing stair landing and replacement of the steps;*
- (c) Reversing of the door swing to enable access from the ramp; and*
- (d) Provision of metal handrails to match those existing.*

CARRIED

5. **APPLICATION BY FIRST ON SITE RESTORATION LTD. FOR A HERITAGE ALTERATION PERMIT AT 3580 MONCTON STREET (HEPWORTH BLOCK)**

(File Ref. No. HA 20-890427) (REDMS No. 6518122 v. 3)

It was moved and seconded

That a Heritage Alteration Permit be issued which would permit the following repair work to a small portion of the south elevation of the building located at 3580 Moncton Street to address damage caused by a vehicle accident:

- (a) removal and cleaning of a section of the existing brick façade for reinstallation, and replacement of any non-salvageable brick with new brick to match existing (as verified by City Staff prior to installation);*

5.

General Purposes Committee
Monday, September 21, 2020

- (b) *repair to the existing concrete window sill to match existing;*
- (c) *removal and replacement of a portion of the exterior wall wood framing behind the damaged brick due to existing rot; and*
- (d) *installation of wheel stop curbs for the north-facing parking spaces along the south side of the building.*

CARRIED

ENGINEERING AND PUBLIC WORKS DIVISION

6. **ROBERTS BANK TERMINAL 2 EXPANSION PROJECT UPDATE**

(File Ref. No. 10-6125-30-004) (REDMS No. 6466120 v. 4)

In reply to queries from Committee, Chad Paulin, Manager, Environment, advised that the economic impact of the project has not been examined and the rationale to oppose the project is based on the future availability of consultation. John Irving, General Manager, Engineering and Public Works, further added that the City's past experience with both federal and provincial environmental approval processes has been less than favourable and as such, a position on the expansion of the Roberts Bank Terminal 2 is justified.

The Chair directed staff to reiterate the City's position and rationale in its letters to the various parties as captured in the attachments to the staff report titled "Roberts Bank Terminal 2 Expansion Project Update."

Discussion took place on the value of the Fraser River Estuary Management Program and the need for an economic impact study on the expansion of the Roberts Bank Terminal. Also, it was noted that the Prime Minister, federal and provincial Leaders of the Opposition, local MPs, local MLAs, and Metro Vancouver municipalities be included in the City's correspondence on the project.

As a result, the following **motion** was introduced:

It was moved and seconded

That, as described in the staff report titled "Roberts Bank Terminal 2 Expansion Project Update," dated September 8, 2020 from the Director, Sustainability and District Energy:

- (1) *Letters be sent to the Prime Minister, Federal Minister of Environment and Climate Change, Premier of BC, Provincial Minister of Environment and Climate Change Strategy, the Provincial Minister of Transportation and Infrastructure, federal and provincial Leaders of the Opposition, local MPs, local MLAs, and Metro Vancouver municipalities requesting that the Roberts Bank Terminal 2 Expansion Project not proceed; and*

General Purposes Committee

Monday, September 21, 2020

- (2) *That staff be directed to work with the BC Environmental Assessment Office to develop provincial assessment conditions that protect the interests of the community, should the Roberts Bank Terminal 2 Expansion Project be approved.*

CARRIED

Opposed: Cllr. Loo
McPhail

7. **PHOENIX NET LOFT LEAN-TO AND FIRST NATIONS
BUNKHOUSE PRESERVATION COSTS**

(File Ref. No. 06-2052-25-PNET1) (REDMS No. 6518831 v. 5)

Councillor Steves provided background information and read from his submission titled “First Nation ‘Long House’ preservation costs” (attached to and forming part of these Minutes as Schedule 1).

- (1) *That the staff report titled “Phoenix Net Loft Lean-to and First Nations Bunkhouse Preservation Costs”, from the Director, Facilities and Project Development dated September 9, 2020 be received for information; and*
- (2) *That the materials titled “First Nation ‘Long House’ preservation costs” be referred to staff for consideration in conjunction with forthcoming staff report on the First Nations Bunkhouse and update on the Steveston Heritage Sites Interpretive Plan.*

CARRIED

ADJOURNMENT

It was moved and seconded
That the meeting adjourn (5:55 p.m.).

CARRIED

Certified a true and correct copy of the Minutes of the meeting of the General Purposes Committee of the Council of the City of Richmond held on September 21, 2020.

Mayor Malcolm D. Brodie
Chair

Hanieh Berg
Legislative Services Associate

Motion:

For staff to investigate and report back on the creation of a Women's Advisory Committee; and evaluate the additional strategy recommendations of the FCM Run, Win and Lead framework and report back.

Rationale:

Women continue to be underrepresented at all levels of government. In Canada, women represent 28% of locally elected officials. Only 18% of mayors are women, which falls to 12% of mayors in the largest 50 cities. Further, women are underrepresented at higher levels of leadership; of TSX listed companies only 3.5% have women CEOs and only 19% of Board and Executive positions are held by women.

“Leadership opportunities are scarce for most women. These opportunities are even scarcer for women of diverse and intersectional backgrounds – including women who are Indigenous, Black, racialized, LGBTQ2S+, newcomers, living with disabilities or earning low incomes.” (FCM, 2020).

Implementing a Women's Advisory Committee will benefit our entire community both for increasing civic political engagement and also increasing leadership opportunities for an underrepresented group.

Resources:

<https://data.fcm.ca/documents/tools/wilg/run-win-and-lead-toward-parity-in-municipal-politics-wilg.pdf>

<https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019028-eng.htm>

https://www.edmonton.ca/city_government/city_organization/womens-advocacy-voice-of-edmonton-committee.aspx

<https://vancouver.ca/your-government/womens-advisory-committee.aspx>



City of Richmond

Report to Committee

To: General Purposes Committee

Date: September 21, 2020

From: Milton Chan, P.Eng.
Director, Engineering

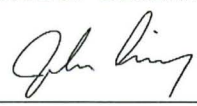


File: 10-6060-01/2020-Vol
01

Re: UBCM Community Emergency Preparedness Fund 2020/2021 Application

Staff Recommendation

1. That the Box Culvert Repair project submission to the 2020 Union of BC Municipalities (UBCM) Community Emergency Preparedness Fund for Structural Flood Mitigation be endorsed; and
2. That, should the submission be successful, the Chief Administrative Officer and General Manager, Engineering and Public Works be authorized to negotiate and execute the funding agreement with UBCM.

Milton Chan, P.Eng.
Director, Engineering
(604-276-4377)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Intergovernmental Relations	<input checked="" type="checkbox"/>	
Finance	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO 

Staff Report

Origin

On May 29, 2019, the Province announced \$31 million in grant allocation for the Community Emergency Preparedness Fund (CEPF). UBCM administers the CEPF to provide grant funding for partners to plan and implement structural flood protection projects in British Columbia.

There are a number of different funding streams in this program. Under the Structural Flood Mitigation category, staff are preparing an application for Box Culvert Repair. Major repairs to existing flood protection works or flood conveyance works (e.g. culverts) are eligible for funding.

The application guidelines state that projects must be endorsed by Council to be considered for funding. Staff are requesting Council's endorsement for this project submission to the UBCM Community Emergency Preparedness Fund.

This report supports the following strategies within Council's Strategic Plan 2018-2022:

Strategy #1 A Safe and Resilient City:

Enhance and protect the safety and well-being of Richmond.

1.2 Future-proof and maintain city infrastructure to keep the community safe.

Strategy #5 Sound Financial Management:

Accountable, transparent, and responsible financial management that supports the needs of the community into the future.

5.1 Maintain a strong and robust financial position.

5.4 Work cooperatively and respectfully with all levels of government and stakeholders while advocating for the best interests of Richmond.

Analysis

There are approximately 585 kilometers of drainage pipe and 61 kilometers of box culvert owned and maintained by the City. The drainage network collects storm water throughout the City and discharges it directly to the Fraser River.

The scope of work for this project includes, but is not limited to, the repair and rehabilitation of the No. 4 Road box culvert between Blundell Road and Granville Avenue. Repair work will include filling of voids and separated joints, sealing of cracks and grouting of walls, floors and any infiltration areas.

Completion of the Box Culvert Repair project will reduce flood risk, increase flood protection and minimize potential flood damage. This project corresponds with the City's Flood Protection Management Strategy, which identifies the requirement for an integrated physical flood

protection approach as a top priority. There are two box culvert projects which were previously approved by Council. These were the 2020 Box Culvert Repair capital account (\$1,000,000) and the 2018 Box Culvert Repair capital account (\$1,500,000).

Staff reviewed Council approved projects in order to choose a project that met the grant program guidelines. These projects were chosen as they are shovel ready, with a detailed budget and will be completed within a 2 year timeline, both of which are requirements in the technical review process for this grant. The remaining, shovel ready, structural flood mitigation projects are already provincially and/or federally grant funded.

The UBCM Community Emergency Preparedness Fund can contribute up to 100% of the project costs, to a maximum of \$750,000. The estimated cost to complete the box culvert repair between Blundell Road and Granville Avenue is \$1,740,000. Should the City be awarded the UBCM grant, the funding for the two respective capital projects will be amended, the original funding will be returned to their respective source and the 5 Year Financial Plan will be amended accordingly.

Financial Impact

None.

Conclusion

The Union of BC Municipalities has requested funding applications from local governments for emergency preparedness activities to reduce flood risk through the construction of structural flood mitigation projects. Staff recommend that Council endorse the Structural Flood Mitigation Project for grant funding in accordance with grant program guidelines. Staff are also seeking Council authority for the negotiation and execution of funding agreements should the City's application be successful.



Jason Ho, P. Eng.
Manager, Engineering Planning
(604-244-1281)



Corrine Haer, P. Eng.
Project Manager, Engineering Planning
(604-219-5281)

JH:ch



City of Richmond

Report to Committee

To: General Purposes Committee
From: Cecilia Achiam
General Manager, Community Safety
Date: August 27, 2020
File: 12-8080-12-01/Vol 01
Re: **Soil Use for the Placement of Fill Application for the Property Located at 8511 No. 6 Road (Jiang)**

Staff Recommendation

That the 'Soil Use for the Placement of Fill' application, submitted by Bohan Jiang (the "Applicant"), proposing to deposit soil on the property located at 8511 No. 6 Road for the purpose of remediating the property to develop a blueberry farm, be authorized for referral to the Agricultural Land Commission (ALC) for the ALC to review and determine the merits of the proposal from an agricultural perspective as the Applicant has satisfied all of the City's current reporting requirements.

Cecilia Achiam
General Manager, Community Safety
(604-276-4122)

Att. 14

REPORT CONCURRENCE	
ROUTED TO:	CONCURRENCE
Engineering	<input checked="" type="checkbox"/>
Policy Planning	<input checked="" type="checkbox"/>
Sustainability	<input checked="" type="checkbox"/>
Transportation	<input checked="" type="checkbox"/>
SENIOR STAFF REPORT REVIEW	INITIALS:
APPROVED BY CAO 	

Staff Report

Origin

The City of Richmond received a 'Soil Use for the Placement of Fill' application for the property located at 8511 No. 6 Road (the "Property"). The intent of the application is to address damage to a large portion of the Property due to past activities of a previous landowner(s) approximately 38 years ago, which included excavating and removing the native soil and replacing the soil with untreated woodwaste. The Applicant is proposing to improve the agricultural capability of the Property from its current Class 6 or 7 rating to a Class 1 rating to allow for the development of a blueberry farm.

The Property is situated within the Agricultural Land Reserve (ALR) and is subject to provisions of the *Agricultural Land Commission Act (ALC Act)* and its regulations (the "Regulations"), and the City's Soil Removal and Fill Deposit Regulation Bylaw No. 8094 (the "Soil Bylaw").

Pursuant to applicable Provincial regulations, a 'Soil Use for the Placement of Fill' application requires authorization from local government in order to be referred to the Agricultural Land Commission (ALC) for their review and approval. As such, this application must be submitted to the City for review and a decision from Council. Should the application be referred to the ALC and should it subsequently be approved by the ALC, the Applicant is required to satisfy the City's requirements outlined in the Soil Bylaw before a soil deposit permit would be issued by the City.

The Applicant has satisfied all of the City's referral requirements for submission to the ALC.

This report supports Council's Strategic Plan 2018-2022 Strategy #2 A Sustainable and Environmentally Conscious City:

Environmentally conscious decision-making that demonstrates leadership in implementing innovative, sustainable practices and supports the City's unique biodiversity and island ecology.

2.1 Continued leadership in addressing climate change and promoting circular economic principles.

2.3 Increase emphasis on local food systems, urban agriculture and organic farming.

Analysis

The Property is zoned AG1 (Agriculture). The current zoning permits a wide range of farming and compatible uses consistent with the provisions of the *ALC Act* and Regulations and the City's Official Community Plan and Zoning Bylaw. The Applicant is proposing to deposit 30,000 cubic metres of soil over approximately 2.5 ha of the 4.05 ha Property at an average depth of 1.0m, which would bring the Property to the same elevation as neighbouring properties as it currently resides at a lower elevation due to the previous excavation and removal of native soil.

The soil deposition will serve to cap untreated woodwaste placed on the Property by a previous owner(s) in addition to improving the Property's soil conditions to develop a blueberry farm.

Uses on Adjacent Lots

- To the North: ALR – Land is not in agricultural production
- To the East: ALR – Golf course
- To the South: ALR – Land is in agricultural production
- To the West: ALR – Land is not in agricultural production

Table 1: Existing Information and Proposed Changes for the Property

Item	Existing
Owner/Applicant	Bohan Jiang (the "Applicant")
Authorized Agent/Lead Contractor	Barry Mah (the "Agent")
Authorized Consultants	Daniel Lamhonwah, PhD candidate, MES, P. Ag. and Thomas Elliot, PhD, P. Geo, P. Ag. (Madrone Environmental Services Ltd.) (the "Agrologists")
Authorized Farm Manager	Quan Ming Wu (the "Farm Manager")
Lot Size	4.05 hectares (10 acres)
Current Land Uses	A portion of the Property is currently under agricultural production (blueberries and orchard)
Proposed Land Uses	Remediate 2.5ha of the Property to create a blueberry farm
Official Community Plan Designation	Agriculture
ALR Designation	Property is within the ALR
Zoning	AG1
Riparian Management Area (RMA)	Yes; no disturbance proposed
Environmental Sensitive Area (ESA)	No

Project Overview

The Applicant – who has owned the Property since 2005 – is applying to deposit 30,000 cubic metres of soil over approximately 2.5 ha of the 4.05 ha Property at an average depth of 1.0m. The objective is to improve the agricultural capability of the Property from its current Class 6/7 rating to a Class 1 rating to allow for the development of a blueberry farm. Class 1 soil would provide the maximum flexibility for future agricultural activities because it would allow a farmer to grow the widest range of crops.

In addition, the soil deposition will serve to ensure the woodwaste deposited on the Property by a previous owner approximately 38 years ago remains in an anaerobic state to ensure leachate does

not enter neighbouring watercourses. As per the Agrologists, the remediation work will ensure the long term stability of the woodwaste.

The Applicant has advised that the project will take two years to complete. The timeline for completion is heavily dependent on ensuring the appropriate soil – as recommended by the Agrologists – is sourced to complete the project. Soil sourcing has not commenced at this time due to the considerable period of time involved with respect to the soil deposit application process and seeking approval from the City and ALC.

Staff Comments

The proposal aligns with a number of Council endorsed strategies and directions including concerns about the use of Richmond soil. Other objectives satisfied by the project are described as follows:

- The Applicant's desire to utilize Richmond soil where possible provides for a reduction in carbon emissions as there will be a considerable decrease in mileage as trucks will not be traveling back and forth from City approved development projects to the Fraser Valley as is the common practice;
- Following completion of the project, the Applicant's Farm Plan will include expansion of current farming operation by over six acres thus supporting initiatives as described within the City's Food Charter; and
- The proposal to raise the Property to improve the agricultural viability is consistent with the City's current Flood Protection Management Strategy (FPMS) which identifies raising land levels within all areas of the City as a key overall long-term objective. At the January 27, 2020 Regular Council Meeting, Council made a referral for staff to review the FPMS and provide comments with regard to the raising of land, specifically as it relates to agricultural land and agricultural viability. Staff are preparing a response to this referral.

Richmond Food Security and Agricultural Advisory Committee (FSAAC) Consultation

The Applicant presented the proposal to the FSAAC on July 23, 2020. The FSAAC unanimously supported the proposal with conditions, passing the following motion:

That the Food Security and Agricultural Advisory Committee support the ALR Soil Use for Placement of Fill Application at 8511 No. 6 Road, subject to the following considerations:

- *Monitoring and regular reporting of fill deposits (suitable fertile soil);*
- *Completion of a long-term lease (minimum 10 years) between the property owner and the farm operator; and*
- *Submission of a performance bond equal to the revenue from tipping fees minus the cost to implement the farm plan, to be returned upon completion of the farm plan.*

Agricultural Considerations

The Applicant has provided a Proposed Remediation Report (the “Remediation Report”) prepared by Bruce McTavish, MSc MBA, PAg, RPBio and Dr. Hubert Timmenga, PhD, PAg, CMC. The Remediation Report (Attachment 1) outlines the history of the Property, the current soil conditions at the time of reporting, soil analysis conclusions, and proposed options to improve the Property. Following analysis and site investigation (ie. test digs), McTavish and Timmenga concluded that the agricultural capability of the Property had been negatively impacted due to the extraction of native peat and the subsequent backfilling of cedar woodwaste and wooden construction debris by a previous owner(s).

The Remediation Report indicates that at the time of their assessment of the Property, “the blueberry plants on the Property are stunted or dead due to the lack of adequate soil depth for them to grow in.” It was the opinion of McTavish and Timmenga that “a large portion of the [Property] seems only capable of producing annual weeds”. As per McTavish and Timmenga, the Property was deemed to have a Land Capability Assessment of a Class 6 or 7D.

The Remediation Report provided for two options to improve the agricultural capability of the Property. Option 1 outlines movement of the shallow soil cap to facilitate the removal of the woodwaste from the Property and import and deposit soil to complete remediation. This option is prohibitive due to the financial cost of the removal. In addition, as noted in the Remediation Report, “the disruption of the wood waste may lead to the generation of leachate which is not happening at the present time.” In addition, the Remediation Report estimates that the Property contains 13,000 m³ of woodwaste. As result, should Option 1 be undertaken – excavating and removing the woodwaste – it would result in the requirement for more soil to be imported/deposited to complete remediation than is currently being requested by the Applicant.

Option 2 (preferred by the Applicant) proposes to leave the woodwaste in its current state. The Remediation Report proposes that the Applicant deposit 25mm of silty clay to silty clay loam on top of the current soil. In addition, that 75mm of topsoil be deposited to improve the land capability for future crops. With the additional soil capping, anaerobic conditions will be maintained and will “inhibit the production of leachate.”

The Remediation Report concluded that upon project completion, the land would be improved “to class 2 or 3 which [would] support a wide range of agricultural crops.”

In addition, the Applicant has provided a Woodwaste Leachate and Site Drainage Report (the “Leachate/Drainage Report”). The Leachate/Drainage Report (Attachment 2) indicates “the wood waste has been buried on [the Property] for at least [38] years and it is in virtually the same condition as when it was buried.” The Leachate/Drainage Report outlines the projected work plan to ensure the proposed capping with imported soil “preserve[s] the wood waste and prevent[s] the formation of leachate.”

Subsequent to the initial reporting from McTavish and Timmenga, the Applicant was required to retain a new qualified professional as Mr. McTavish currently reviews and assesses soil deposit proposals on behalf of the City. As a result, Daniel Lamhonwah and Thomas Elliot, PhD, P. Geo,

P. Ag. of Madrone Environmental Services Ltd. were retained to review the proposal and provided additional information on behalf of the Applicant.

As per City requirements, the Agrologists provided an updated Farm Plan (Attachment 3). As noted in the Farm Plan, the Class 6 or 7D classification(s) is an “undesirable soil structure/aeration, with the limiting factor being the root restricting layer of anaerobic wood waste.” Subsequent reporting by the Agrologists confirms that the majority of the Property remains a Class 6 or 7D classification.

Following additional study by the Agrologists, the initial conclusion by McTavish and Timmenga that the Property would be improved to a Class 2 or 3 was amended by the Agrologists, who state:

*Following implementation of the Remediation Plan and the recommendations [within the Farm Plan], the proposed soil importation and deposit is targeting a **Class 1** agricultural capability by selectively receiving soils suitable to that end goal.*

The improvement to Class 1 will allow for the implementation of a blueberry farm as desired by the Applicant and the Farm Manager; however, the proposed improvements would allow for the growing of a multitude of different crops - as verified by the Agrologists - should the Applicant wish to vary crop types in the future. Such crops would require deep rooting (0.6m to 0.9m) and would include rhubarb, sweet potatoes, tomatoes, pumpkins and asparagus.

As per the Farm Manager (Attachment 4), who manages the Property on behalf of the Applicant, 8,000 blueberry bushes were planted in 2006 in addition to implementing irrigation improvements and the application of fertilizer and sawdust. Due to the conditions within the proposed soil deposit area, only 500 plants have survived as of 2016. Following consultation with other local blueberry farmers and continuing crop failure, the Applicant retained the Agent in 2012 to determine a means to improve the Property. The Agent in turn retained McTavish and Timmenga to assess the Property and provide recommendations.

Subsequent to the Remediation Report being provided by McTavish and Timmenga, the Applicant provided a Technical Addendum to [the] Remediation Plan (the “Remediation Addendum”). The Remediation Addendum (Attachment 5) outlines recommendations based on current regulatory practices. In particular, it focuses on source site approval and maintaining the quality of soil that is to be imported and deposited on the Property.

The Applicant has also provided a Technical Memorandum re. Appropriate Imported Soil and Soil Source Sites (the “Soil Memo”). The Soil Memo (Attachment 6) addresses the types of soil required to properly complete the project should the Applicant receive approval. In particular, the Soil Memo addresses why the Applicant should not be solely restricted to importing alluvial soils. Furthermore, the Agrologists advise that limiting the type of soil to alluvial and specifically to sources found within Richmond “may introduce an undesirable salinity limitation (Class N limitation) that may not have existed on a receiving site.”

The Agrologists “recommend that the City favours imposing a condition that considers the physical and chemical properties of the soil proposed to be imported instead of restricting the imported soil to a deposition method and/or soil parent material type.”

It must be noted that a portion of the Property to the west of the house was improved as a result of excavated soil – sourced from the Property due to construction of a house – being relocated to raise the level of the Property. The raised area (Attachment 7) was planted with blueberry plants and an orchard. The Agent has confirmed that there was no woodwaste under the raised area. This work was conducted following submission of the McTavish and Timmenga reports.

Should the proposal be approved, the City will require that a qualified agrologist be retained to monitor the project and provide regular reporting. Should an agrologist not be retained or cease providing regular oversight and reporting, the City would reserve the right, as per the Soil deposit permit (the “Permit”) conditions, to suspend and/or void the Permit until such time as a new qualified agrologist, agreeable to the City and ALC, is retained to monitor the project and provide regular reporting.

The Applicant has confirmed with staff (Attachment 8), in response to the FSAAC conditions of support, that a long term lease will be signed once the proposed soil deposit area is improved to standard capable of growing crops. In addition, while there is no requirement within the current Soil Bylaw, the Farm Manager and Applicant have confirmed a willingness to “submit a \$30,000 performance bond as a guarantee to implement and complete the Farm Plan, to be returned upon completion of the farm plan” (Attachment 9).

Drainage & Geotechnical Considerations

The Leachate/Drainage Report indicates that flow direction for the existing ditches on the Property is to be maintained with minor regrading and widening. In addition, it is proposed that a new ditch be constructed along the west property line. The Leachate/Drainage Report contends that there will be no increase to peak flows into City ditches.

The Leachate/Drainage has been reviewed by Colin S. Johnson, P.Eng (OOTB Engineering Ltd.) at the request of the City. The Drainage Assessment Memo (Attachment 10) confirms “that the site drainage recommendations in [the Leachate/Drainage Report] appear to be reasonable and should allow for adequate storm water drainage from the site, without altering peak flow conditions.”

A Geotechnical Assessment (the “Geotech Assessment”) has been provided by Tony Yam Engineering Ltd. The Geotech Assessment (Attachment 11) concludes that the “additional fills over the impacted area will not impact the drainage pattern of the adjacent areas (filling elevation of the impacted area is lower than the adjacent areas).” The Geotech Assessment has determined that the “placing of fills will not impact stability of adjacent areas as the impacted area is not less than 6 m away from adjacent properties.” In addition, the Agrologists confirm that the soil deposition shall bring the Property to the same elevation as the neighbouring properties.

Permit conditions will provide staff the latitude to request a geotechnical report at any time in addition to requiring a closure report from the geotechnical engineer following completion of the project.

In response to discussions at previous Council and FSAAC meetings, the Agrologists have also provided a Soil Drainage & High Water Table Memorandum (the “Water Table Memo”)

addressing the concept of berming and pumping the Property to address excess water issues on the Property rather than importing soil. As per the Water Table Memo (Attachment 12) and the conclusion of McTavish and Timmenga, the “[p]roperty is affected by groundwater and not flood water (i.e., from watercourses).”

A separate technical memorandum that focuses on the Agricultural Environmental Management Code (the “AEM Code Memo”) (Attachment 13) further addresses the question of pumping excess water from the Property. The Agrologists state the following:

[P]ump works are generally suitable for bermed (or dyked) areas, such as floodplains, whereby the inundation/excess water is not congruent with the regional high water table. In many circumstances within the [City of Richmond], the issue is more related to high water table and regional conveyance rather than point-specific short duration inundation-water sources (i.e. flooding during the late spring freshet of the Fraser River) that pumping is ideally suited to resolve.

It is the professional opinion of the Agrologists, that berming and pumping cannot eliminate the current excess water issues and that the Property will be improved via importing soil and raising the land.

Despite the aforesaid water table issue and the suitability of berming and pumping, the main driver of the proposal is to ensure that the woodwaste is capped with an appropriate level of soil to ensure that there is no potential for leachate and to ensure that there is an appropriate depth of soil to permit for the planting of a blueberry crop and orchard.

Environmental Considerations

While the overall objective is to improve the agricultural capability of the Property, an additional purpose of the proposal is to cap the woodwaste currently located beneath the surface soil to ensure water does not penetrate and permeate the woodwaste.

As per City staff, at the time of the deposition of the woodwaste and upon receipt of the application in 2012, there were no measures available for the City to undertake enforcement action. Prior to receipt of the application, staff were not aware of the issue and the City does not have any records or complaints related to the issue. Currently, there is no enforcement measure available within the Soil Bylaw or other City bylaws for the City to take action with respect to the woodwaste. In addition, the property owner is not required to advise the province of what has occurred on-site (ie. dumping of untreated woodwaste) as the site is not considered to be contaminated.

Staff note that landfilling with wood waste and the environmental liability associated with such a practice is covered under provincial jurisdiction. The “responsible party” is generally the previous owner, or the site operator who buried the woodwaste. The Agent has confirmed that due to the challenge in proving who undertook the work 38 years ago and the potential expense in litigating the matter, the Owner does not intend to address this matter through the courts; however, would prefer to utilize his financial resources to re-establish the Property to an agricultural standard capable of growing blueberries.

As noted in a Ditch Water Analysis Report submitted by McTavish and Timmenga (Attachment 14), which analysed the water within the ditches on the Property and in the City allowances, testing found that the ditch water was “not affected by wood waste leachate.” The Leachate/Drainage Report provides recommendations to ensure there is no generation of leachates from the woodwaste following completion of the project. As per the Leachate/Drainage Report, placement of additional soil will ensure that “the wood waste [remains] in an anaerobic state”. Staff are satisfied with the aforesaid reports and conclusions within.

The proposed soil deposition area is outside of the Riparian Management Area located on the east property line running along No. 6 Road.

Staff have determined that areas identified within the City’s GIS mapping system as an Environmentally Sensitive Area along the north, south and western property lines are referencing vegetation on adjacent properties. The proposal will not impact any neighbouring Environmentally Sensitive Area.

There will be no impacts to trees due to the soil deposit operations.

As per Permit conditions, all work undertaken in or around a watercourse, must be completed in compliance with the *Water Sustainability Act*, under the guidance of a Qualified Environmental Professional (QEP). The City will require that erosion and sediment control measures be installed and inspected by a QEP should it be deemed necessary by City staff. Staff will require on-going monitoring by a QEP of the project to ensure no leachate enters City ditches or other watercourses.

Financial Costs and Considerations for the Applicant

Due to ongoing and approved development within the City of Richmond and the Lower Mainland, developers and contractors must find a location (the “End Site”) that will accept soil excavated and removed off-site to facilitate development. Due to such demand, a market has been created in which End Site owners can generate income via tipping fees. Such fees are variable depending on the location, type and volume of soil, and season. Contractors are willing to pay a premium based on location of the soil (the “Source Site”) to the End Site in order to reduce significant costs. Although End Site owners derive income due to tipping fees, soil deposit projects are not without significant costs to the Permit holder.

Please refer to the Farm Plan (pgs. 14-17) to review the potential tipping fee income and soil deposit project and farm development costs as provided by the Applicant.

Road and Traffic Considerations

A Traffic Management Plan has been submitted and reviewed by City staff. Truck access to the Property will be limited to Steveston Highway and will not be permitted to access the Property from Blundell Road or Westminster Highway.

Soil Deposit Permit Requirements and City Inspection and Project Oversight Protocols

Should the proposal receive ALC and City approval, City staff will prepare a comprehensive Permit that sets out a number of conditions, including but not limited to:

- Oversight by a professional agrologist;
- Source site inspection requirements;
- On-site monitoring and reporting requirements;
- Requirements for protection of the Riparian Management Area near the truck entrance point on No. 6 Road;
- Measures needed to eliminate impacts, including drainage, to neighbouring properties and City infrastructure;
- Permitted hours/days of operation;
- An approved Traffic Management Plan; and
- Security deposits (further explained below).

Despite the Remediation Report recommending that source site inspections occur for sites generating more than fifty truck loads, Qualified Professional reporting requirements are intended to be similar to the requirements for the Sixwest Holdings soil deposit project located on Westminster Highway. This will include the agrologist-of-record being required to inspect and approve all source sites. An on-site monitor will be required to inspect each load of soil prior to deposition on the Property and maintain an accurate daily log of trucks depositing soil on the site. At the sole discretion of the City, alternate measures may be required (i.e. survey) to determine the volume of soil deposited on the Property.

In addition to the expected reporting requirements of an agrologist or other qualified professionals to the City and ALC, City staff will maintain proactive inspection and enforcement on the Property that will include the following:

- multiple site inspections per week of the Property at the onset of the project to ensure conditions of the Permit are being maintained;
- weekly site assessments to continue to be undertaken when soil importation is underway to ensure the Permit conditions are respected;
- meet on-site with the site supervisor a minimum of two times per month;
- maintain communication with the agrologist-of-record and Agent on a regular basis;
- review reports to ensure conditions of the Permit are being satisfied; and
- advise the ALC of concerns relative to the project and request that ALC staff undertake inspections to ensure compliance with the approval conditions when deemed necessary by City staff.

No soil will be permitted to be imported/deposited until such time as all City and ALC requirements have been satisfied and the Permit has been issued by the City.

Security Bonds

Should the soil deposit project receive approval, the City will require that the Applicant provide the following security bonds:

- \$5,000 pursuant to s. 8(d) of the current *Boulevard and Roadway Protection Regulation Bylaw No. 6366* to ensure that roadways and drainage systems are kept free and clear of materials, debris, dirt, or mud resulting from the soil deposit activity;
- \$10,000 pursuant to s. 4.2.1 of the current *Soil Removal and Fill Deposit Regulation Bylaw No. 8094* to ensure full and proper compliance with the provisions of this Bylaw and all other terms and conditions of the Permit; and
- The Applicant has also proposed to provide a \$30,000 bond to the City for implementation of the Farm Plan. Beyond completion of the soil project, this bond will provide security that the Farm Plan will be implemented.

In addition to the security bonds provided to the City, the ALC has the authority to require a performance bond to ensure that all required mitigation and monitoring measures are completed. The bond required by the ALC is also intended to ensure the rehabilitation of the Property in the event the project is not completed. ALC performance bonds and the approved volumes from four previous approvals for projects within the City are as follows:

- \$70,000 – 17,500m³ (Athwal - approved May 2020)
- \$160,000 – 48,000m³ (City of Richmond - approved June 2017)
- \$290,000 – 140,000m³ (Sixwest Holdings - approved Jan. 2017)
- \$500,000 – 102,080m³ (Sunshine Cranberry Farms – approved Jan. 2014)

As per the Permit conditions, security deposits will not be returned until all conditions as stated in the Permit and the ALC approval are satisfied in their entirety, to the satisfaction of the City. This will include confirmation that the Farm Plan has been completed as per a final report from the owner's agrologist-of-record. City staff is to conduct a final inspection and receive confirmation from the ALC that the project has been completed as per ALC approval prior to closing the file.

Alternatives to Council Approval

Should Council not authorize staff to refer the proposal to the ALC for their review and decision; the application will be considered to be rejected. Council may add additional recommendations for ALC consideration and/or conditions within a referral to the ALC, similar to conditions already provided within this report.

Financial Impact

None.

Conclusion

Staff recommends that the soil deposit application for the Property located at 8511 No. 6 Road be authorized for referral to the ALC for the ALC to review and determine the merits of the

proposal from an agricultural perspective as the Applicant has satisfied all of the City's current reporting requirements.



Mike Morin
Soil Bylaw Officer, Community Bylaws
(8625)



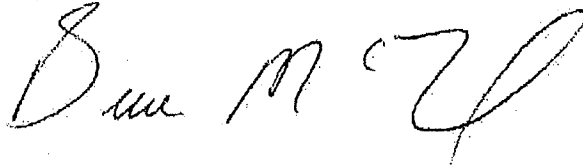
Carli Williams, P.Eng.
Manager, Business Licence and Bylaws
(4136)

- Att. 1: Proposed Remediation Report (30 Sept 2012)
 2: Woodwaste Leachate and Site Drainage Report (14 Dec 2013)
 3: Farm Plan (11 Aug 2020)
 4: Letter from Farm Manager re. Farming Background (10 Aug 2020)
 5: Technical Addendum to Remediation Plan re. Regulatory Updates (30 Jun 2020)
 6: Technical Memorandum re. Appropriate Imported Soil & Soil Source Sites (30 Jun 2020)
 7: Farm Plan re. Figure 1 (16 Jun 2020)
 8: Letter from Owner re. Lease Commitment (12 Aug 2020)
 9: Letter of Commitment re. Farm Plan Security Bond (10 Aug 2020)
 10: Drainage Assessment Memo (29 Jun 2020)
 11: Geotechnical Assessment (10 Oct 2018)
 12: Soil Drainage & High Water Table Memorandum (30 Jun 2020)
 13: Technical Memorandum: Agricultural Environmental Management Code (09 Mar 2020)
 14: Ditch Water Analysis Report (04 Mar 2015)

Proposed Remediation of Land Located at 8511
#6 Road Richmond, B.C.

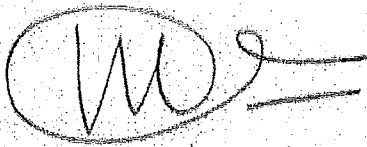
BCAA Legal: SEC 20 BLK4N RG5W PL 3109 Parcel A, Subsidy Lot 3, (J71246E).

Prepared by:



Bruce McTavish, M.Sc., MBA, P.Ag., RPBio.
McTavish Resource & Management Consultants Ltd.
2858 Bayview St. Surrey, B.C. V4A 3Z4
bmct@intergate.ca

and



Hubert Timmenga, PhD, P.Ag., CMC
Timmenga & Associates Inc
292 E 56 Avenue, Vancouver BC V5X 1R3
htimmenga@telus.net

Prepared for:

Bohan Jiang

September 30, 2012

Table of Contents

List of Tables	1
1.0 Introduction.....	1
2.0 Site Location.....	1
2.1 Zoning and Present Land Use	1
2.2 Previous Land Use	1
3.0 Soils.....	1
4.0 Land Capability based on Mapping.....	5
5.0 On Site Observations from Soil Pits.....	8
6.0 Site Remediation	12
6.1 Option 1 Removal of Wood waste	13
6.2 Option 2 Leave Wood waste improve Cap and Topsoil	13
6.3 Preferred Option.....	14
7.0 Summary and Recommendation	15
8.0 Site Management.....	16
8.1 Soil Stockpiling	17
8.2 Sediment Control.....	17
8.3 Dust Control	17
8.4 Drainage Management	17
8.5 Management of Fill Quality	17
8.5 Transition to Agriculture	18
9.0 References	18
Appendix I Soil Chemical Analysis.....	19

List of Figures

Figure 1: Site and Sampling Locations.....	3
Figure 2: Soil Map of Site.....	4
Figure 3: Land Capability for Agriculture	7
Figure 4: Typical Wood Debris found buried on the Farm	9
Figure 5: Cedar Shaving Buried on Site	9
Figure 6: Buried Wood waste	10
Figure 7: Undisturbed Soil Profile.....	11
Figure 8: Depth of Wood Waste on Site (contour in cm)	12

List of Tables

Table 1 Depth of Soil Cap and Wood Waste	8
Table 2 Fill Volume Estimates	16

1.0 Introduction

McTavish Resource & Management Consultants Ltd. was retained by Bohan Jiang to determine the cause for the Blueberry Crop failure and develop a remediation plan to allow agricultural production on the land. The farm is located at 8511 #6 Road in Richmond, B.C. The total farm size is 40475 m² or 10 acres and is zoned AG1. Approximately 2.5 hectares of the land is planted in Blueberries and ½ of the crop has been a complete failure and the other ½ has marginal growth.

2.0 Site Location

The subject properties are located at 8511 # 6 Road Richmond B.C. The legal description is: SEC 20 BLK4N RG5W PL 3109 Parcel A, Subsidy Lot 3, (J71246E).

2.1 Zoning and Present Land Use

The subject property is 4 hectares and is in the ALR and is zoned AG1. At the present time the owner is attempting to grow Blueberries on the land with limited success.

2.2 Previous Land Use

The use of the land for any agricultural use is severely impeded by the fact that approximately 25 to 30 years ago a previous owner has stripped all the organic soil (peat) from the site and filled it with cedar wood waste and wooden construction debris. This will be discussed in detail in section 3 of this report.

3.0 Soils

Based on existing soil mapping, the soils on the site are in a large polygon of Lulu and Triggs soils. The Lulu soils are composed of partially decomposed organic deposits (peat) varying in depth from 40 cm to 160 cm deep. The underlying soil is fine textured deltaic deposits, either silty clay loam, or silty clay. The Triggs soils are deep (at least 2m) un-decomposed organic deposits composed mainly of sphagnum and other mosses. The underlying soil is medium to moderately fine textured Fraser River deltaic or floodplain sediments.

The on-site soil survey information found that all of the organic soils (peat) on the site had been removed, and that the site was backfilled with cedar wood waste, and wooden construction debris. It is the understanding of the author that approximately 30 years ago the land owner at the time removed all the organic soil (peat) and back filled with wood

waste.¹ They then capped the wood waste with 35 to 40 cm of loam to silty loam soil. The soil map aerial photo shown in figure 2 which is from 1980 seems to show a large pile of wood waste at the eastern end of the property which would confirm the time frame that the wood waste was buried.

To determine the extent of the fill and the texture of the soil used to cap the site 12 soil pits were excavated and samples collected for laboratory analysis. The objective of the soil analysis was to determine if pH, Electrical Conductivity, or Sulphur were limiting factors to plant growth in the capping loam/silty loam soil and to determine the macro nutrients that were available for plant growth in the capping soil. In the capping soil (WP 211) the pH, and electrical conductivity were rated as good; pH was slightly acidic (5.9) and the organic matter was 6.0%. A soil sample beneath the fill was taken at site WP205 and on this soil the pH was 4.8 (acidic) and the sulphur content was high at 128 ppm. It is typical for various soils in Delta and Richmond to be acidic and have high sulphur content in subsoil. Plant roots would not reach those subsoil layers. The detailed results for all soil samples are provided in Appendix 1

Based on the soil analysis of the capping soil, there are no obvious limiting factors to growth. It is the opinion of the authors that the plant limiting factor is the shallow depth of the capping soil above the anaerobic wood waste. The present depth of soil above this layer is not deep enough for adequate root development for perennial plants. Roots of the perennial plants would penetrate the wood waste and be affected by its anaerobic conditions. At the present time only (shallow-rooting) annual weeds seem to thrive on the site.

It is important to note that the soils that underlay the wood waste are fine textured and as such have a low saturated hydraulic conductivity (low permeability) and water will move through them very slowly. This has effectively produced a sealed environment that has contained the wood waste in an anaerobic environment, and based on visual inspection inhibited the generation or movement of any wood waste leachate.

¹ Personal communication Mr. Barry Mah

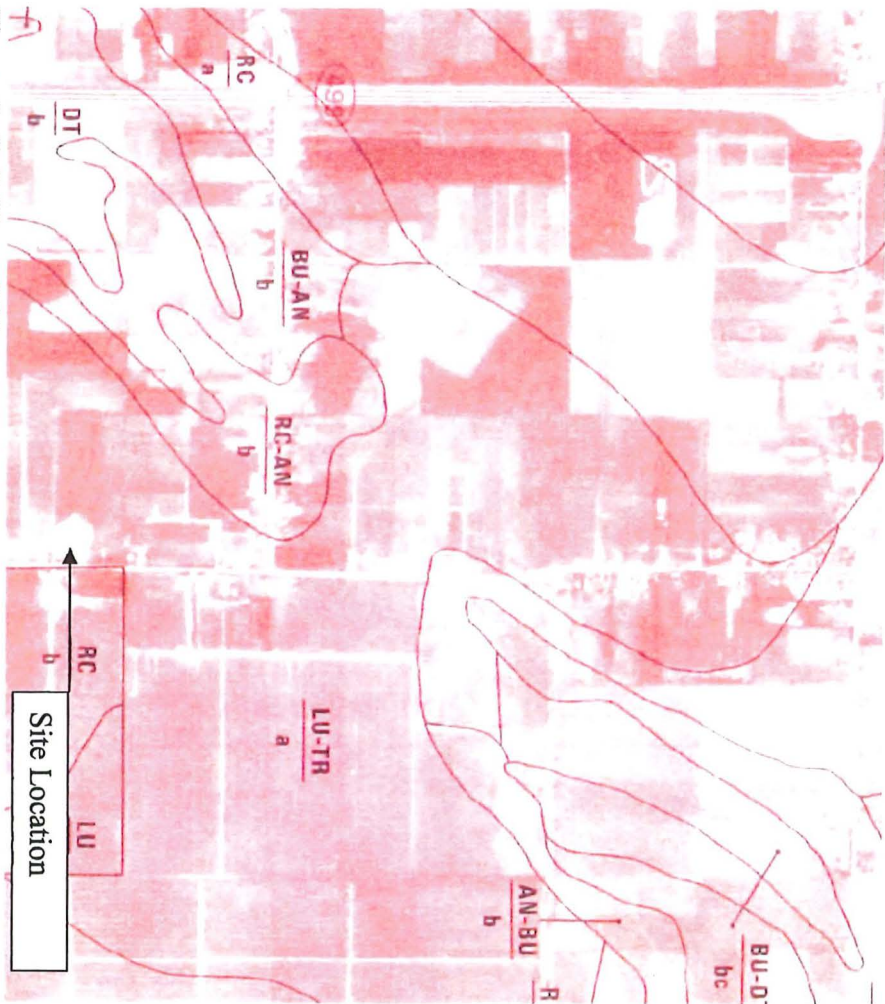


Figure 2: Soil Map of Site
 Site Location Soil = LU-TR

4.0 Land Capability based on Mapping

The land capability mapping shown in figure 3 indicates that the site before the organic soil was removed was 7:O4W 3:O5WF (O3LW). This means that based on the published mapping without improvement 70% is class O4W with excess wetness as a restriction (O indicates and organic soil). Observation of the adjoining land would indicate that classification Class 4W and 5WF (W being the same for organic and mineral soils) is correct for this site and is described below:² The improved class to 3 LW which is also described below.

CLASS 4W: Frequent or continuous occurrence of excess water during the growing period causing moderate crop damage and occasional crop loss. Water level is near the soil surface during most of the winter and/or until late spring preventing seeding in some years, or the soil is very poorly drained.

CLASS 5W: Frequent or continuous occurrence of excess water during the growing period making the land suitable for only perennial forage crops, and/or improved pasture. Water level is near the soil surface until early summer, or the maximum period the water level is less than 20 cm below the soil surface is 6 weeks during the growing period, or the soil is very poorly drained, commonly with shallow organic surface layers. Effective grazing period is longer than 10 weeks.

CLASS 5F: Includes soils with very severe nutrient imbalances, extreme acidity or alkalinity and/or extremely high levels of carbonates. Fertility status restricts the range of crops to perennial forages or other specially adapted crops such as cranberries. With very intensive, closely controlled and carefully monitored applications of fertilizers and/or other soil amendments, these soils are improvable in crop range, climate permitting. If expected crop range upon improvement is wide the Improved Rating is 2F, otherwise 3F.

² Henk E., & I Cotic. 1983. Land Capability Classification for Agriculture. BC Ministry of Agriculture and BC Ministry of Environment.

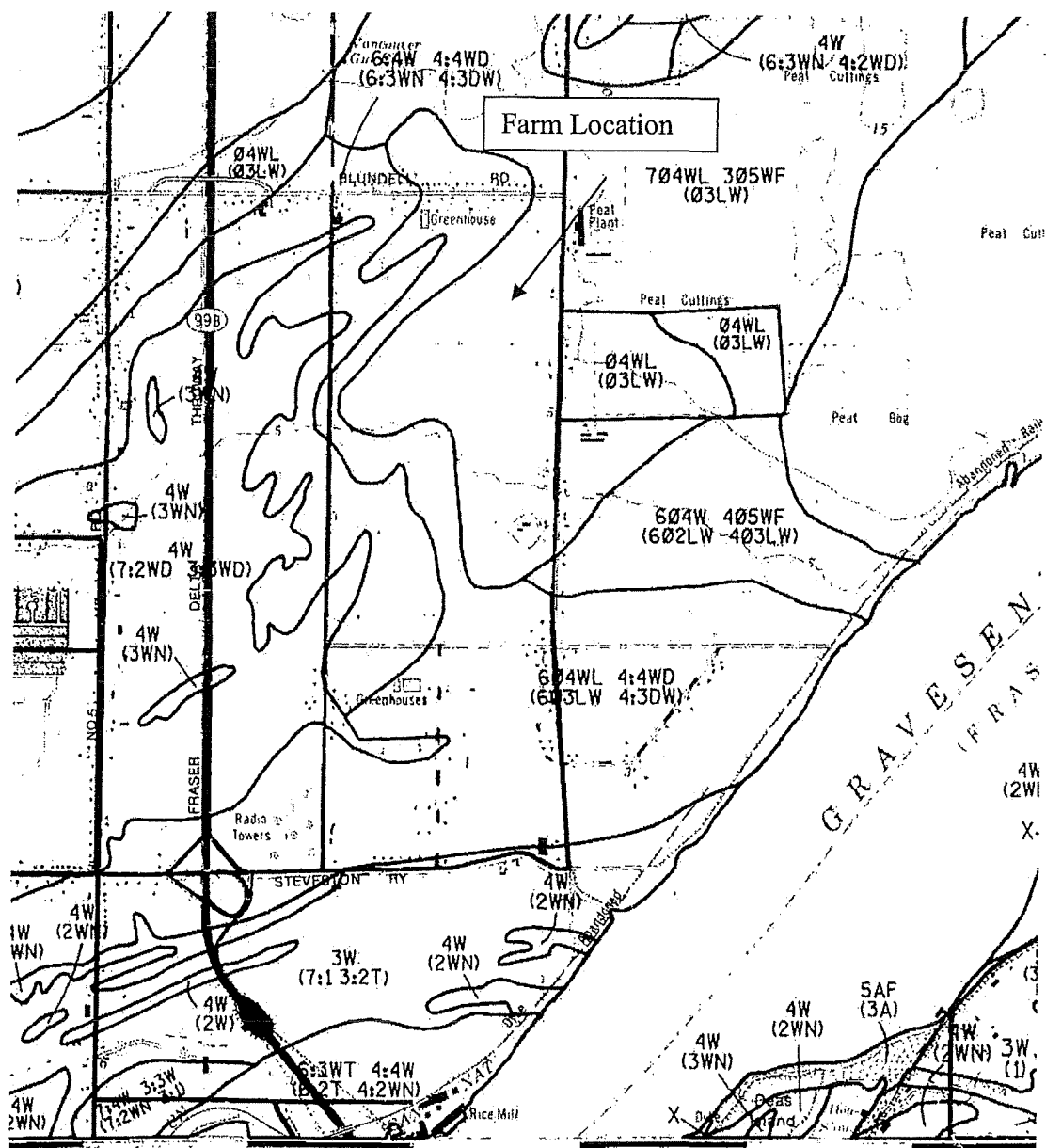
CLASS Q3L: Dominantly humic or fibric soil in the 30 to 150 cm depth and/or aquatic muck greater than 5 cm thick in the 100 to 150 cm depth of the profile and/or a cumulo or continuous layer of loamy soil greater than 5 cm thick occurring in the upper 150 cm.

CLASS 3W: Occasional occurrence of excess water during the growing period causing minor crop damage, but no crop loss, or the occurrence of excess water during the winter months adversely affecting perennial crops. Water level is near the soil surface until mid-spring forcing late seeding, or the soil is poorly and in some cases imperfectly drained, or the water level is less than 20 cm below the soil surface for a continuous maximum period of 7 days during the growing period.

Given the removal of all of the organic soils from the site the land capability improved ratings will not be applicable to this site. It is the author's opinion that a strategy must be developed that will improve the existing site which presently would be classed as 6³ or 7⁴ with the limiting factor being the root restricting layer of anaerobic wood waste. It is not clear if perennial grasses would survive on this site due to the shallow (34cm) soil cap. At the present time a large portion of the site seems only capable of producing annual weeds.

³ Class 6 land is nonarable but is capable of producing native and or uncultivated perennial forage crops.

⁴ Class 7 land has no capability for arable culture or sustained natural grazing.



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Figure 3: Land Capability for Agriculture

5.0 On Site Observations from Soil Pits

Nineteen soil pits were dug on the site. The pits were located in positions to observe typical soils and depth of wood waste burial on the site. The sampling locations are shown on Figure 1 while Figure 4 shows a typical sample of the wood waste debris found on the site, Figure 5 shows typical depth of soil capping wood waste and Figure 6 shows an example of the cedar shavings (hog fuel) found on the site. Figure 7 shows the undisturbed organic soil from Pit WP 272, in the northwest corner of the property.

All soil pits showed a profile including a cap of fill of various depths overlaying semi decomposed wood waste over non-decomposed wood waste. The border between decomposed and non-decomposed wood waste appeared to be the summer water table for the property, which was at about 1m depth. The winter water table appeared to be at the surface of the soil, with some lower areas being flooded during the winter – according to Ming Wu, the site manager.

Location	Depth of Capping (cm)	Depth of Wood (cm)
WP 202	32	118 (limit of backhoe)
WP 203	30	120 (limit of backhoe)
WP 204	60	140 (limit of backhoe)
WP 205	46	34
WP 206	0	40
WP 207	40	20
WP 208	30	30
WP 209	38	0
WP 210	35	15
WP 211	35	15
WP 212	35	67
WP 213	23	30
WP 268	55	110
WP 269	28	47
WP 270	45	27
WP 271	48	46
WP 272	15	60 organic soil no wood
WP 273	30	95 ++ limit of hoe
WP 274	85	40++ limit of hoe
Average	37.4	

Table 1 Depth of Soil Cap and Wood Waste



Figure 4: Typical Wood Debris found buried on the Farm



Figure 5: Cedar Shaving Buried on Site

The capping soil on all pit sites was hand textured and one sample was sent to the laboratory for particle size analysis. Hand texturing indicated the capping soil was loam to silty loam and this was confirmed by the lab analysis as seen in appendix I (detailed soil analysis). The average depth of the capping soil is 33.7 cm and the depth of the wood waste and hog fuel (cedar shavings) varies considerably as shown in Table 1. In locations WP 202 to 204, and 273 and 274 it may have been considerably deeper as the depth in the shown in Table 1 was the maximum depth the excavator could dig. These areas are where the Triggs were located and depths are likely to be much greater than 2m.



Figure 6: Buried Wood waste



Figure 7: Undisturbed Soil Profile

Most of the buried wood waste was in almost fresh condition with no signs of decomposition as can be seen in figure 4 and 6. It appears that the high water table and the soil capping are keeping the wood waste in anaerobic conditions and no microbial

decomposition is taking place. There is no visual indication of toxic leachates being generated from this material. The ditch to the south was visually observed and there were no signs of typical wood waste leachate, and the blueberry plants on property to the south are in healthy condition. For wood waste to generate toxic substances there needs to be oxygen present as seen by the high chemical and biological oxygen demand in studies on generation of leachate from cedar and other wood waste.^{5 6}

The blueberry plants on the subject property are stunted or dead due to the lack of adequate soil depth for them to grow in, and possibly through flooding of the property, as alluded to by the Manager. Review of the laboratory analysis of the site soils provided in Appendix I indicate that pH, electrical conductivity and sulphur are within normal parameters. The flooding hypothesis appears plausible for stunted growth. Figure 8 provides contours for the depth of wood waste: red is the 100cm depth contour, orange the 50cm contour and green the 25cm contour. Wood waste filling does not appear to be beyond the property boundaries.



Figure 8: Depth of Wood Waste on Site (contour in cm)

6.0 Site Remediation

There are two options to remediate this site and bring it back into agricultural productivity. One option is to remove the capping soil, remove all the wood waste, fill the site with clean fill and top this with a minimum of 50 cm of high quality topsoil. A second option is to leave the wood waste in place, improve the soil cap by importing and depositing a 50 cm layer of silty clay or silty clay loam to increase the depth of the cap

⁵ Hall, Kne J, et. al. 2005. Water Quality Research Journal of Canada vol. # 4 40 pp 476-483

⁶ Samis, S.C. et.al. 1999. Mitigation of Fisheries Impacts from the Use and Disposal of Wood Residue in British Columbia and the Yukon. Canadian Technical Report of Fisheries and Aquatic Sciences 2296.

and provide additional rooting depth and topping this with a and topping this with a minimum of 50 cm of high quality topsoil, preferably silty loam or loam.

6.1 Option 1 Removal of Wood waste

Removal of the wood waste would require the:

- removal of all irrigation works and irrigation lines
- removal of all vegetation
- stripping of the existing soil cap,
- excavation of the wood waste (this will be in excess of 13,000 m³ as it is not possible to determine the depth of the eastern portion of the property.)
- hauling and disposal of the wood waste
- importing of fill to backfill from wood waste removal (difference between removal is an estimated increase of 20% in compaction of fill vs. the wood waste.
- Importing and spreading a minimum of 50 cm of topsoil or about 12,500 m³ after compaction

Removal would eliminate any long term threat of pollution and provide a suitable site for agricultural production in the future. The negative side of removal is that the disruption of the wood waste may lead to the generation of leachate which is not happening at the present time; the disposal of this material is difficult and it would end up in landfills in the area and there is a significant financial cost to excavate and remove the material.

6.2 Option 2 Leave Wood waste improve Cap and Topsoil

The Richmond, Triggs and Lulu soil complexes found at and around the site consist of peat of various depth and state of decomposition (Richmond: 40 – 160 cm of well decomposed organic matter; Triggs more than 160cm mainly sphagnum moss; and Lulu 40 – 160 cm of partially decomposed organic matter). All are located over moderately to fine textured deltaic deposits.

Formation of a peat soil typically takes place when vegetation grows in stagnant bodies of water such as lakes or cut-off river arms. First, dying water plants accumulate on the bottom followed by remains of reeds, sedges, and later trees. Because of the stagnant water with low oxygen content and a low pH, organic matter is not decomposed and accumulates to fill the complete body of water. This may be followed by a build-up of growth of primarily sphagnum moss that will form a dome with a locally elevated water table, thus forming a sphagnum-peat bog.

Peat bogs typically have an impermeable bottom and water turn-over is rather low. This will deprive the water of oxygen which is used in the decomposition process, and the pH is typically low, around pH 4 or 4.5. When peat is dug from peat bogs and the remaining area is not dewatered, the peat forming process repeats itself. When peat soils are dewatered and cultivated, organic matter is quickly oxidized and the depth of the peat soil rapidly diminishes.

At the subject site, peat has been replaced by wood waste. During the site investigation it was found that the wood waste had not decomposed to a great extent, likely due to the site conditions that allowed the anaerobic conditions and low water movement to continue. A remediation plan that includes capping, should include measures to keep the peat formation factors in place to preserve the wood waste and prevent the formation of leachate.

6.3 Preferred Option

The preferred option based on our site observations is to leave the wood waste in place and return the land to agricultural production by increasing the depth of the cap by 25 cm and adding a minimum of 75 cm of topsoil.

The wood waste has been buried on this site for at least 30 years and as can be seen in figure 5 and 6, it is in virtually the same condition as when it was buried. The fine textured deltaic deposits that underlay the wood waste and the fine textured soil barrier between the wood waste and the ditches to the south and north has effectively sealed this site⁷. One of the key considerations in keeping the wood waste in an anaerobic condition is to ensure that the ground water is recharged at historical rates, as these have kept the wood waste submerged for most of the year. For this reason it is recommended that the cap depth be increased by 25 cm using silty clay loam or silty clay and not compacting to a state of impermeability. This cap will allow water to move slowly through and assist in the recharge of the water table on the site. There will of course be some recharge from the lateral and vertical movement of water into the site from the natural water table.

On top of this cap a layer of 75 cm of quality topsoil should be applied. The combination of 25 cm of the capping layer and the topsoil will provide between 75 and 100 cm of rooting depth while keeping the wood waste contained in its present anaerobic condition. The added topsoil will act as a small "pre-load" for the site and may compact the wood waste layer. While in the case of wood waste (the pieces of 2x4 seen in one of the pictures) the compaction will be minimal, some of the fine wood waste may be compacted. This will keep the wood waste under water and in the stable, anaerobic state.

The increase of height of the soil will also prevent flooding of the property during the winter wet season, allowing permanent vegetation such as blueberries to survive and other crops such as nursery trees to flourish. A small part of the property has been raised with quality topsoil and now supports vegetable production and some large fruit trees.

⁷ The saturated hydraulic conductivity of these soils will be between 0.42 and 1.41 um/sec

The preferred option would require:

- Removal of all irrigation works including pressure lines and drip hoses
- Removal of all vegetation, either by mowing or uprooting and hauling for disposal, or through digging and saving blueberry plants that are several years old.
- Placing 25 cm of cap
- Placing of 75cm of quality topsoil
- Crowning and ditching where required
- Seed with cover crop and establish soil forming processes
- Installing subsurface drainage where required
- Installing irrigation works where required
- Improve ditch on north side of property and clean the ditch on the south side.

7.0 Summary and Recommendation

Based on the analysis provided in this report it is recommended that the wood waste and debris be left in place and that 25 cm of silty clay loam to silty clay cap be placed on top of the existing soil cap and that 75cm of quality topsoil be placed on top of the soil cap. This strategy will maintain the wood waste in anaerobic conditions and inhibit the production of leachate and improve the land capability to class 2 or 3 which will support a wide range of agricultural crops.

The estimated volume of fill is provided below:

Area of proposed fill m ²	Fill depth m	m ³ compacted	loose	m ³ loose material
Fill – silty clay loam or silty clay				
2.5 hectares	0.25	6,250	1.25	7,800
Topsoil*				
2.5 hectares	0.75	18,750	1.2 compaction factor	22,500
Total Loose Volume Fill capping + Top Soil				30,300 m³

Table 2 Fill Volume Estimates

8.0 Site Management

Good site management will be critical for the success of the fill operation and the final use of the site for an agricultural production.

The following activities must take place:

- Monitor the removal of irrigation works and vegetation
- Monitor the incoming fill to ensure that there are is not concrete, asphalt, plastic or other non-soil materials mixed with the fill
- Monitor to ensure that there are no contaminants in any of the fill brought to the site.
- Monitor to ensure that there is no large woody debris or other non-mineral components in the fill.
- Ensure that the truck wash facility is operating properly and that sediment is removed from wash water before entering waterways.
- Install silt fencing to protect all ditches.

The fill operator has agreed and it is assumed it will be a condition of the permit that a Professional Agrolgist will carry out regular monitoring and oversight, and that they will have the authority to stop filling if there are issues with the fill quality or environmental concerns on the site.

8.1 Soil Stockpiling

Since topsoil will be delivered at the same time as mineral fill, it is important that topsoil be stockpiled and managed separately. As well, any excavated organic soil that is being retained on site should also be separately stockpiled. For all topsoil piles the following procedures should be implemented.

- Compaction will be minimized by minimizing vehicle traffic when stockpiling and handling soils when not wet
- Stockpiles will be constructed to heights of 4m or less with 2 H: 1 V slopes.
- The shape of the stockpile should provide for positive drainage (i.e. sufficiently sloped to prevent puddling or ponding), to minimize water infiltration into the pile.
- Peat and topsoil will be stockpiled separate from mineral fill to ensure they are not mixed.

8.2 Sediment Control

- Sediment will be controlled by the installation of silt fences along all watercourses.
- The on-site Agrologist will also make decisions to halt the fill operation of weather conditions are so wet that excess sediment is being produced from the site that the sediment control fences cannot handle.
- All sediment will be removed from truck wash water prior to discharge.

8.3 Dust Control

- All tires will be washed which will reduce dust during dry periods
- Access roads will be watered on a regular basis during dry periods to minimize dust.

8.4 Drainage Management

- The ditch on the north side of the property will need to be widened and deepened to ensure positive drainage of surface water,
- The ditch on the south side of the property should be cleaned.

8.5 Management of Fill Quality

Management of fill quality is critical for the success of this site and for meeting the legal requirements of the ALC and the City of Richmond. This section expands on the comments made in section 8.0.

- There cannot be any fill that has any probability of hydrocarbon or metal contamination. Soil must adhere to Schedule 7 Column III of the Contaminated Sites Regulation. If soil originates from a contaminated site an Approved Soil

Relocation Agreement and authorization from the ALC must be in place. This requires the fill operator to be certain of the origin of all fill.

- There cannot be any concrete, asphalt, plastic or other non granular soil/gravel contaminants in the fill. It is understood that occasionally a piece of asphalt or concrete or other material may be in a load, but is the responsibility of the fill operator to spot this on dumping and remove it prior to spreading of the fill. The on-site staff must be fully briefed and trained on the importance of ensuring no contaminants enter the site.
- If there are more than 50 truck loads originating from a source site the fill should be inspected at the point of origin by a Professional Agrologist prior to entering the fill site.
- On a regular basis (at least once per month) a professional agrologist will with the cooperation of the fill operator dig random test holes to make observations on the quality of the fill.

8.5 Transition to Agriculture

Once the project is completed it is recommended that forage grasses and legumes be planted and harvested for the first two years. This will help establish good soil structure, create macrospores to improve drainage, and improve fertility. After two years the pasture can be cultivated, and a wide range of agricultural crops will be capable of growing on the site.

9.0 References

Bertrand, R.A., G.A. Hughes-Games, D.C. Nikkel. 1991. *Soil Management Handbook for the Lower Fraser Valley*. BC Ministry of Agriculture, Fisheries and Food. Abbotsford, B.C.

Henk E., & I Cotic. 1983. *Land Capability Classification for Agriculture in British Columbia*. BC Ministry of Environment & Ministry of Agriculture and Food. Kelowna, B.C.

Luttmerding, H.A. 1981. *Sols of the Langley-Vancouver Map Area*. RAB Bulletin 18, Vol. 1 & 3. BC Ministry of Environment, Victoria, B.C.

Appendix I Soil Chemical Analysis

McTavish Resource & Management Consultants Ltd.

Site WP 202 Existing soil cap

Exova
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

T: +1 (604) 514-3322
F: +1 (604) 514-3323
E: Surrey@exova.com
W: www.exova.com

Farm Soil Analysis

Bill To:	McTavish Resource & Management Consultants	Grower Name:	Ming Wu	Lot Number:	878074
Report To:	McTavish Resource & Management Consultants	Client's Sample Id:	#6 Road	Report Number:	1747015
	2858 Bayview Street	Field Id:	WP 202 Topsoil	Date Received:	Jun 26, 2012
	Surrey, BC, Canada	Acres:		Disposal Date:	Jul 26, 2012
	V4A 2Z4	Legal Location:		Report Date:	Jun 29, 2012
Agreement:	36394	Last Crop:	Crop not provided	Arrival Condition:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BicarbP	pH	EC(dS/m)	OM(%)	Sample#
0" - 6"	<2	17	66	3	1900	109								6.7	0.13	3.6	4102833

Soil Quality

Excess														Alkaline	Very Toxic	High
Optimum														Neutral	Toxic	Normal
Marginal														Acidic	Caution	Low
Deficient														Very Acidic	Good	Very Low

Total lbs/acre	4	34	133	6	Texture n/a				Hand Texture n/a				BS	90.6 %			
					Sand n/a				Silt n/a				Ca	81.4 %	Mg	7.7 %	Na <1 %
					Ammonium				<0.4 ug/g				TEC	11.6 meq/100g			K 1.5 %
Estimated lbs/acre	8	34	133	11	Lime 0 T/ac				Buffer pH 6.9				Est. N Release n/a				C:N Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed



Ekovox
 #104, 1957-55 A Ave.
 Surrey, British Columbia
 V3S 3P9, Canada
 T: +1 (604) 514-9322
 F: +1 (604) 514-3323
 E: Surrey@ekovox.com
 W: www.ekovox.com

T: +1 (604) 514-3322
F: +1 (604) 514-3323
E: Survey@exova.com
W: www.exova.com

Exova

Nutrient analysis (ppm)

Soil Quality

pH	EC(ds/m)	OM(%)	Sample#
4.8	0.63		4102831

Alkaline	Very Toxic	High
Neutral	Toxic	Normal
Acidic	Caution	Low
Very Acidic	Good	Very Low

BS	n/a			
Ca	n/a	Mg	n/a	K n/a
TEC	n/a	Na	n/a	
		Na	n/a	
Est. N Release	n/a	C:N Ratio	n/a	

*Nitrate-N **Sulfate-S n/a = not analysed

21

Analysis of Cedar Wood-Waste Site WP 204

Exova
#104, 19575-55 A Ave.
Surrey, British Columbia
V3S 8P8, Canada

T: +1 (604) 514-3322
F: +1 (604) 514-3323
E: Surrey@exova.com
W: www.exova.com

Page 1 of 1

EXOVA 

Farm Soil Analysis

Bill To: McTavish Resource & Management Consultants	Grower Name: Ming Wu	Lot Number: 878074
Report To: McTavish Resource & Management Consultants	Client's Sample Id: #6 Road	Report Number: 1747014
2858 Bayview Street	Field Id: WP 204 Hog Fuel	Date Received: Jun 26, 2012
Surrey, BC, Canada	Acres:	Disposal Date: Jul 26, 2012
V4A 2Z4	Legal Location:	Report Date: Jun 28, 2012
Agreement: 36394	Last Crop: Crop not provided	Arrival Condition:

Nutrient analysis (ppm)														Soil Quality					
Depth 0" - 6"	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BiCatbP	pH	EC(ds/m)	OM(%)	Sample#		
	<2			10										5.8	0.12		4102832		
Excess														Alkaline	Very Toxic	High			
Optimum														Neutral	Toxic	Normal			
Marginal														Acidic	Caution	Low			
Deficient														Very Acidic	Good	Very Low			
Total lbs/acre	4			20	Texture n/a									Hand Texture n/a		BS n/a			
Estimated lbs/acre	8			40	Sand n/a									Silt n/a	Clay n/a	Ca n/a	Mg n/a	Na n/a	K n/a
					Ammonium n/a											TEC n/a			Na n/a
					Lime n/a	Buffer pH n/a				Est. N Release n/a				C:N Ratio n/a					

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

Capping Soil Site WP 211

Exova
 #104, 19575-55 A Ave.
 Surrey, British Columbia
 V3S 5P8, Canada
 T: +1 (604) 514-3322
 F: +1 (604) 514-3323
 E: Surrey@exova.com
 W: www.exova.com

Page 1 of 1



Farm Soil Analysis

Bill To:	McTavish Resource & Management Consultants	Grower Name:	Ming Wu	Lot Number:	878074
Report To:	McTavish Resource & Management Consultants	Client's Sample Id:	#6 Road	Report Number:	1746976
	2858 Bayview Street	Field Id:	WP 211 Topsoil	Date Received:	Jun 26, 2012
	Surrey, BC, Canada	Acres:		Disposal Date:	Jul 26, 2012
	V4A 2Z4	Legal Location:		Report Date:	Jun 29, 2012
Agreement:	36394	Last Crop:	Crop not provided	Arrival Condition:	

Nutrient analysis (ppm)														Soil Quality			
Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Bi/Ca/P	pH	EC(ds/m)	OM(%)	Sample#
0" - 6"	5	13	83	7	1400	180								5.9	0.15	6.0	4102829
Excess														Alkaline	Very Toxic	High	
Optimum														Neutral	Toxic	Normal	
Marginal														Acidic	Caution	Low	
Deficient														Very Acidic	Good	Very Low	
Total lbs/acre	10	25	166	13													
Estimated lbs/acre	21	25	166	27	Texture Loam				Hand Texture n/a				BS 50.6 %				
					Sand 49.0 %				Silt 34.0 %				Clay 17.0 %				
					Ammonium 0.9 ug/g								Ca 40.7 % Mg 8.6 % Na <0.8 % K 1.2 %				
					Lime 3.0 T/ac				Buffer pH 6.2				Est. N Release n/a C:N Ratio n/a				

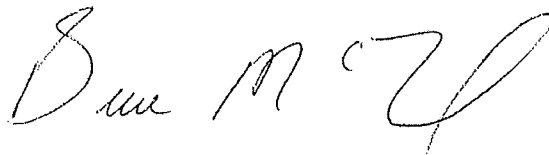
*Nitrate-N **Sulfate-S n/a = not analysed

McTavish Resource & Management Consultants Ltd.

Woodwaste Leachate and Site Drainage
Addendum I
To
Proposed Remediation of Land Located at 8511
#6 Road Richmond, B.C.

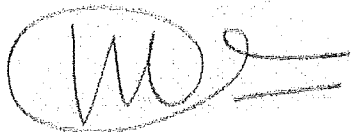
BCAA Legal: SEC 20 BLK4N RG5W PL 3109 Parcel A, Subsidy Lot 3, (J71246E).

Prepared by:



Bruce McTavish, M.Sc., MBA, P.Ag., RPBio.
McTavish Resource & Management Consultants Ltd.
2858 Bayview St. Surrey, B.C. V4A 3Z4
bmct@intergate.ca

and



Hubert Timmenga, PhD, P.Ag., CMC
Timmenga & Associates Inc.
292 E 56 Avenue, Vancouver BC V5X 1R3
htimmenga@telus.net

Prepared for:

Bohan Jiang

December 14, 2013

McTavish Resource & Management Consultants Ltd.

Table of Contents

1.0	Introduction.....	1
2.0	Site Location	1
2.1	Previous Land Use	1
3.0	Recommendations from 2012 Report.....	1
4.0	Potential for Leachate Generation and Mitigation.....	3
4.1	Site Observations December 2013	3
4.2	Leachate Risk Management	3
5.0	Summary and Conclusions Leachate	4
6.0	Site Drainage	4
6.1	New Ditch Elevations	5
6.1.1	Southern Ditch	5
6.1.2	Northern Ditch	5
6.1.3	Western Ditch	5
6.1.4	Impact on Western Environmentally Sensitive Area.....	5
Appendix I	Field Notes.....	8
Appendix II	Ditch Elevations and Cross Sections South Ditch	9
Appendix III	Ditch Elevations North Ditch	11
Appendix IV	Ditch Elevations West Ditch	13
Appendix V	Environmentally Sensitive Areas	14

1.0 Introduction

McTavish Resource & Management Consultants Ltd. was retained by Bohan Jiang to determine the cause for the Blueberry Crop failure and develop a remediation plan to allow agricultural production on the land. That report was submitted to the City of Richmond in September of 2012. The City of Richmond requested further information on the generation of leachate from the wood waste and a drainage plan. This current report provides further information on wood waste leachate and recommended mitigation measures.

2.0 Site Location

The subject properties are located at 8511 No 6 Road Richmond B.C. The legal description is: SEC 20 BLK4N RG5W PL 3109 Parcel A, Subsidy Lot 3, (J71246E).

The street address is 8511 No 6 Road in Richmond, B.C. The total farm size is 40475 m² or 10 acres and is zoned AG1. Approximately 2.5 hectares of the land is planted in Blueberries and ½ of the crop has been a complete failure and the other ½ has marginal growth.

2.1 Previous Land Use

The use of the land for any agricultural use is severely impeded by the fact that approximately 25 to 30 years ago a previous owner has stripped all the organic soil (peat) from the site and filled it with cedar wood waste and wooden construction debris. This has been discussed in detail in section 3 of the September 2012 report.

3.0 Recommendations from 2012 Report

The Richmond, Triggs and Lulu soil complexes found at and around the site consist of peat of various depth and state of decomposition (Richmond: 40 – 160 cm of well decomposed organic matter; Triggs more than 160cm mainly sphagnum moss; and Lulu 40 – 160 cm of partially decomposed organic matter). All are located over moderately to fine textured deltaic deposits. Formation of a peat soil typically takes place when vegetation grows in stagnant bodies of water such as lakes or cut-off river arms. First, dying water plants accumulate on the bottom followed by remains of reeds, sedges, and later trees. Because of the stagnant water with low oxygen content and a low pH, organic matter is not decomposed and accumulates to fill the complete body of water. This may be followed by a build-up of growth of primarily sphagnum moss that will form a dome with a locally elevated water table, thus forming a sphagnum-peat bog.

Peat bogs typically have an impermeable bottom and water turn-over is rather low. This will deprive the water of oxygen which is used in the decomposition process, and the pH is typically low, around pH 4 or 4.5. When peat is dug from peat bogs and the remaining area is not dewatered, the peat forming process repeats itself. When peat soils are dewatered and cultivated, organic matter is quickly oxidized and the depth of the peat soil rapidly diminishes.

At the subject site, peat has been replaced by wood waste. During the site investigation it was found that the wood waste had not decomposed to a great extent, likely due to the site conditions that allowed the anaerobic conditions and low water movement to continue. A remediation plan that includes capping, should include measures to keep the peat formation factors in place to preserve the wood waste and prevent the formation of leachate.

The preferred option based on site observations is to leave the wood waste in place and return the land to agricultural production by increasing the depth of the fine textured soil cap by 25 cm and adding a minimum of 75 cm of topsoil.

The wood waste has been buried on this site for at least 30 years and it is in virtually the same condition as when it was buried. The fine textured deltaic deposits that underlay the wood waste and the fine textured soil barrier that exists in most locations between the wood waste and the ditches to the south and north has effectively sealed this site¹. One of the key considerations in keeping the wood waste in an anaerobic condition is to ensure that the ground water is recharged at historical rates, as these have kept the wood waste submerged for most of the year. For this reason it is recommended that the cap depth be increased by 25 cm using silty clay loam or silty clay and not compacting to a state of impermeability. This cap will allow water to move slowly through and assist in the recharge of the water table on the site. There will of course be some recharge from the lateral and vertical movement of water into the site from the natural water table.

On top of this cap a layer of 75 cm of quality topsoil should be applied. The combination of 25 cm of the capping layer and the topsoil will provide between 75 and 100 cm of rooting depth while keeping the wood waste contained in its present anaerobic condition. The added topsoil will act as a small “pre-load” for the site and may compact the wood waste layer. While in the case of wood waste (the pieces of 2x4 shown in the 2012 report) the compaction will be minimal, some of the fine wood waste may be compacted. This will keep the wood waste under water and in the stable, anaerobic state.

The increase of height of the soil will also prevent flooding of the property during the winter wet season, allowing permanent vegetation such as blueberries to survive and other crops such as nursery trees to flourish. A small part of the property has been raised with quality topsoil and now supports vegetable production and some large fruit trees.

The preferred option will require:

- removal of all irrigation works including pressure lines and drip hoses;
- removal of all vegetation, either by mowing or uprooting and hauling for disposal, or through digging and saving blueberry plants that are several years old;
- placing 25 cm of cap of fine textured soil;
- placing of 75cm of quality topsoil;

¹ The saturated hydraulic conductivity of these soils will be between 0.42 and 1.41 um/sec

- crowning and ditching improvements where required;
- seed with cover crop and establish soil forming processes;
- installing irrigation works where required;
- improve ditch on north side of property and clean the ditch on the south side; and
- implement measures to ensure a minimum of a 2 m sealed buffer between the wood waste and the ditches on the north and south of the property. This is a new recommendation.

4.0 Potential for Leachate Generation and Mitigation

Based on visual observations made during 2012 and 2013 there does not appear to be any leachate entering the ditches on the north or south side of the property. To determine the potential impact on the surrounding ditches, on-site observations were made in December of 2013 to determine the distance of buried wood waste to the ditches on the north and south of the property. Figure 1 shows where auguring took place to identify underlying conditions.

4.1 Site Observations December 2013

From the onsite investigation it appears that the former owner of the property only excavated peat and replaced it with wood waste on the property itself and not on the adjoining properties. The west side of the property did not contain wood waste (or only to a very small extent), and in most places the wood waste was at least 2m from the north or the south ditches. However in one location (GPS location 826) wood waste was found close to the north ditch. Along the south ditch there is an area (between GPS location 831 and 832) where the wood waste is near and/or underneath the ditch. The wood waste close to and underneath the ditch was covered with a layer of 20 to 30 cm of clay and the wood waste was virtually in a non-decomposed form. At the south ditch the water level was well above the top of the wood waste in the soil and the ditch water was clear and did not appear to have been affected by the wood waste.

These observations indicate that no or very little lateral movement of water takes place through the wood waste and into the ditches. It appears that in the current configuration, there is enough of a clay buffer between the wood waste and the ditches to keep the wood waste anaerobic and the ditches unaffected.

4.2 Leachate Risk Management

The rehabilitation plan is geared towards capping the surface of the wood waste to prevent precipitation water from entering this mass. This protection will be enhanced with the crowning of the subsoil and topsoil. Precipitation will move by overland flow and lateral movement through the topsoil towards the ditches. Some downwards percolation is preferred to keep the wood waste in an anaerobic state.

Based on the recent findings; (December 12, 2013 field visit – see Appendix I) there are locations where the wood waste is close to or even underneath the perimeter ditches. In these areas it is recommended that when the project is underway, that wood waste is stripped from near the ditches to a width of 2 m from the ditches and replaced with clay or silty clay to provide

a barrier between the remaining wood waste and the ditch. This will prevent any wood waste leachate from reaching the ditch and thus ensure that the municipal drainage system is unaffected. Stripping wood waste and replacing it with clay to form a barrier is only required in a few areas as most of the site is separated from the ditches by at least 2 m of natural soil.

It is recommended that at the time of project execution the consultants work with the contractor and clearly mark all areas where the 2m buffer is not in place and supervise the removal of wood waste in these areas and the back filling with clay or silty clay.

5.0 Summary and Conclusions Leachate

Extensive sampling of the site (see figure 2) has identified the extent and the anaerobic condition of the wood waste as described in the September 2012 report and this report. To ensure that leachate is not generated from this site, the following recommendations need to be implemented as part of the process of making the subject property a productive and environmentally safe farm:

- cap with 25 cm of fine texture soil
- add 75 cm of topsoil
- crown the land to facilitate drainage
- ensure a 2m buffer between the woodwaste and the ditches

6.0 Site Drainage

The subject farm presently has a ditch on the north and south side of the property. The north ditch has its flow split with part of the ditch flowing east to the # 6 road ditch part flowing west, connecting to a north south ditch flowing south and connecting with the ditch on the southern border of property.

The south ditch flows to the west from approximately the mid-point of the property and continues into the adjoining property to the west. At the present time these ditches are not functioning properly as grades fluctuate and the ditches are overgrown with vegetation.

It is recommended that the following drainage plan be implemented

- a) Keep the flow direction as is and do minor regrading and clean ditches of water flow constricting vegetation;
- b) Construct a new ditch along the western side of the property if the existing ditch is on the neighbouring property;
- c) During the filling operation ensure that subsoil and topsoil is crowned to enable water to flow from the centre of the property to the ditches on the north and south sides of the property.

These activities will not increase peak flows to the City of Richmond ditches above historical levels as all ditches previously existed (with one replacing the neighbouring ditch), and only needed maintenance and re-grading is taking place

6.1 New Ditch Elevations

The following section provides details on ditch elevations and flow directions. The purpose is to improve the site drainage by minor regrading and clearing of vegetation and debris that is impeding water flow.

6.1.1 Southern Ditch

The property (like most of Richmond) has very little natural grade and therefore the slope of the ditches have very little gradient. The highest point along the southern ditch is at the culvert invert across from the access road shown on the elevation map in Appendix II. The ditch elevation at this point is 0.81m the ditch slopes from this point to the west to an elevation of 0.21m at the western end of the ditch. From this point it continues to flow to the west into the neighbouring property which has an ESA designation and is considered a Freshwater Wetland.

The southern ditch requires minor regrading to eliminate the topographic fluctuations and make the bottom an even gradient to the west, keeping western bottom of ditch elevation at approximately its present level (See Appendix II). Some ditch widening is recommended to have an average cross section as shown in Appendix II. At the eastern end it will not be possible to maintain 0.50 m ditch depth, however there is little flow at this end of the system and a shallower ditch will be functional.

6.1.2 Northern Ditch

The northern ditch should be graded from approximately the cross section 5 line on the topographic map to have all flow from this point split go east to the #6 road ditch and all flow to the west of this point to drain as it presently does to the west. The water flowing west presently connects with a north south ditch that connects with the south property ditch. The north south ditch seems to be on the neighbouring property and a new ditch that is entirely on the subject property should be installed to connect the north and south ditches. See Appendix III for detailed elevations.

6.1.3 Western Ditch

As described in section 6.1.2 there is a ditch running from north to south along the western property boundary. Based on survey pins observed during the December site visit this ditch seems to be on the neighbouring property. For this reason a new ditch should be installed on the subject property to connect the north and south ditches. Elevations are shown in Appendix IV.

6.1.4 Impact on Western Environmentally Sensitive Area

The southern ditch flows to the west into an Environmentally Sensitive Area (ESA) that is categorized as Fresh Water Wetland (FRWT). By keeping the drainage flow direction as it presently exists on this property the freshwater recharge from the subject property to the ESA will be maintained.

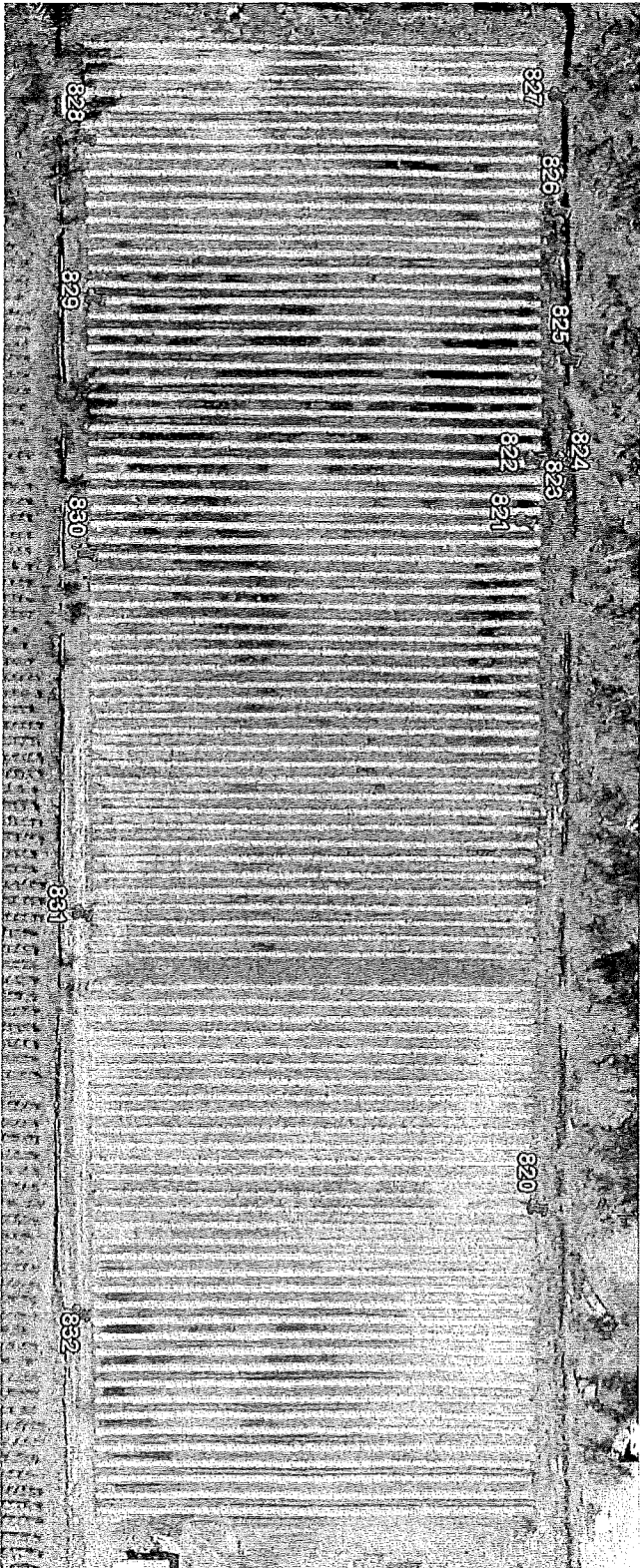


Figure 1: Auger Sampling Points December 2013

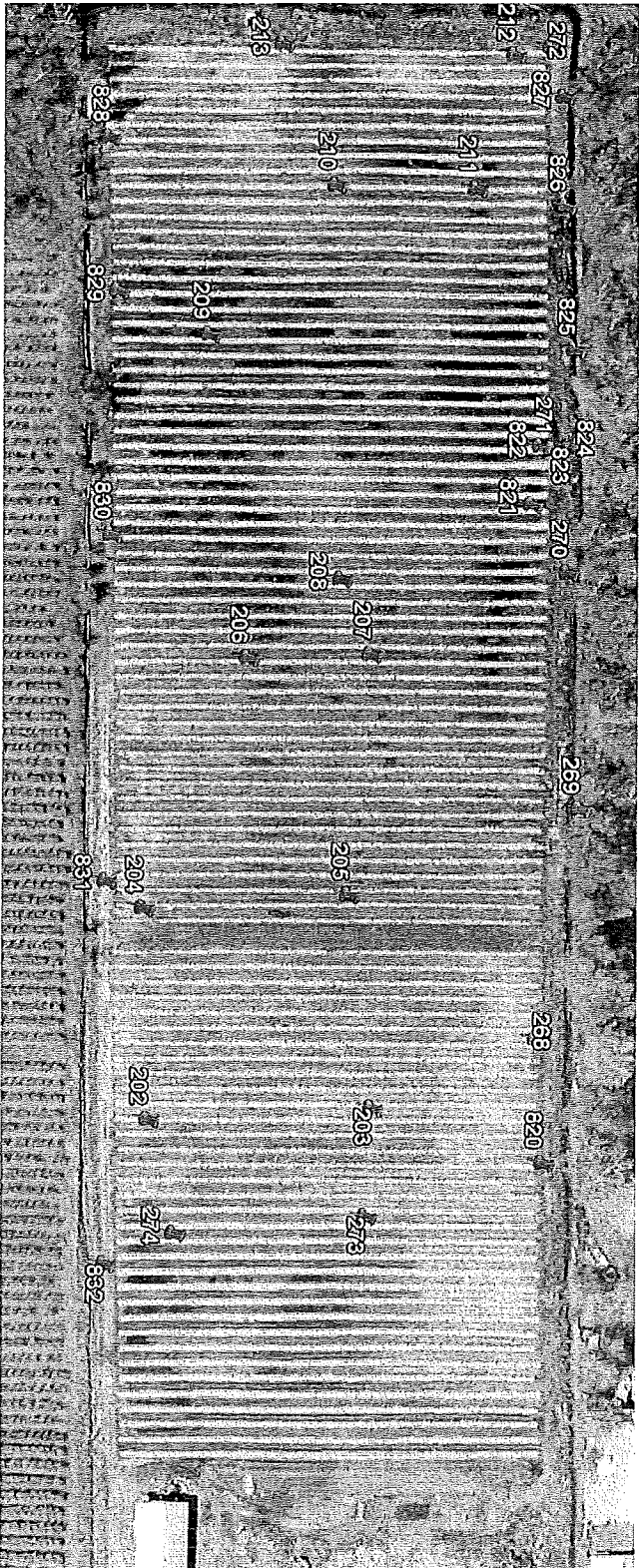
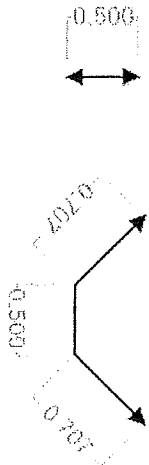
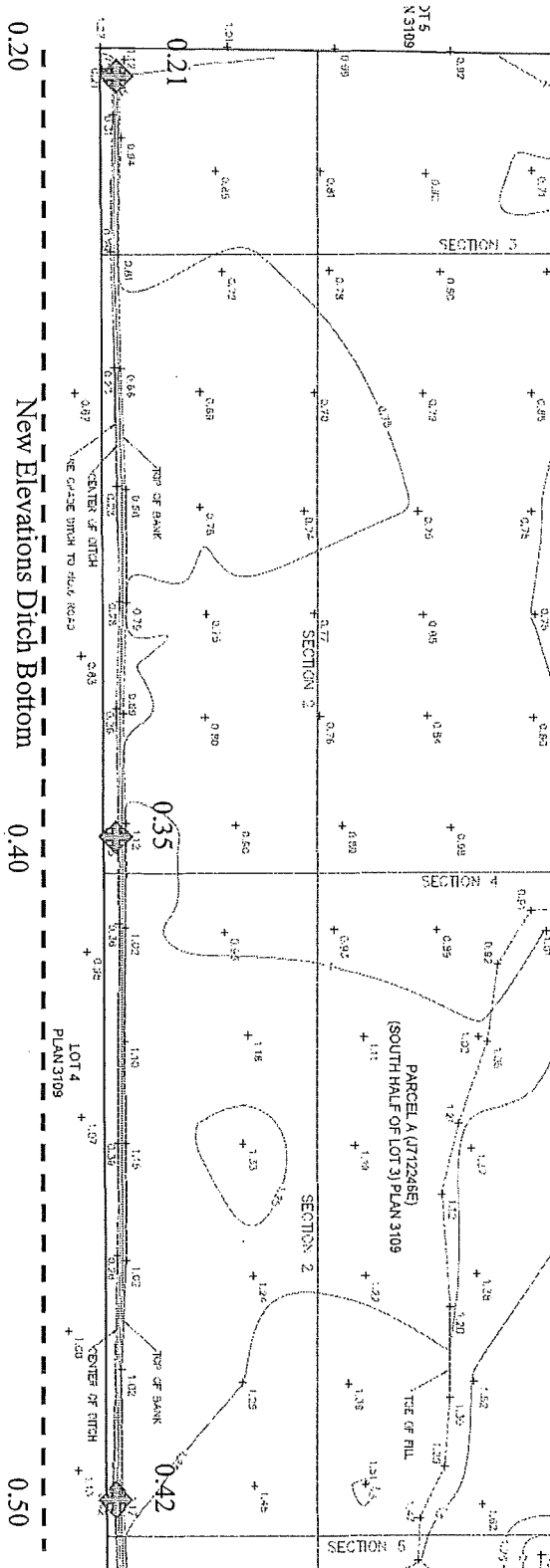


Figure 2: Sampling Sites 8511 #6 Road

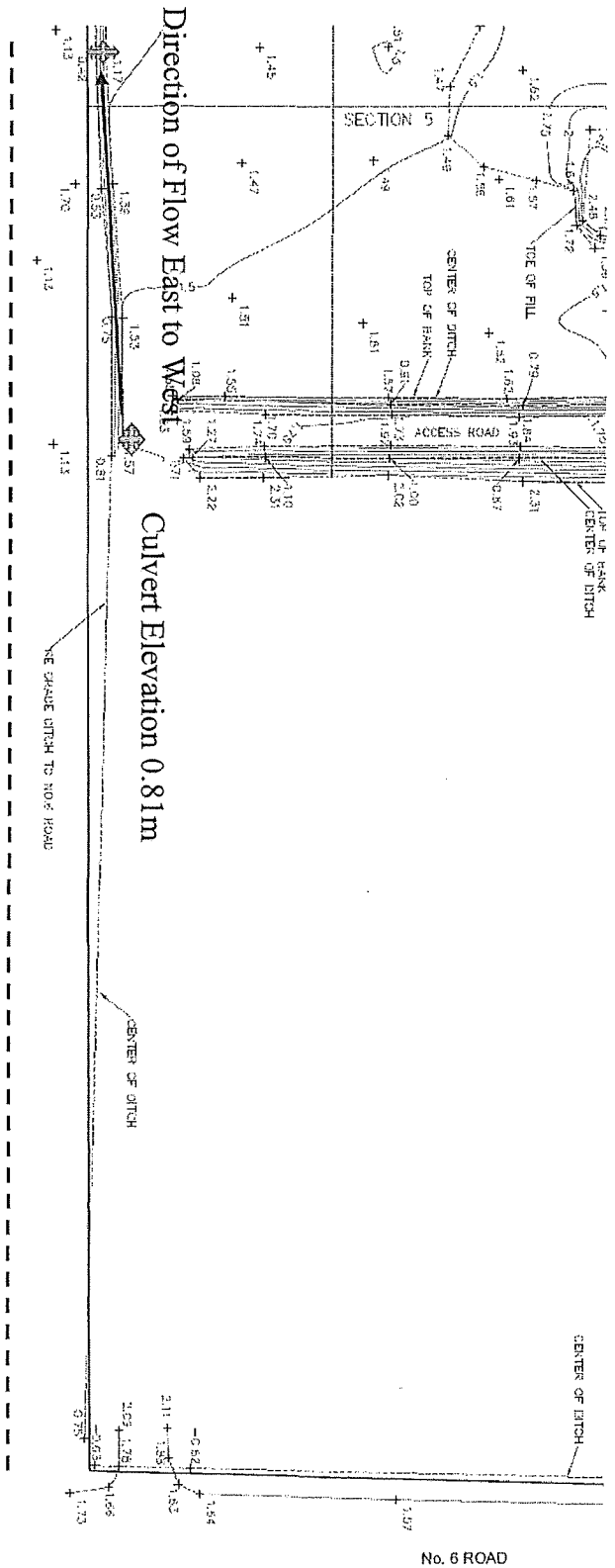
Appendix I Field Notes

GPS Location	Comments
820	Ditch lower than adjacent land to north Property to north is peat/organic soil as seen by ditch edge
821	Woodwaste 60 cm below surface Greater than 3m away from north ditch
822	Woodwaste 35 cm below surface Woodwaste 7.5m from ditch
823	Woodwaste 40 cm below surface Woodwaste 4 m from ditch
824	Shallow layer of woodwaste 3m from ditch
825	Auger 2m from ditch no woodwaste, peat only
826	Woodwaste at 15 cm below surface 1m from ditch 0.5 m from ditch only a thin layer of woodwaste
827	2m from ditch no woodwaste
828	3m from ditch no woodwaste
829	3m from ditch no woodwaste
830	2m from ditch no woodwaste
831	Woodwaste at 75cm from ditch edge Sample in ditch, woodwaste found buried below 20 cm clay layer, still anaerobic, no sign of leaching or pollution
832	Sample in ditch, woodwaste found buried below 20 cm clay layer, still anaerobic, no sign of leaching or pollution

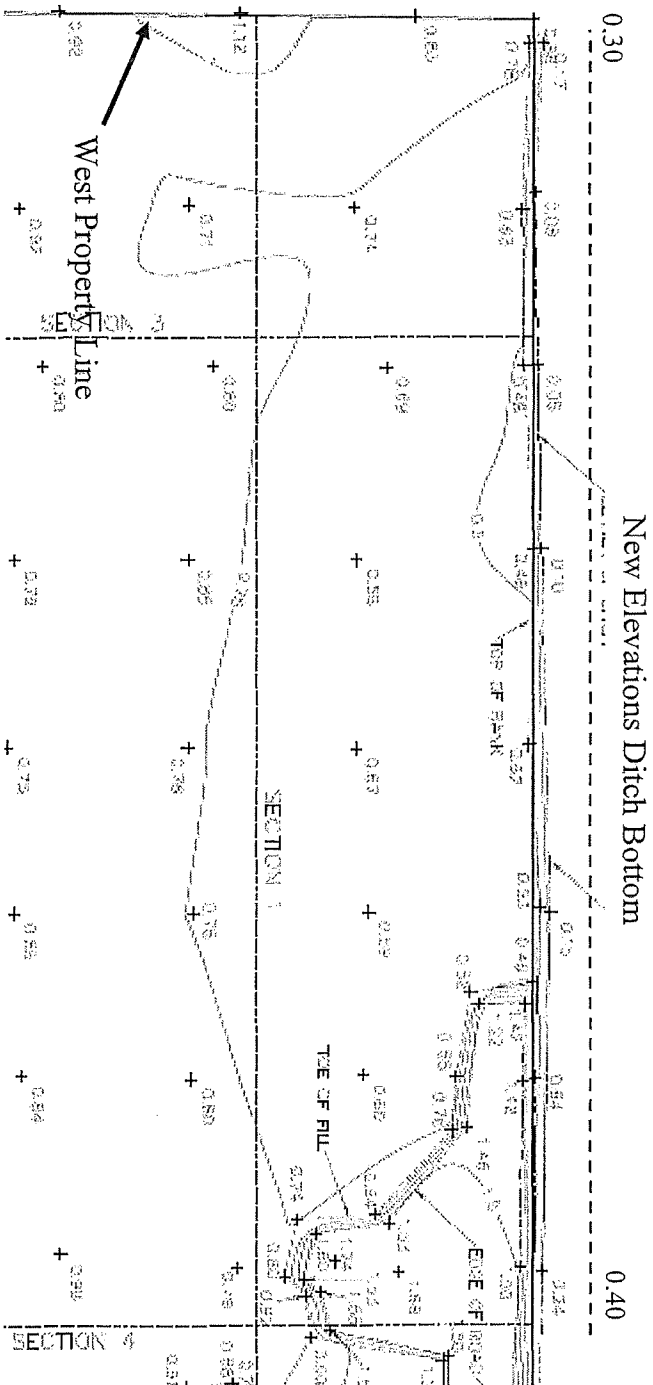
Appendix II Ditch Elevations and Cross Sections South Ditch Leave water flow in historical directions

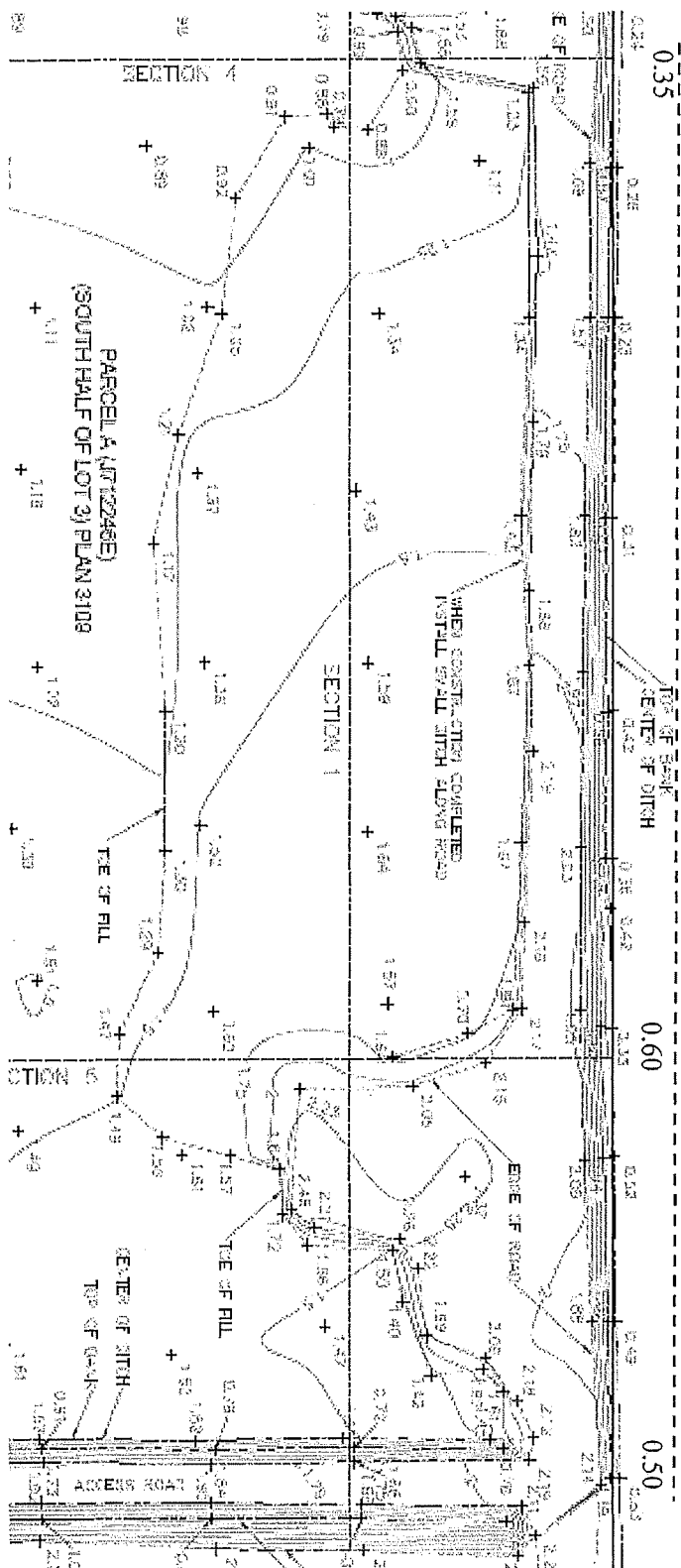


Average Ditch Cross-Section South Ditch

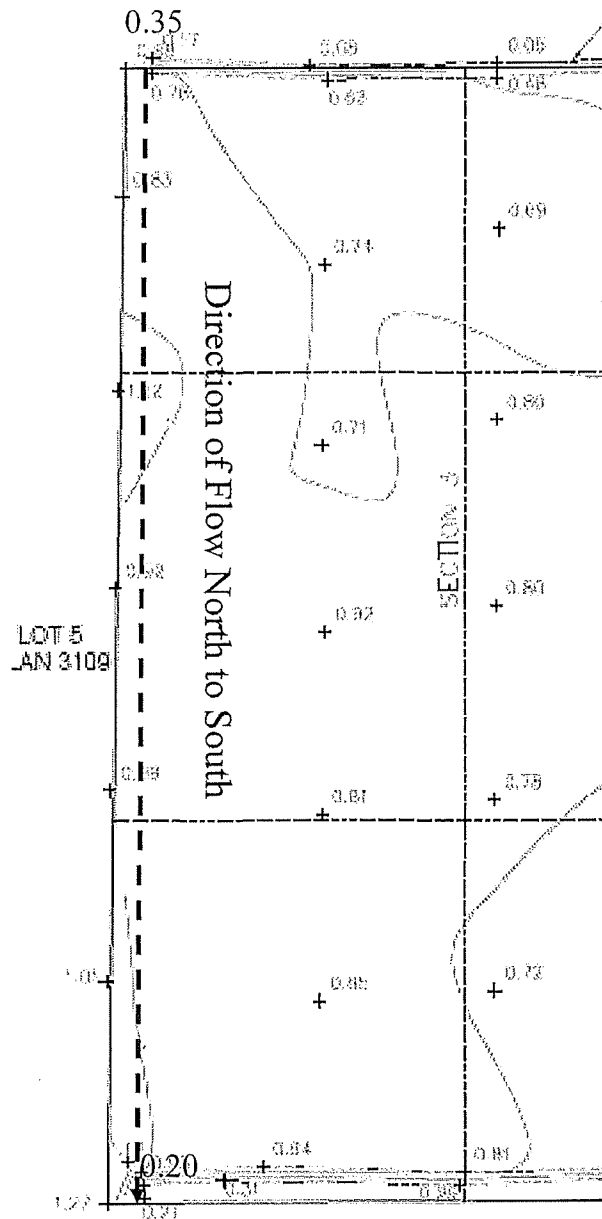


Appendix III Ditch Elevations North Ditch





Appendix IV Ditch Elevations West Ditch



This is a new ditch to be installed existing ditch is on the neighbouring property. This will be a relative shallow ditch due to the existing bottom of ditch elevations.

Appendix VEnvironmentally Sensitive Areas

McTavish Resource & Management Consultants Ltd.

8511 No 6 Road Surrounding Environmentally Sensitive Areas

Subject Property

127.0 0 63.50 127.0 Meters
© City of Richmond

This map is a user-generated static output from an internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

August 11, 2020

Barry Mah
Westwood Topsoil Ltd.
6604 62B Street
Delta, BC V4K 5A8
westwoodbarry@mac.com

Dear Mr. Mah,

RE: Requirement of a Farm Plan for 8511 No. 6 Road, Richmond, BC (CD 28808)

Madrone Environmental Services Ltd. ('Madrone') understands that you, Mr. Barry Mah ('the Client'), requires the development of a Farm Plan to facilitate a proposal to import soil onto a parcel located at 8511 No. 6 Road, Richmond, BC ('the Property') for the purpose of remediating the land for crop cultivation. This soil importation proposal will be reviewed by the City of Richmond ('the City'), the City's Food Security and Agricultural Advisory Committee (FSAAC) and the Agricultural Land Commission (ALC).

In an email¹, Mr. Mike Morin, Community Bylaws, City of Richmond, outlined requirements for the Farm Plan which includes a site plan, site description, legal description, zoning and current land use, soils description and unimproved agricultural capability, soil management rationale/improved agricultural capability, recommended agricultural uses and suitable crops, drainage requirements, irrigation requirements, proposed agricultural operation, proposed planting plan and a cost estimate for agricultural improvement. Mr. Morin also commented that although the aforesaid information may be found in other reports specifically prepared for the Property by Qualified Professionals (QPs), the City wants said information consolidated into a single document to better clarify what is planned post-project completion.

This report has been prepared by Daniel Lamhonwah, MES, P.Ag, and reviewed by Thomas R Elliot, PhD P.Ag, P.Geo, of Madrone for the specific purpose of providing the City and the FSAAC with the information required in a summarized manner for review. Please note that this Farm Plan has been informed by reports previously prepared by non-Madrone QPs for the Property. Information available from municipal and provincial sources were used by Madrone for the purpose of corroborating information presented in previous

¹ Email communication addressed to Barry Mah from Mike Morin, Community Bylaws, City of Richmond. Subject: CD 28808 - Outstanding application requirements - Jaing/Barry Mah (21 Apr 2020). Sent on April 21, 2020 12:47 PM.

reports for making applicable updates to the Farm Plan. Madrone did not conduct any field investigations on the Property to specifically inform this report.

1 Introduction

The Client had previously retained McTavish Resource and Management Consultants Ltd. ('McTavish') and Timmenga and Associates Inc. ('Timmenga') to design a remediation plan² ('the Remediation Plan') for the Property, further to which a drainage and leachate management plan³ ('the Drainage and Leachate Plan') and analysis of perimeter ditch water report⁴ ('the Ditch Analysis Report') was developed jointly by these two firms. Since the development of aforementioned plans, Bruce McTavish, former Principal of McTavish, has been employed by the City as a municipal agrologist, thus creating a conflict of interest within the context of City review of the Client's intention for soil importation on the Property. Thus, the Client has retained Madrone to act as QPs for the purpose of finalizing documentation for intended remediation works on the Property for review by the City, FSAAC, and the Agricultural Land Commission (ALC), acting at the QPs during any future council meetings, and monitoring the proposed soil importation works on the Property should they be approved.

2 Site Description

The Property is a 4.05 ha (10 acre) parcel of private land located at the street address 8551 No.6 Road, in Richmond, BC. Information about the Property, as provided by the City⁵, is summarized in Table 1. Recent satellite imagery of the Property (2018) is shown in Figure 1.

3 Current and Previous Land Use

At time of writing, it is Madrone's understanding that the owner of the Property, Mr. Bohan Jiang, is attempting to grow blueberries on the land with limited success. Our understanding is supported by recent satellite imagery provided by the City showing limited agricultural activity for the majority of the Property (~3.0 ha; 7.4 acre), particularly in the centre and western sides of the parcel (Figure 1). As reported in the Remediation Plan, the Property has been severely impeded by removal of native surficial organic soil (peat)

² Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated September 30, 2012.

³ Woodwaste Leachate and Site Drainage Addendum I To Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated December 14, 2013.

⁴ Analysis of Perimeter Ditch Water from Property Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated March 4, 2015.

⁵ City of Richmond (2019). Richmond Interactive Map. <https://maps.richmond.ca/rim/>. Accessed April 30, 2020.

from the site, which was replaced with cedar wood waste and, as reported, 'wooden construction debris' with a mineral-soil cap-layer, approximately 25 to 30 years ago by a previous land owner.

TABLE 1. PROPERTY INFORMATION FOR 8511 NO. 6 ROAD, RICHMOND, BC

PID	005-147-077
Property Roll	025686728
Legal	SEC 20 BLK 4N RG 5W PL NWP3109 Parcel A, Block 4N, Plan NWP3109, Sublot 3, Section 20, Range 5W, New Westminster Land District, (J712 46E)
Richmond Key	162678
Official Community Plan (OCP) Land Use	Agriculture
Official Community Plan (OCP) Environmentally Sensitive Areas (ESAs)	Freshwater Wetland (FRWT)
Environmentally Sensitive Areas (ESAs) Development Permit (DP)	Yes
Agricultural Land Reserve (ALR)	Yes
Agricultural Land Reserve (ALR) Development Permit (DP)	No
Zoning Development Permit (DP)	No
Flood construction Level (FCL)	3.0 m GSC



FIGURE 1. SATELLITE IMAGERY OF 8511 NO.6 ROAD OUTLINED IN YELLOW. THE RED SHADED AREA REPRESENTS TO PROPOSED AREA FOR SOIL IMPORTATION. IMAGE PROVIDED BY THE CITY OF RICHMOND AND DATED AS TAKEN IN 2018.

4 Soils Description

Provincial soil mapping⁶ indicates that the area of the Property contains soils of the Lulu soil association. Lulu soils are composed of partially decomposed organic deposits that are between 40 to 160 cm deep with underlying silty clay loam or silty clay deltaic deposits. The provincially mapped Land Capability for Agriculture (LCA) for the Property is Class O4 and contains an excess water (W) limitation and degree of decomposition – permeability (L) limitation.

An on-site soil survey conducted by McTavish and Timmenga in 2012 as reported in the Remediation Plan⁷ found that the organic peat on the Property was removed by a previous landowner (estimated to be between 20 to 30 years ago) and backfilled with cedar wood waste and ‘wooden construction debris’. From review of site photographs in the Remediation Plan (specifically Figure 4), Madrone disputes the presence of ‘wooden construction debris’ and instead identifies the materials present as ‘end cuts’ which are a standard byproduct of sawmills when cutting feedstock to dimensional lumber. This distinction is of moderate importance as

⁶ Province of British Columbia (2019). BC Soil Information Finder Tool.
<https://www2.gov.bc.ca/gov/content/environment/air-land-water/land/soil/soil-information-finder>. Accessed April 30, 2020.

⁷ Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated September 30, 2012.

construction debris is not suitable fill material as per the *Agricultural Environmental Management Code of Practice*⁸ (AEMCoP), while end cuts are a category of wood residue acceptable for use on agricultural land as per the AEMCoP. Hereafter, these materials will be referred to as 'wood residue' to be in line with current regulations. The wood residue layer was backfilled with 35 to 40 cm of loam to silty loam sand by the previous landowner. These activities resulted in subsurface conditions which limit root growth highly acidic, poorly draining and anaerobic subsurface environment due to the natural perched watertable creating the local 'W' agricultural capability limitation, as identified in provincial mapping of Lulu soils.

5 Unimproved Agricultural Capability

Based on the soil and landscape conditions of the Property at time of assessment, the professional opinions of McTavish and Timmenga⁹, the land has an LCA of Class 6 or 7D (D subclass is undesirable soil structure/aeration)¹⁰, with the limiting factor being the root restricting layer of anaerobic wood waste. **Note that Class 6 and 7 lands, as defined by the ALC, are unsuitable for cultivation or use of farm machinery, or the soils do not respond to intensive improvement practices.** We at Madrone understand that the Property has retained a Class 6 or 7D limitations to LCA because, to our knowledge, no management practices or earthworks have been implemented to improve the site LCA.

6 Soil Importation Rationale and Site Plan

The Remediation Plan developed by McTavish and Timmenga recommends that the wood residue be left in place (and kept at an anaerobic state) and that the land be returned to agricultural production by:

- Removing all irrigation works including pressure lines and drop hoses;
- Removing all vegetation, either by mowing or uprooting and hauling for disposal, or through digging and saving blueberry plants that are several years old;
- Increasing the cap depth by 25 cm with noncompacted permeable silty clay loam or silty clay; and

⁸ Province of British Columbia (2019). Environmental Management Act Agricultural Environmental Management Code of Practice.
http://www.bclaws.ca/civix/document/id/complete/statreg/8_2019. Accessed April 30, 2020.

⁹ As reported in the Remediation Plan.

¹⁰ Land in Class 6 provides sustained natural grazing for domestic livestock and is not arable in its present condition. Land is placed in this class because of severe climate, or the terrain is unsuitable for cultivation or use of farm machinery, or the soils do not respond to intensive improvement practises. Some unimproved Class 6 lands can be improved by draining and/or diking. Class 7 land may have limitations equivalent to Class 6 land but they do not provide natural sustained grazing by domestic livestock due to climate and resulting unsuitable natural vegetation. Also included are rockland, other nonsoil areas, and small water-bodies not shown on maps. Some unimproved Class 7 land can be improved by draining or diking. (source: https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/agriculture_capability_classification_in_bc_2013.pdf)

- Adding a minimum of 75 cm of topsoil.

Based on the proposed area of soil important (2.5 ha), the Remediation Plan involves importing ~30,000 m³ of soil (silty clay loam or silty clay + topsoil).

McTavish and Timmenga comment that the plan will also prevent flooding of the Property during the wet season and allow permanent vegetation (i.e. blueberries) to survive and nursery plants to flourish. Additional recommendations in this remediation plan includes:

- Crowning and ditching the remediated land where required;
- Seeding the topsoil with cover crop and establishing soil forming processes;
- Installing subsurface drainage where required;
- Installing irrigation works where required; and
- Improving the ditch on the north side of Property and cleaning the ditch on the south side.

A site plan ('the Site Plan') showing the proposed fill for the Property based on McTavish and Timmenga's reporting was developed by Peak Surveying in 2013 and is attached at the end of this Farm Plan developed by Madrone.

In 2018, the Client retained Tony Yam Engineering Ltd. ('Tony Yam') as the geotechnical engineer to evaluate the remediation works proposed by McTavish and Timmenga for the Property. Following a site visit and test pit excavation, Tony Yam provided the following comments in a letter-style report¹¹ prepared for the Client:

- Placing 1.0 m of additional fill over the impacted area (whereby the impacted area refers to the area where organic soils were removed, and wood waste was placed by a previous owner) will not impact the drainage pattern of adjacent areas;
- The weight of additional fill will not impact the stability of adjacent areas; and
- The remediated area is only suitable for agricultural use and is not suitable to support any building structure without further site improvement.

Madrone acknowledges that the importation of soil onto the Property (25 cm of noncompacted permeable silty clay loam or silty clay, and 75 cm) will raise lands on the Property to a similar elevation of adjacent land parcels in the area. This statement is based on a survey prepared by Peak Surveying and provided to Madrone by the Client. The survey, which contains cross sections, point elevations and site plan for the Property, shows point elevations of the adjacent parcel to the left ranging from 1.55 to 1.77 m above sea level (masl).

¹¹ Project No: G18154-00 – Remediation of Farm Land, 8511 No.6 Road, Richmond BC. Prepared by Tony Yam Engineering Ltd. Prepared for Barry Mah. Dated October 10, 2018.

Point elevations of proposed fill area on the Property generally range from ~0.60 to 0.85 masl. Thus, the addition of soil at an average depth of 100 cm (1.0 m) across the proposed fill area would result in the Property being level with surrounding lands.

7 Improved Agricultural Capability

It is the professional opinion of Madrone that following implementation of the Remediation Plan and the recommendations outlined in the next section (*8 Proposed Agricultural Plan*), the proposed soil importation and deposit is **targeting a Class 1 agricultural capability**¹² by selectively receiving soils suitable to that end goal¹³. If the deposited soil is assessed as anything other than a Class 1 agricultural capability upon completion of the project, the farm operator (Mr. Jiang) should endeavour to improve the agricultural limitations through soil amendment, irrigation, or some combination thereof.

8 Proposed Agricultural Plan

8.1 Soil Preparation and Amendments

Following Madrone's review of the Remediation Plan, we have determined that all proposed works and recommendations are appropriate based on the available background information and field survey results detailed in these reports. We would however like to make the following soil preparation and amendment recommendations to supplement the professional opinions expressed by McTavish and Timmenga:

- It is our understanding that peat moss has been removed and recovered from the Property. Peat moss can be used as a soil conditioner and/or amendment on farms, thus we encourage the use of such on the Property to facilitate crop growth. Similarly, any clean wood waste recovered from the Property can be chipped into mulch, composted as per AEMCoP and/or the *Organic Matter Recycling Regulation*¹⁴ (OMRR), and used as a soil conditioner and/or amendment.

¹² Class 1 is defined as land that has no or only very slight limitations that restrict its use for the production of common agricultural crops. Land in Class 1 is level or nearly level. The soils are deep, well to imperfectly drained under natural conditions, or have good artificial water table control, and hold moisture well. They can be managed and cropped without difficulty. Productivity is easily maintained for a wide range of field crops. (source: https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/agriculture_capability_classification_in_bc_2013.pdf)

¹³ The Remediation Plan prepared by McTavish and Timmenga states that following importation of soil under their recommendations, the agricultural capability of the Property will be improved "to class 2 or 3 which will support a wide range of agricultural crops". It is Madrone's professional opinion that there is potential for the Property to be improved to Class 1 if the receiving soil is suitable.

¹⁴ Province of British Columbia (2019). Environmental Management Act and Public health Act Organic Matter Recycling Regulation. http://www.bclaws.ca/civix/document/id/complete/statreg/18_2002. Accessed April 30, 2020.

- We encourage that any vegetation removed by mowing or uprooting be composted on-site as opposed to being hauled off-site for disposal. Compost generated on the Property can be used as an additional soil conditioner and/or amendment. Composting is a permitted use on land in the ALR, however are subject to conditions outlined in the *Part 6 Division 2 – Agricultural Composting in the Environmental Management Act Agricultural Environmental Management Code of Practice*¹⁵.
- When increasing the cap depth over the wood residue by 25 cm with silty clay loam or silty clay, Madrone recommends grading the surface to facilitate drainage to perimeter ditching.
- Due to the local perched water table, seasonal inundation from flooding and requirement to maintain anaerobic conditions within the historically deposited wood residue through increased thickness of low-permeability silty clay loam/silty clay cap, Madrone recommends installation of widely spaced (~10m) subsurface drainage tile.
- Once the 75 cm of topsoil has been applied to the 25 cm cap, we recommend grading the soils to a 1V:2H slope (1 m vertical, 2 m horizontal) on the north, west and south sides of the soil import area to mitigate slumping along the perimeters.
- Madrone recommends progressive use of fall rye (cereal rye) as a cover crop option for areas completed in the fall or early winter. Fall rye is effective at loosening compact soil, suppressing weeds and adding nitrogen to soil. If cover crop is to be established in the spring, we recommend using buckwheat, clover, annual ryegrass or oats as options.
- Following one to two years of cover cropping, we recommend that the topsoil be tested for nutrient concentrations in the spring, specifically to quantify nitrogen (N), phosphorus (P), potassium (K), boron (B) and magnesium (Mg) as recommended by the *BC Berry Production Guide*¹⁶. It is recommended that 10 to 20 individual samples to a depth of 15 cm be taken from a uniform sample width through the entire 0 to 15 cm soil profile. The *BC Berry Production Guide* contains general recommendations on how to determine how much fertilizer to apply based on nutrient range ratings.
- We further we recommend testing the topsoil pH post placement and adjusting (increasing¹⁷ or reducing¹⁸) the pH range using soil amendments if necessary. Blueberries do best in acid soil with a pH range of 4.5 to 5.2. A pH outside this range can result in poor growth and low yields.

¹⁵ Province of British Columbia (2019). Environmental Management Act Agricultural Environmental Management Code of Practice. http://www.bclaws.ca/civix/document/id/complete/statreg/8_2019. Accessed April 30, 2020.

¹⁶ Province of British Columbia (2012). Berry Production Guide – Beneficial Management Practices for Commercial Growers in British Columbia. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agriservicebc/production-guides/berries/nutrient_management.pdf. Accessed April 30, 2020.

¹⁷ Anderson, N.P. et al. (2013). Applying Lime to Raise Soil pH for Crop Production (Western Oregon). <http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38531/em9057.pdf>. Accessed April 30, 2020.

¹⁸ Horneck, D. et al. (2004). Acidifying Soil for Crop Production West of the Cascade Mountains (Western Oregon and Washington).

8.2 Suitable Crop and Proposed Planting Plan

Madrone acknowledges that blueberries are a suitable choice following remediation of the Property based on favourable soil conditions (assuming all recommendations are implemented), regional climate and distance to market. Please note that the proposed texture and depth of imported soil would facilitate the growth of crops that typically require deep rooting such as rhubarb, sweet potatoes, tomatoes, pumpkins and asparagus, all of which would require 0.6 to 0.9 m (24 to 36 inches) of soil for optimal growth. Blueberry production is detailed in this Farm Plan because this crop is the preferred choice of the proposed farm operator (8.7 Proposed Agricultural Operator).

Table 2, informed by the Blueberry Production Guide¹⁹ (an online resource) developed by the Province of British Columbia, outlines a planting plan for the proposed blueberry farm. It is anticipated that new plantings will occur in the spring (March) following cover cropping in the previous year. Additional information such as disease control, insect control, weed control and food safety can be found in the aforementioned guide. The guide also contains information pertaining to blueberry varieties and pollination strategies.

TABLE 2. BLUEBERRY PLANT CARE SCHEDULE

Timing	Activity	Plant Care Recommendations
March	Budding	<ul style="list-style-type: none"> New plantings Begin land preparation for fall or next spring plantings
Late March to Late April	Leaf and flower bud break	<ul style="list-style-type: none"> Make first fertilizer application (mid-April) New plantings. Set out new plants as conditions permit (up to mid-May)
Late April/May	Blossoming	<ul style="list-style-type: none"> Place bee hives in field when 10% of blossoms are open. Protect hives from bears where necessary Remove hives from fields when blossoming is over
June	Fruit development	<ul style="list-style-type: none"> Make second fertilizer applications up to mid-June Irrigate as necessary
July	Fruit development and ripening	<ul style="list-style-type: none"> Monitor soil moisture and irrigate as necessary
July to September	Harvesting	<ul style="list-style-type: none"> Harvest and market fruit. Collect plant tissue samples (mid-July to mid-August) for nutrient analysis Irrigate as needed
September	Post-harvest growth	<ul style="list-style-type: none"> Irrigate as necessary
October	Post-harvest growth	<ul style="list-style-type: none"> Continue to prune out and remove diseased wood.

<https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em8857.pdf>. Accessed April 30, 2020.

¹⁹ Province of British Columbia (n.d.). Blueberries.

<https://www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides/berries/blueberries>. Accessed April 30, 2020.

Timing	Activity	Plant Care Recommendations
		<ul style="list-style-type: none"> New plantings. Set out new plants. Best time to plant container stock in coastal areas.
November/December	Plants dormant	<ul style="list-style-type: none"> Apply sawdust mulch, if necessary Order bees for the coming season
January/February	Plants dormant	<ul style="list-style-type: none"> Prune beginning after leaf drop. Be sure to remove diseased and dead wood.

8.3 Field Layout and Plant Spacing

The following recommendations are outlined in the BC Blueberry Production Guide²⁰:

- Fields should be designed for mechanical harvesting to allow flexibility in future harvesting decisions. Mechanical harvesting requires a minimum of 3 m between the rows. Provide a 4.5 to 5.0 m wide row break every 125 m for unloading harvesters and other machinery. Most harvesters require 7.6 to 9.0 m at the ends of rows (headlands) to turn around.
- The risers or posts for overhead irrigation should be no higher than 2.1 m and placed in the center of the row.
- Plant on raised beds to reduce fruit drop when harvesting mechanically. Beds place the catcher plates nearer to the narrow base of the plant, keeping them in close contact resulting in less fruit drop. Build the beds 20 cm high and 120 cm wide at the base.
- The most commonly used in-row spacing between plants is 90 cm. The number of plants required for this spacing scheme is ~4115 plants per ha or ~1646 plants per acre (depending on variety).

Based on these guidelines, we estimate that the Property can accommodate ~50 vertical rows of blueberry plants based on the approximate 250 m length of the proposed soil important area. This includes a row break every 125 m, and an 8 m distance along the perimeter of the growing area to allow room for mechanical harvesters to turnaround. Over the ~2.5 ha of proposed soil importation, ~10,000 to 12,000 blueberry plants are required.

8.4 Drainage Requirements

The Drainage and Leachate Plan developed by McTavish and Timmenga as an addendum to the initial Remediation Plan makes a number of recommendations, which we incorporate to this Farm plan with commentary as follows:

²⁰ Province of British Columbia (n.d.). Blueberries.

<https://www2.gov.bc.ca/gov/content/industry/agriservice-bc/production-guides/berries/blueberries>. Accessed April 30, 2020.

- i. That a 'sealed buffer' (2 m minimum) be placed between the wood residue and ditches on the north and south of the Property to "ensure that leachate is not generated from this site", whereby this site refers to the Property.
 - a. Madrone interprets this recommendation to require the excavation to low permeability native material adjacent to the ditch line, removal of wood residue, and replacement with the fine-texture capping material;
 - b. This approach is not conducive with best practices for setback from sensitive habitats, as outlined in the Federal Fisheries Act S.35 which '*prohibits harmful alteration, disruption or destruction of fish habitat unless authorized (e.g. removing stream side vegetation)*';
 - c. These modifications would require a Section 11 – working in or about water – of the BC Water Sustainability Act;
 - d. Madrone strongly recommends that this recommendation from the Drainage and Leachate Plan be substituted for the modified version contained in section 8.5 of this report (Below).
- ii. Southern ditch: Regrade to eliminate topographic fluctuations and make the bottom (of the ditch) an even gradient to the west; some ditch widening is also recommended;
 - a. Madrone recommends a gradient of 1 – 2%, with a minimum ditch width of 3m.
 - b. These modifications would require a Section 11 – applications for changes in and about a stream – of the BC Water Sustainability Act;
 - c. All works should be conducted during low flow season with full isolation of working area from natural streams;
- iii. Northern ditch: Regrade to have all flow split east and west;
 - a. Madrone recommends an even split of flow between east and west, established through re-grading of the ditch bottom to a central crest with a 1 – 2% gradient descending therefrom;
 - b. These modifications would require a Section 11 – applications for changes in and about a stream – of the BC Water Sustainability Act;
 - c. All works should be conducted during low flow season with full isolation of working area from natural streams;
- iv. Western ditch: Install a new ditch to connect the north and south ditches.
 - a. Madrone recommends a 1 – 2% gradient;
 - b. These modifications would require a Section 11 – applications for changes in and about a stream – of the BC Water Sustainability Act;
 - c. All works should be conducted during low flow season with full isolation of working area from natural streams;

Madrone otherwise agrees with the recommendations contained in the Drainage and Leachate Plan developed by McTavish and Timmenga.

8.5 Update of Drainage and Leachate Plan Recommendation

A follow-up Ditch Analysis Report by McTavish and Timmenga, saw ditch water sampled and analyzed. Laboratory results indicated that "the quality of the ditch water of the lateral drainage ditches on the subject

property and in the main City of Richmond ditch is not affected by wood waste leachate and is not toxic to fish” whereby subject property refers to the Property.

Therefore, we, Madrone, do not see a requirement to further laterally encapsulate the existing wood residue provided that:

- i. The existing cap layer is enhanced with additional thickness, as recommended, and extended out to a 5 m buffer of the streamside area; and
- ii. The subsurface drain tile is installed atop the cap layer so as to rapidly convey subsurface water toward the perimeter ditches without infiltration to the wood residue.

By pursuing the above course of action, there will be limited water flux through the wood residue from precipitation. Further, influx of water from the perimeter ditches will not change from the preceding 20 – 30 years wherefrom it has been demonstrated there is little/no influence from such, as evidenced through analytic testing.

We do not have any additional contributions to the drainage plan.

8.6 Irrigation Requirements

The Remediation Plan developed by McTavish and Timmenga did not include detailed information regarding irrigation requirements and planning for the Property, thus we at Madrone have provided the required details and resources for irrigation in this section of the Farm Plan. The monthly and annual irrigation demand for the intended blueberry farm on the Property was estimated using the *BC Agriculture Water Calculator*²¹ (Table 3). The soil type selected was silty clay loam which conforms to the recommended imported soil texture in the Reclamation Plan. The irrigation season was selected to be from the start of May to the end of September (153 days). Climactic data and growing season were automatically generated by the calculator based on the location of the Property. Note that the *BC Agriculture Water Calculator* does not take into account climate change (rising air surface temperatures resulting in changes to evapotranspiration), thus irrigation estimates reflect current climactic conditions.

Guidelines for irrigation best management practices can be found in the *BC Irrigation Management Guide*²². Typically, blueberry plants on commercial farms are irrigated using a sprinkler or drip system. We recommend using a drip system because water is applied directly to the root zone, better water control and distribution uniformity compared to a sprinkler system, and the ability for fertigation and other chemical

²¹ BC Agriculture Water Calculator (n.d.). BC Agriculture Water Calculator.
<http://bcwatercalculator.ca/agriculture>. Accessed May 1, 2020.

²² Province of British Columbia (2005). BC Irrigation Management Guide.
<https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/irrigation/irrigation-management-guide>. Accessed May 1, 2020.

application. For drip irrigation systems, it is recommended that one irrigation line is installed per row with 1.9 L per hour (0.5 gallons per hour) emitters every 30.5 cm (12 inches)²³.

TABLE 3. IRRIGATION REQUIREMENT ESTIMATES

Month	Irrigation demand (sprinkler system)	Irrigation demand (drip system)
May	620 m ³	490 m ³
June	1990 m ³	1560 m ³
July	2730 m ³	2130 m ³
August	2080 m ³	1630 m ³
September	740 m ³	580 m ³
Total	8160 m ³	6390 m ³

8.7 Proposed Agricultural Operator

It is Madrone's understanding that the proposed agricultural operator for the blueberry farm is the owner of the Property, Mr. Bohan Jiang. It is assumed that Mr. Jiang will be responsible for the management decisions in operating the proposed agricultural operation (blueberry farm) on the Property. Management decisions pertinent to blueberry farming (and farming in general) involve planting, harvesting, marketing and sales, and making capital purchases and other financial decisions²⁴.

9 Agricultural Improvement Cost and Revenue Estimate

A cost estimated developed by Madrone for the proposed blueberry farm's establishment (Year 1) is presented in Table 4. We estimate the total cost for establishment to be \$2,050 to \$171,350 (median total cost is \$86,700). Please note that estimating costs of farming is largely speculative and depends on the size of farm, the intended use of the farm products (i.e., for personal consumption, for sale via farmer's markets, road stands or u-pick, or a mix several of these factors), experience with farming, and whether the agricultural operator owns basic farm equipment and/or machinery such as a mechanical berry harvester which can cost between \$80,000 to \$120,000 used. Access to farm labour is also critical and may dictate which crops to grow if labour cannot be sourced at specific harvest windows. There are many other costs to consider, including material such as packing crates, a container for temporary cool storage, harvest tools and fencing supplies. We have not included these in the establishment cost table as such detail may result in excessively complicated and extensive cost tables.

²³ United States Department of Agriculture (2011). Irrigation Guidelines for Better Blueberry Production.

http://extension.missouri.edu/blueberry/documents/Shared_Documents/MOBBSchool/MOBBSchoolConf11/Blueberry%20Irrigation%20MO%2010_7_11%20Bryla.pdf. Accessed May 1, 2020.

²⁴ Government of Canada (2019). Farm operation – definition.

<https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=Unit&Id=103167>. Accessed May 1, 2020.

As estimated in 8.3 *Field Layout and Plant Spacing*, over the ~2.5 ha of proposed soil importation, ~10,000 to 12,000 blueberry plants are required. If each plant following maturation can produce 5 to 20 lbs of blueberries²⁵, there is a potential yield of 60,000 to 240,000 lbs per annum barring any major disease, weather or pest-related growing restrictions. Blueberry plants take a minimum of 2 to 3 years to mature for fruit production, and at least 7 years before full maturation (optimal growing). Assuming that the price of blueberries is \$2.50 CAD/lb²⁶, there is the potential for gross venue²⁷ of ~\$150,000 CAD 2 to 3 years after farm establishment (Years 3 and 4). According Statistics Canada²⁸, the average operating profit margin for fruit and tree nut farming in 2017 was 15.8 cents, resulting in a net profit for the proposed blueberry farm of ~\$24,000 CAD 2 to 3 years after initial establishment. By Year 8, there is the potential for up to ~\$95,000 CAD net profit with optimal fruit yield (20 lbs/plant) and/or market conditions.

TABLE 4. ESTIMATED COSTS FOR BLUEBERRY FARM ESTABLISHMENT AT NO.6 ROAD, RICHMOND, BC

Activity	Description of Work	Units	Unit Costs	Total (\$CAD, 2020 estimated)
Soil importation	Importation of clean, silty clay loam ²⁹ and topsoil for remediation	Remediation would require ~30,000 m ³ (39,238.5 yd ³) of imported soil	\$60 to \$80 tipping fee per truckload; typical dump truck has a capacity of 10 yd ³	\$240,000 to \$320,000
	Ongoing monitoring and reporting by Professional Agrologist as required by the ALC and the City of Richmond (generally per 3,000 m ³)	At minimum 10 visits required for 30,000 m ³ of imported soil, to meet ALC monitoring requirements	\$500 per monitoring visit and report	\$5000

²⁵ Blue Grass Blueberries (2020). Small Farm Business Opportunity – How to Profit From Blueberry Sales? <https://bluegrassblueberries.com/small-farm-business-opportunity-how-to-profit-from-blueberry-sales/>. Accessed May 4, 2020.

²⁶ Note that price of berries can vary based on variety and quality. Indicate price assumes general market cost for premium berries for high-demand varieties.

²⁷ Gross venue is intermediate earnings figure before all expenses are included for farm operations including labour, soil amendments, machinery, irrigation, fuel, taxes etc.

²⁸ Statistics Canada (2019). Chart 2 Average operating profit margin, by farm type, Canada, 2017. <https://www150.statcan.gc.ca/n1/daily-quotidien/190329/cg-c002-eng.htm>. Accessed May 4, 2020.

²⁹ Soil texture is readily found in the Richmond area therefore, trucking distances are anticipated to be small.

Activity	Description of Work	Units	Unit Costs	Total (\$CAD, 2020 estimated)
	Earthworks costs including project management, load inspector (on Site), machine / labour costs, fuel and traffic management	Costs take into consideration complete development of the soil deposit area (~2.5 ha)	Estimated at \$23,000 to \$27,000/acre (\$50,000 to \$60,000/ha) based on other projects of similar nature and location	\$100,000 to \$120,000
Post-importation land preparation and pre-planting preparation	Tractor purchase (one-time)	1 tractor for field preparation and ongoing farm maintenance	\$35,000 to \$50,000 per machine ^A ; used tractor, diesel-powered; includes costs of periodic maintenance	\$40,000 to \$55,000
	Plowing or tilling field, applying manure and/or fertilizer, mulch application, fence construction, bed construction	Estimated 2 months of labour from 1 farm worker	\$14.60/hr ^B x 40 hr/week x 2 months	\$4600
	Soil testing - nutrients and pH	Laboratory fees at AGAT Laboratories: Nutrients 5 package - \$160/soil sample (includes pH and environmental handling and compliance fee) ^C	\$160/soil sample x 4 soil samples \$500 minimum consultant time to collect samples, report results	\$1200
	Tractor use during pre-planting preparation	Estimated 50 hours of machine time Fuel consumption - 4L/hr Diesel cost - Richmond price, \$1.10/L ^C	4 L/hr x 50 hr = 200 L 200 L x \$1.10/L	\$220
	Erosion and sediment control implementation such as silt fencing installation, gravel road rehabilitation and possible wheel wash installation	Material and installation costs	\$5000 to \$10,000	\$5000 to \$10,000

Activity	Description of Work	Units	Unit Costs	Total (\$CAD, 2020 estimated)
Irrigation system (drip)	Purchase and installation by hired farm labourers, accounted for above; one-time cost (until replacement needed due to age, wear and tear)	\$1/m planted Length of vertical row (80) x # of rows (50 to 55) = 4000 to 4400 m of drip irrigation	\$1/m x 4000 to 4400 m	\$4000 to \$4400
Plant purchase	Purchase juvenile blueberry plants	10,000 to 12,000 plants required	\$4/1.5-year-old blueberry starter plant	\$40,000 to \$48,000
Soil amendment**	75 lbs per acre of 18-9-9 of granular fertilizer is applied twice Year 1 ^D	Soil import area is ~7.0 acres ~1100 lbs (550 lbs x 2 applications) of fertilizer is required	40 lb bag is ~\$100 CAD ^E	\$2750
Pest management consultant	Retention of a pest management consultant prior to seeding of either crop to test soil and prescribe biological controls (if organic farming, assuming no applications of chemical controls, or pesticides)	10 to 20 hours consultant time, plus travel for initial consultation, soil testing and reporting recommendations. Cost of biological controls unknown.	\$150 per hour consultant time (Professional Agrologist)	\$3000
Maintenance of crop during growing and harvesting	Mechanical harvester (one-time)	1 mechanical harvester for blueberry harvesting	\$80,000 to \$125,000 per machine F; used harvester, diesel-powered; includes costs of periodic maintenance	\$85,000 to \$125,000
	Mechanical harvester operator and general farm maintenance (e.g., fertilizer application, irrigation, weeding, pruning, fruit quality control, fruit preparation for sales, new plantings)	Estimated 4 months of labour from 2 farm workers	\$14.60/hr ^B x 40 hr/week x 4 months x 2 workers	\$18,700

Activity	Description of Work	Units	Unit Costs	Total (\$CAD, 2020 estimated)
Application fee	If the proposal is forwarded to the ALC by the City of Richmond	One-time application fee to the ALC	\$1500	\$1500
Other service and reporting costs from Qualified Professional (QP)	Final topographic survey	Includes travel, field time, equipment fees, report writing, map and/or survey development (if applicable), senior review and report formatting	\$2000 to \$4000	\$2000 to \$4000
	Final geotechnical report (if required)		\$2000 to \$4000	\$2000 to \$4000
	Final closure report from Professional Agrologist		\$3000 to \$4000	\$3000 to \$4000
Estimated total cost for farm establishment <u>without</u> revenue from tipping fees				\$317,950 to \$411,350
Estimated total cost for farm establishment <u>with</u> revenue from tipping fees				\$2050 to \$171,350 (median total cost is \$86,700)

Green text represents revenue from tipping fees

Red text represents capital costs for farm establishment (Year 1)

* based on information from other soil importation projects in the area

** does not include the cost to increase or decrease soil pH with lime, sphagnum peat, elemental sulfur, aluminum sulfate, iron sulfate, acidifying nitrogen, and organic mulches; these includes additional costs following soil testing

Cost estimation sources

^A Used tractor sales: <https://www.countrytractor.ca/default.asp?page=xPreOwnedInventory> and <https://www.islandtractors.com/default.asp?page=xPreOwnedInventory>

^B BC minimum wage by June 1, 2020: <https://www2.gov.bc.ca/gov/content/employment-business/employment-standards-advice/employment-standards/wages/minimum-wage>

^C Average diesel cost: <https://www.gasbuddy.com/GasPrices/British%20Columbia/Richmond>

^D Standard blueberry fertilizer blend: http://files.tlhort.com/product_info/3855-standard_blueberry_blend_18-9-9.pdf

^E 40 lb bag 18-9-18: <https://www.domyown.com/contec-dg-18918-fertilizer-40-lb-p-21463.html>

^F Used blueberry harvester sale: <https://www.marketbook.ca/listings/farm-equipment/for-sale/list/category/300103/specialty-crop-equipment-harvesters-grape-berry>

10 Closure

By following the recommendations contained in previous reports for the Property, and incorporating any modifications thereto as contained within this Farm Plan, we are confident in establishing a robust agriculturally capable land base (targeted as Class 1 by selectively receiving suitable soil) on which the Farm Operator can pursue blueberry production. We also anticipate that, should recommendations be followed, the existing wood residue on the Property will maintain a low level of decomposition, therefore generating limited amounts of leachate with no considerable impact to surrounding aquatic resources or environmental receptors.

Sincerely,

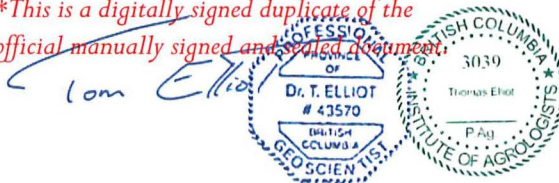
MADRONE ENVIRONMENTAL SERVICES LTD.

**This is a digitally signed duplicate of the official manually signed and sealed document*



Daniel Lamhonwah, PhD candidate, MES, P. Ag
Environmental Scientist, Professional Agrologist

**This is a digitally signed duplicate of the official manually signed and sealed document*



Thomas R Elliot, PhD, P. Geo, P. Ag
Hydrogeologist, Professional Agrologist

August 10th, 2020

To: Mike Morin
Soil Bylaw Officer
City of Richmond
6911 No.3 Road
Richmond, B.C
V6Y 2C1

Dear Mike,

As per my agricultural, farming, and nursery experience.

Before founding Garden in Gardens, I worked at Garden City Greenhouses on 9460 Cambie Road from 1995 to 2004 as a manager where I was in charge of all farming and landscaping operations. During this time, I have managed numerous blueberries and vegetable farms from inception to completion

In 2004, I founded my business Garden in Gardens, where our retail operations have supplied trees and plants to the lower mainland for over fifteen years. On our agricultural side, we have successfully completed and managed over 6 farms, with a majority of them being blueberry farms. We have managed these farms from beginning to end, from site/land prep, ploughing, crop sourcing, planting, to fertiliser application. Our services also include the continual maintenance and operations of these farms in which we are presently managing several blueberry farms.

When Mr Bo Han Jiang purchased the land in 2005, we were contacted to oversee Mr Jiang's blueberry operations. In 2006, we prepared the site, set up irrigation, placed sawdust, planted around 8000 blueberry bushes and fertilized all plants. It was noticed that the following winter, roughly 1000 blueberries plant died due to the high water table. For the following 3 years, we replanted roughly 1000 blueberries plants annually. After that, we continued to maintain the land but did not replant the blueberries as it was not economically feasible to do so.

In 2010, we consulted with numerous other blueberry farmers and we were all told that the land was too low and that the water table was too high. This is later reaffirmed by the Madrone Environmental Services LTD report dated June 30th, 2020.

Soil conditioners were not used; however, it is important to note that the application of soil amendment on cedar wood waste (imported by the previous owner after the removal of native surficial organic soil), in addition to the high water table, would unlikely yield a successful outcome. It's evident that importing soil is the only practical solution to address both these problems.

In 2012, Mr Barry Mah was contacted to import soils onto the parcel.

In 2016, when only roughly 500 plants were remaining from the initial 8000 bushes, the remaining bushes were moved to the west of the house where the elevation is the same as the house due to peat removal from the home construction. These plants have been monitored and no further blueberry bushes have died.



Quan Ming Wu
7600 No.5 Road
Richmond, B.C
V6Y 2V2



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

Attachment 5

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

June 30, 2020

Barry Mah
Westwood Topsoil Ltd.
6604 62B Street
Delta, BC V4K 5A8
westwoodbarry@mac.com

Dear Mr. Mah,

RE: Technical Addendum to Remediation Plan for 8511 No. 6 Road, Richmond, BC (CD 28808)

Madrone Environmental Services Ltd. ('Madrone'), acting as the qualified professionals (QPs) retained by you, Mr. Barry Mah ('the Client'), was asked by Mr. Mike Morin¹, Community Bylaws, City of Richmond ('the City'), to respond to commentary² from City staff regarding updates to technical requirements in a Remediation Plan³ ('the Plan' or 'Plan') developed for 8511 No. 6 Road, Richmond, BC ('the Property') to be in line with recent regulatory changes that have been enacted (by the BC Ministry of Environment and the Agricultural Land Commission) since the original Plan was completed in 2012.

This addendum has been prepared by Daniel Lamhonwah, MES, P.Ag, and reviewed by Jessica Stewart, P.Ag., P.Geo, of Madrone for the specific purpose of updating the Plan's technical requirements. The section numbers referred to below are in the original Plan.

Under section *8.4 Drainage Management*, we recommend the following updates:

- In-stream works should be completed in compliance with the BC Water Sustainability Act⁴ (WSA), under guidance from a Qualified Environmental Professional (QEP), with adherence to applicable

¹ Email communication addressed to Barry Mah from Mike Morin, Soil Bylaw Officer, Community Bylaws, City of Richmond. Subject: CD 28808 - Outstanding application requirements (06 Dec 2019). Sent on Friday, December 6, 2019, 15:04.

² Food Security and Agricultural Advisory Committee meeting minutes. Held Thursday, September 12, 2019 (7:00 PM). M.2.004. Richmond City Hall.

³ McTavish and Timmenga (2012). Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated September 30, 2012.

⁴ Province of British Columbia (2020). Water Sustainability Act Water Sustainability Regulation B.C. Reg. 36/2016. Last amended December 17, 2019 by B.C. Reg. 278/2019.
http://www.bclaws.ca/civix/document/id/crbc/crbc/36_2016. Accessed April 20, 2020.

“wildlife timing windows”. Timing guidelines for works in and about watercourses to limit risk of negative impacts to aquatic organisms specific to the Lower Mainland Region is provided by the BC Ministry of Environment⁵.

- Any disturbed banks of the ditches should be stabilized/re-vegetated to limit ongoing erosion following works on the Property.

Under section 8.5 *Management of Fill Quality*, we recommend the following updates:

- Imported soil to the Property should meet applicable agricultural land standards under the BC Contaminated Site Regulations (BC CSR) *Schedule 3.1, Part 1 Numerical Soil Standards, Column 4 Agricultural (AL)*⁶.
- Imported soil to the Property should not contain Prohibitive Fills as defined in Section 36 of the Agricultural Land Commission Act Agricultural Land Reserve Use Regulation⁷.
- All soil import source sites should be approved by a QEP prior to soil removal from the source site and deposition on the Property. The QEP should be knowledgeable in the fields of contaminated sites and invasive species management. Each shipment origin, truckload, and end location must be tracked and available upon request from the City. This is an updated City of Richmond requirement.

Madrone has the capacity and experience to fulfil the role(s) of QEP described in the above recommendations, particularly with contaminated sites and invasive species management, to ensure that the quality of imported soil (i.e. also referred to as fill) meets provincial standards. Please contact the undersigned authors should there be any questions regarding the contents of this addendum and/or for discussions regarding Madrone's QEP services to facilitate the Plan.

⁵ BC Ministry of Environment (2006). Guidelines for Reduced Risk Instream Work Windows Ministry of Environment, Lower Mainland Region (March, 2006).
https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/working-around-water/work_windows_low_main.pdf. Accessed April 20, 2020.

⁶ Province of British Columbia (2020). Environmental Management Act Contaminated Sites Regulation Schedule 3.1 [includes amendments up to B.C. Reg. 13/2019, January 24, 2019].
http://www.bclaws.ca/civix/document/id/complete/statreg/375_96_07. Accessed April 20, 2020.

⁷ Agricultural Land Commission Act (2020). Agricultural Land Commission Act Agricultural Land Reserve Use Regulation.
http://www.bclaws.ca/civix/document/id/complete/statreg/30_2019#section36. Accessed April 30, 2020.

Sincerely,

MADRONE ENVIRONMENTAL SERVICES LTD.

**This is a digitally signed duplicate of the
official manually signed and sealed document*



Daniel Lamhonwah, PhD candidate, MES, P.Ag
Environmental Scientist, Professional Agrologist

**This is a digitally signed duplicate of the
official manually signed and sealed document.*

A handwritten signature in blue ink.

Jessica Stewart, BSc, P.Ag, P.Geo
Professional Geoscientist, Professional Agrologist



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

Attachment 6

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

June 30, 2020

Barry Mah
Westwood Topsoil Ltd.
6604 62B Street
Delta, BC V4K 5A8
westwoodbarry@mac.com

Dear Mr. Mah,

RE: Appropriate Imported Soil and Soil Source Sites for 8511 No. 6 Road, Richmond, BC (CD 28808)

Madrone Environmental Services Ltd. ('Madrone'), acting as the qualified professionals (QPs) retained by you, Mr. Barry Mah ('the Client'), was asked by Mr. Mike Morin¹, Community Bylaws, City of Richmond ('the City'), to respond to commentary² from City staff regarding the use of "alluvial soil" for proposed soil importation projects. This memo, prepared by Daniel Lamhonwah, MES, P.Ag. and reviewed by Jessica Stewart, P.Ag., P.Geo, of Madrone discusses why restricting soil importation to solely alluvial soils puts strong limitations on sourcing soil for the project and furthermore, may result in the importation of suboptimal textures. The proposal is intended to remediate the property and improve the existing agricultural capability.

Alluvium is defined³ as loose, unconsolidated soil or sediment that has been eroded, reshaped by water in some form, and redeposited in a non-marine setting. Soils originating from alluvial parent material (alluvial soils) do not necessarily have physical properties that would make them favourable for agriculture because of the variable texture (from sandy gravel to silty clay) which is dependent on source and exact forming process. Fine textured alluvial soils, such as those that are predominantly composed of silts and clays, can limit the movement of water through the soil profile and possibly created elevated watertables, therefore limiting the growth of certain crops. Thus, if the soil importer acts upon the directive to only import alluvial to a receiving site under the assumption that alluvial soils the best method to preserve and/or improve agricultural capability

¹ Email communication addressed to Barry Mah from Mike Morin, Soil Bylaw Officer, Community Bylaws, City of Richmond. Subject: CD 28808 - Outstanding application requirements (06 Dec 2019). Sent on Friday, December 6, 2019, 15:04.

² Food Security and Agricultural Advisory Committee meeting minutes. Held Thursday, September 12, 2019 (7:00 PM). M.2.004. Richmond City Hall.

³ GeoTech.org (n.d.). Dictionary of Geologic Terms
<https://web.archive.org/web/2010501155938/http://www.geotech.org/survey/geotech/dictiona.html>. Accessed April 30, 2020.

without taking into account the texture of the alluvial soil, this action may result in undesired subsurface drainage conditions.

The physical properties of native soils on the Property must also be taken into consideration when determining the type and source of soils for importation to reclaim the land as to not impact the conveyance of surface water. Based on existing mapping⁴, the Property is in an area containing Triggs soils, characterized by deep (at least 2 m) un-decomposed organic deposits composed mainly of sphagnum and other mosses. The on-site soil survey information for the Property found that all the organic soils (peat) on the site had been removed⁵. Using fine textured alluvial soils, such as silts and clays, to reclaim the removed Triggs soils is likely to cause undesirable surface drainage conditions on the Property, particularly infiltration-excess overland flow during precipitation events, which may impact neighboring parcels downslope.

Furthermore, the importation of alluvial soils commonly found in the Richmond area, including Blundell⁶ and Delta⁷ soils which are characterized by subsoil salinity (conductivity $> 4 \text{ dS m}^{-1}$), may introduce an undesirable salinity limitation (Class N limitation) that may not have existed on a receiving site. Salinity limitations are difficult to improve.

To conclude, it is our qualified professional opinion that soil importation projects, with the intent of preserving agricultural capability at receiving sites, should not be limited to the use of alluvial soils. We recommend that the City imposes a condition that considers the physical and chemical properties of the soil proposed to be imported instead of restricting the imported soil to a deposition method and/or soil parent material type. This would likely reduce completion time of the proposed soil importation projects because it would increase the potential number of soil source sites available to the applicant. The ALC has recently advised through information bulletin 7 (in March of 2019) that “the Commission will not consider fill placement activities that would extend beyond two years.”⁸

Please contact the undersigned authors should there be any questions regarding the contents of this memo.

⁴ Province of British Columbia (2020). BC Soil Information Finder Tool.

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/land/soil/soil-information-finder>. Accessed April 17, 2020.

⁵ McTavish and Timmenga (2012). Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated September 30, 2012.

⁶ Canadian Soil Information Service (2013). Description of soil BCBNLpsad~A (BLUNDELL). <http://sis.agr.gc.ca/cansis/soils/bc/BNL/psad~/A/description.html>. Accessed April 17, 2020.

⁷ Canadian Soil Information Service (2013). Description of soil BCDLTansadN (DELTA). <http://sis.agr.gc.ca/cansis/soils/bc/DLT/ansad/N/description.html>. Accessed April 17, 2020.

⁸ Agricultural Land Commission (2019). Information Bulletin 07 Soil or Fill Uses in the ALR. https://www.alc.gov.bc.ca/assets/alc/assets/legislation-and-regulation/information-bulletins/information_bulletin_07_-_soil_or_fill_uses_in_the_alr.pdf. Accessed April 30, 2020.

Sincerely,

MADRONE ENVIRONMENTAL SERVICES LTD.

**This is a digitally signed duplicate of the
official manually signed and sealed document*



Daniel Lamhonwah, PhD candidate, MES, P.Ag
Environmental Scientist, Professional Agrologist

**This is a digitally signed duplicate of the
official manually signed and sealed document.*

A handwritten signature in blue ink.

Jessica Stewart, P.Ag, P.Geo
Professional Geoscientist, Professional Agrologist

*Raised area identified in blue



FIGURE 1. SATELLITE IMAGERY OF 8511 NO.6 ROAD OUTLINED IN YELLOW. THE RED SHADED AREA REPRESENTS TO PROPOSED AREA FOR SOIL IMPORTATION. IMAGE PROVIDED BY THE CITY OF RICHMOND AND DATED AS TAKEN IN 2018.

Attachment 8

August 12th, 2020

To Whom It May Concern,

Mr Quan Ming Wu has been working on my property since I purchased my property in 2005. Upon the post-completion of the project should it be approved; I intend to sign a minimum 10-year lease with Mr Wu to allow him to farm and grow blueberries and vegetables on the parcel.

Bo Han Jiang
8511 No.6 Road
Richmond, B.C
V6W 1E3

A handwritten signature in black ink, appearing to read 'Bo Han Jiang', written in a cursive style.

Attachment 9

August 10th, 2020

To:
Mike Morin
Soil Bylaw Officer
City of Richmond
6911 No.3 Road
Richmond, B.C
V6Y 2C1

Should the soil deposit proposal be formally approved at the upcoming FSAAC meeting, I (Quan Ming Wu) will voluntarily submit a \$30,000 performance bond as a guarantee to implement and complete the Farm Plan, to be returned upon completion of the farm plan.

A handwritten signature in black ink, appearing to read 'QM Wu', is positioned above the printed name and address of the sender.

Quan Ming Wu
7600 No.5 Road
Richmond, B.C
V6Y 2V2



June 29, 2020

2020-1091

Madrone Environmental
#202 - 2790 Gladwin Rd
Abbotsford, BC V2T 4S7

Attention: Daniel Lamhonwah

Reference: Review of Site Drainage Report
8511 #6 Road, Richmond, BC

Out of the Box Engineering (OOTBE) has been asked to review the site drainage recommendations stated in the *Woodwaste Leachate and Site Drainage Addendum I To Proposed Remediation of Land Located at 8511 #6 Road Richmond B.C.* report prepared by McTavish Resource & Management Consultants Ltd. (McTavish) and dated December 14, 2013. It is our understanding that the property is planned to be used for vegetable farming and prior to this being successful, remediations are necessary to the site conditions in order to establish a proper growing medium and allow for proper storm water drainage from the site.

A site visit and meeting with the property manager (Barry Mah) was done on June 17, 2020. The condition of the site appeared to be similar to that stated in the 2013 report. The site is overgrown, has visible wood pieces scattered throughout, and has areas with visible wetland plants.

In reference to the site drainage, McTavish's report recommends the site be cleared of excess vegetation and the slopes/ditches be repaired. It is to be ensured that all ditches are located on the subject site. The report states that the recommended changes will not increase peak flows. Also, the direction of flows and discharge locations will not be altered.

OOTBE finds that the site drainage recommendations in McTavish's report appear to be reasonable and should allow for adequate storm water drainage from the site, without altering peak flow conditions. If required, OOTBE can perform an additional site visit when contacted following the works to review the conformance of the site drainage.

Please note that only drainage recommendations in the report were reviewed by OOTBE. Other topics were not reviewed as they are out of our scope of expertise.

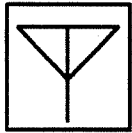
If there are any questions, please do not hesitate to contact the undersigned.

Regards,

Collin S. Johnson, P.Eng.



Out of the Box Engineering (DBA 0772308 BC LTD)
Box 274 Agassiz PO, Agassiz, BC V0M 1A0
604-819-9809 / ootbe2013@gmail.com



Attachment 11

TONY YAM ENGINEERING LTD.

GEOTECHNICAL AND MATERIAL INSPECTION

Project No.: G18154-00

October 10, 2018

c/o Barry Mah

Dear Sir:

Re: Owner – Bohaw Jiang
Remediation of Farm land
8511 No.6 Road
Richmond, B.C.

We have retained by Mr. Mah, agent of the subject property (8511 No.6 Road, Richmond) as the geotechnical engineer to evaluate the remediation works proposed by McTavish Resource and Management Consultants Ltd. (MRMCL) for the above-mentioned address. Our scope of work is limited to the geotechnical aspect of the project. For this, we obtain and reviewed reports prepared by MRMCL including the site drainage plans.

The site is located on the west side of No.6 Road and is approximately 360 m south of Blundell Road. Site frontage along No.6 Road is 94 m and site depth is 410 m. There is an existing house along the front section of the site next to No.6 Road. The remaining of the site is vacant. We understand organic soils (peat) were removed in the mid-section of the site and the excavated area was filled with wood wastes. For remediate this section of the site so it can be used for agriculture usage, MRMCL has proposed to deposit up to 0.75m of topsoil, over 0.25m of un-compacted silty fill over the existing ground surface of the impacted area.

We visit the site on September 28, 2018. We noted the impacted area (area requires remediation is 4 to 5 feet lower than the adjacent properties to the east and the west. At the time of our site visit, two pits were put down in the impacted area. Both of the test pits encountered an existing fill, several inches thick, over wood wastes, 4 to 5 feet (1.2 to 1.5 m) thick, over a silty clay deposit to the depth of excavation. Groundwater was encountered in all test pits at approximately 1 foot (0.3m) from the existing ground surface.

Based on the test pit excavation and our observation, followings are our comment.

1. As the impacted area is 4 to 5 feet (1.2 to 1.5m) lower than the adjacent areas, placing of 3.3 feet (1.0 m) of additional fills over the impacted area will not impact the drainage pattern of adjacent areas (finishing elevation of the impacted area is lower than the adjacent areas).
2. Weight of the additional fills will be approximately 250 psf (2 feet of topsoil and one foot of silty clay). Placing of fills will not impact stability of adjacent areas as the impacted area is not less than 6 m away from adjacent properties.
3. The remediated area is only suitable for agricultural use and is not suitable to support any building structure without further site improvement.

2876 EAST 6TH AVENUE, VANCOUVER, B.C. V5M 1R8
PHONE (778)552-7112 PHONE (778)868-5635
eMAIL: asyam@telus.net

Should you have any questions regarding the above or if we can be of further assistance, please call.

Yours truly,

TONY YAM ENGINEERING LTD.,

Per.

Zhao Guan, M.A.Sc., P.Eng.



TONY YAM ENGINEERING LTD.



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

June 30, 2020

Barry Mah
Westwood Topsoil Ltd.
6604 62B Street
Delta, BC V4K 5A8
westwoodbarry@mac.com

Dear Mr. Mah,

RE: Soil Drainage and High Water Table at 8511 No. 6 Road, Richmond, BC (CD 28808)

Madrone Environmental Services Ltd. ('Madrone'), acting as the qualified professionals (QPs) retained by you, Mr. Barry Mah ('the Client'), was asked by Mr. Mike Morin¹, Community Bylaws, City of Richmond ('the City'), to respond to commentary² from City staff regarding whether at 8511 No. 6 Road, Richmond, BC ('the Property') can be 'bermed and pumped' rather than being filled with imported soil to address the drainage limitations to agricultural productivity.

Existing information indicates that Property is affected by groundwater and not flood water (i.e., from watercourses). Based on provincial mapping, the native soils in the Property area is the Lulu soil series (classified as a *Terric Mesisol*) which is an organic soil characterized by very poor drainage³. According to The Canadian Soil Information Service⁴, excess water is present in Lulu soils for the greater part of the year with groundwater flow and subsurface flow being the major water sources. These soil conditions were reported by McTavish and Timmenga⁵ whereby a locally elevated water table was observed during field assessment.

¹ Email communication addressed to Barry Mah from Mike Morin, Soil Bylaw Officer, Community Bylaws, City of Richmond. Subject: CD 28808 - Outstanding application requirements (06 Dec 2019). Sent on Friday, December 6, 2019, 15:04.

² Food Security and Agricultural Advisory Committee meeting minutes. Held Thursday, September 12, 2019 (7:00 PM). M.2.004. Richmond City Hall.

³ Province of British Columbia (2020). BC Soil Information Finder Tool.
<https://www2.gov.bc.ca/gov/content/environment/air-land-water/land/soil/soil-information-finder>. Accessed April 16, 2020.

⁴ CanSIS (2013). Description of soil BCLULd~~~~A (LULU).
<http://sis.agr.gc.ca/cansis/soils/bc/LUL/d~~~~/A/description.html>. Accessed April 16, 2020.

⁵ McTavish and Timmenga (2012). Proposed Remediation of Land Located at 8511 #6 Road Richmond, B.C. Prepared by McTavish Resource and Management Consultants Ltd. and Timmenga and Associates Inc. Prepared for Bohan Jiang. Dated September 30, 2012.

This report described the border between the decomposed and non-decomposed wood waste⁶ to be the summer water table which was at about 1 m depth. The winter water table appeared to be at the surface of the soil, with some lower areas being inundated during the winter.

In previous communication with Mr. Morin, Jessica Stewart, P.Ag, P.Geo and Thomas R Elliot, PhD, P.Ag, P.Geo of Madrone prepared a technical memorandum titled *Significance of the Code of Practice for Agricultural Environmental Management (AEM Code) for low-lying agricultural land in the City of Richmond*. Because drainage issues on the Property is affected by groundwater and not flood water, we believe that the aforementioned technical memorandum addresses the questions posed by the City re: berming and pumping. For your convenience, the memorandum is attached to this memo.

Please contact the undersigned authors should there be any questions regarding the contents of this memo.

Sincerely,

MADRONE ENVIRONMENTAL SERVICES LTD.

**This is a digitally signed duplicate of the official manually signed and sealed document.*



Daniel Lamhonwah, PhD candidate, MES, P.Ag
Environmental Scientist, Professional Agrologist

**This is a digitally signed duplicate of the official manually signed and sealed document.*



Jessica Stewart, P.Ag, P.Geo
Professional Geoscientist, Professional Agrologist

⁶ According to McTavish and Timmenga (2012), approximately 20-30 years ago the previous landowners stripped the native organic soils and replaced them with cedar wood waste and wooden construction debris. This is referred to as 'wood waste' in reports for the property.



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

March 9, 2020

Mr. Michael Morin, Soil Bylaw Officer
& Planning and Development
City of Richmond

Dear Mr. Morin

Re: Technical Memorandum: Significance of the Code of Practice for Agricultural Environmental Management (AEM Code) for low-lying agricultural land in the City of Richmond

INTRODUCTION

Madrone Environmental Services Ltd. (Madrone) is a multi-disciplinary scientific consulting firm with offices in both the Fraser Valley (Abbotsford) and Duncan, B.C. Since 2009, agrologists at our firm have prepared land capability assessments, soil deposit assessments (for both non-farm use and farm-use soil deposition on ALR Land), farm plans¹, and reclamation plans (including soil testing for contaminants, invasive species screening, fill removal plans) for landowners of properties in the City of Richmond (CoR, or 'the city'). Most, if not all, of these properties have been in the Agricultural Land Reserve (ALR).

Madrone continues to work with CoR planners and bylaw officers on such projects as a consultant and agent for applications by the respective landowners. Recently, Thomas Elliot, P.Ag. of Madrone has been engaged with the city in interpreting the significance of a new provincial regulation called the Code of Practice for Agricultural Environmental Management (AEM Code).

The AEM Code came into effect on February 28, 2019 and applies to all agricultural operations in the province². We emphasize that this applies to agricultural operations – not all agricultural land in the ALR has agricultural operations conducted on site (i.e. the land is completely fallow with no nutrient inputs, or the operation on site is not defined as an applicable agricultural operation in the AEM Code – the exact definition

¹ Madrone's first agricultural-related project in the City of Richmond was a farm plan prepared for the Shia Muslim Community of B.C. (8580 No. 5 Road, Richmond).

² <https://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture> Agricultural Environmental Management. Province of B.C. Accessed January 28, 2020

is in this memo, below). This code replaces the former Agricultural Waste Control Regulation (AWCR) for the province.

We (Jessica Stewart, P.Ag. and Thomas Elliot PhD, P.Ag.) at Madrone believe that the AEM Code should be considered when reviewing soil deposit applications for properties in the ALR, specifically, properties that are low-lying with little topographic relief and are subject to **high water tables**. We emphasize that there are instances in which properties subject to excess wetness (which is a defined agricultural limitation in the Land Capability Classification for Agriculture in B.C. MOE Manual 1)³ but are not on designated floodplains. In an effort to disambiguate, the City of Richmond Flood Plain Designation and Protection Bylaw No. 8204 defines a floodplain⁴ as:

“Floodplain means a lowland area, whether or diked or floodproofed, which, by reasons of land elevation, is susceptible to flooding from an adjoining watercourse, river, ocean, lake or other body of water, and that is designated as flood plain in Part 1 of this bylaw”

Whereas lands with excess wetness are resulting from a regionally high water table, either as a result of low elevation or due to a low-permeability soil-layer below ground, resulting in water that percolates through the soil and causes limitations to planting-season (i.e. early) machine access to the lands; ability to realize two crop-rotations within the prevalent climatic conditions in City of Richmond that allow for such; and also survivability of perennial crops.

The excess wetness experienced on these properties (due to high water tables) results in agricultural limitations that we believe can be improved by placement of a mineral soil layer to elevate the growing medium (which is typically, salvaged topsoil native to the property). The significance of the AEM Code to this stance is described as follows.

AEM CODE – PURPOSE AND SECTIONS OF NOTE

The AEM Code is a new regulation that falls under the Environmental Management Act (the ‘Act’)⁵. According to an expert with the British Columbia Organic Grower (Journal for The Certified Organic Associations of B.C.)⁶, it was developed as the old code (the Agricultural Waste Control Regulation, AWCR)

³ https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/land_capability_classification_for_agriculture_in_bc_1983.pdf Land Capability Classification for Agriculture in British Columbia. MOE Manual 1. Accessed January 28, 2020

⁴ https://www.richmond.ca/_shared/assets/Bylaw_8204_0410201225280.pdf Bylaw 8204 Flood plain designation and protection bylaw. City of Richmond. Accessed January 28, 2020

⁵ http://www.bclaws.ca/civix/document/id/complete/statreg/03053_00 Environmental Management Act. BC Laws. Accessed January 28, 2020

⁶ <http://bcorganicgrower.ca/2019/09/ask-an-expert-a-new-agricultural-environmental-management-regulation/> Ask An Expert: A New Agricultural Environmental Management Regulation. Published: September 1, 2019. Accessed January 28, 2020

was believed to be too vague for farm operators to follow and was not adequately protecting the environment. This expert with the Ministry of Environment & Climate Change Strategy (MoECSS) further stated:

"The new regulation includes provisions that aim to: ensure watercourses and groundwater are protected through proper storage and use of manure, other nutrient sources, and other materials, such as wood residue; prevent water quality impacts from contaminated run-off; prohibit direct discharges into watercourses; require nutrient management planning; allow for increased monitoring in high-risk areas; provide clear compliance expectations for agricultural operators for setbacks, storage, and nutrient applications; and, require record-keeping."

The AEM Code therefore ensures that agricultural practices do not impact drinking water, watercourses, air, or public health. According to the AEM Code⁷:

"...for the purpose of minimizing the introduction of waste into the environment and preventing adverse impacts to the environment and human health, this code requires persons to use environmentally responsible and sustainable agricultural practices when carrying out agricultural operations described in subsection (3)"

Section 2 (2) This code applies to an agricultural operation described in subsection (3) that is carried out in British Columbia

(a) on

(i) an agricultural land base that is owned, rented or leased, and managed, by the person who carries out the agricultural operation, and

(ii) land that is not zoned for residential purposes, and

(b) primarily for the purpose of distributing agricultural products to other persons, whether

(i) directly or indirectly,

(ii) with or without a fee, or

(iii) on a commercial or non-commercial basis.

Section 2 (3) Subject to subsection (4), the following are agricultural operations for the purposes of this code:

(a) rearing and keeping livestock or poultry, and growing and harvesting agricultural products, for

(i) consumption or use by humans, including as food, fibre or fuel,

(ii) use as animal feed,

⁷ http://www.bclaws.ca/civix/document/id/complete/statreg/8_2019#division_d1e5540 Code of Practice For Agricultural Environmental Management. BC Laws. Accessed January 28, 2020

- (iii) *use as breeding stock or to produce seedlings or flowers,*
 - (iv) *use in landscaping or for ornamental purposes, in the case of plants, or*
 - (v) *work or recreational purposes, in the case of horses;*
- (b) *storing*
 - (i) *nutrient sources and agricultural by-products, and*
 - (ii) *the primary products of livestock, poultry, insects, plants and fungi;*
- (c) *carrying out agricultural composting processes;*
- (d) applying nutrient sources to land;**
- (e) *washing, grading or packaging agricultural products, if carried out on the same agricultural land base as the livestock or poultry were reared or kept or the agricultural products were grown or harvested;*
- (f) *disposing of or incinerating mortalities and processing wastes, if carried out on the same agricultural land base as the livestock or poultry were reared or kept;*
- (g) *operating equipment in relation to*
 - (i) *an activity referred to in this subsection, or*
 - (ii) *other activities in relation to agriculture, other than processing primary products beyond the activities described in paragraph (e).*

Section 2 (4) *The following are **not** agricultural operations for the purposes of this code:*

- (a) *aquaculture and activities described in subsection (3) that are carried out in respect of aquaculture;*
- (b) *soil blending operations that bring manure, sand or other materials onto a parcel of land for the purpose of producing soil for use other than on that parcel.*

Therefore, there are properties in the ALR that are not agricultural operations under the AEM Code. The majority of the Lower Mainland (including the entirety of Richmond) is identified as a High-Risk Area⁸ under

⁸<https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=c16cde73574c43da877674f423304ae9> High Precipitation Areas Map Tool. Government of B.C. Accessed January 28, 2020

the AEM Code due to high precipitation, which is defined as 600 mm or more of precipitation between October 1st and April 30th.

The AEM Code stipulates that:

“a person must not apply nutrient sources to land:

- (a) in a high-precipitation area during the period that begins on November 1 and that ends on February 1 of the next year,*
 - (b) during strong, divergent windy conditions, unless the nutrient sources are applied*
 - (i) below the soil surface, or*
 - (ii) under a crop canopy having a height of at least 8 cm,*
 - (c) during storm events, or periods of short-term intense or high rainfall, or*
 - (d) during any high-risk conditions that are identified by a director under this Part and are relevant to the application of nutrient sources to land.*
- (2) A person must not apply nutrient sources, other than wood residue, to land in a high-precipitation area during February, March or October unless both of the following conditions are met:*
- (a) the nutrients are needed by, and will be available to, the intended crop;*
 - (b) a risk assessment is made in accordance with subsection (4) before application begins.*
- (3) Without limiting subsection (2), a person may apply nutrient sources to bare soil in a high-precipitation area in the fall only if the following conditions are met:*
- (a) a crop is planted before the winter non-growing season begins;*
 - (b) the application is to medium or fine-textured soils with a low risk of leaching;*
 - (b) the nutrients will not enter a watercourse or go below the seasonal high water table.*
- (4) A person must prepare a risk assessment, in writing and in the form and manner required by a director,*
- (a) for each field to which nutrient sources are to be applied, and*
 - (c) considering the special circumstances of the high-precipitation area and any high-risk conditions.*

[am. B.C. Reg. 8/2019, App. 3.]

Therefore, there are limitations to applying nutrients to land in high precipitation areas, including in the City of Richmond. The application window is smaller than elsewhere in the province where annual precipitation is not as high.

Furthermore, in Division 4, Nutrient Application and Management of the AEM Code, Section 49:

- (1) A person must not apply nutrient sources to land
 - (a) on which there is standing water or water-saturated soil,**
 - (b) on ground in which the top 5 cm of soil is frozen so as to be impenetrable to manually-operated equipment,
 - (c) on a field having at least 5 cm of ice or snow over at least 50% of its area, or
 - (d) at a rate of application, under meteorological, topographical or soil conditions,** or in a manner, that may cause nutrient sources or contaminated runoff, leachate or solids to **enter a watercourse**⁹, cross a property boundary or **go below the seasonal high water table.**
- (2) A person must not apply to land a material described in any of paragraphs (e) to (g) of the definition of "nutrient source" unless the material is treated, provided, used or produced, as applicable, in accordance with this code and the applicable regulation referred to in those paragraphs.

This requirement under the AEM code, combined with high precipitation in Richmond, further limits windows for nutrient applications that may be necessary for an agricultural operation.

SIGNIFICANCE OF THE AEM CODE TO CoR AGRICULTURAL LAND

Based on our experience assessing the agricultural capability of agricultural land in the CoR, and subsequently preparing soil deposit plans to elevate properties subject to excess wetness¹⁰, we have determined the following:

⁹ Such as a ditch – the CoR defines all ditches in the city as watercourses.

¹⁰ Dr. Elliot and Ms. Stewart have prepared such applications and reports since 2014.

- 1 There are several areas within CoR that are not subject to seasonal floodwaters (i.e. the classic definition of floodplain), but are generally low-lying (1 to 5 m above sea level), with fine-texture subsoil (such as silty clay loams) or bedrock which prevents vertical drainage into the subsurface;
- 2 The lack of vertical drainage coupled to the regionally high water table in the low-lying areas results in poor conveyance (i.e. local drainage) of water **out** of these areas – which is not otherwise improvable through installation of subsurface drain-tiles due to said drain-tile outfalls being **below** the water table; and
- 3 Pump-works may suppress the local elevation of water table, however the water will be required to be pumped to an area that will:
 - a. Receive the waters and not impact other agricultural lands; and
 - b. Receive the waters and not allow them to be communicated back to the field via subsurface or displacement within the regional drainage works.

Unfortunately, pump works are generally suitable for bermed (or dyked) areas, such as floodplains, whereby the inundation/excess water is not congruent with the regional high water table. In many circumstances within the CoR, the issue is more so related to high water table and regional conveyance rather than point-specific short-duration inundation-water sources (i.e. flooding during the late spring freshet of the Fraser River) that pumping is ideally suited to resolve.

With a known issue of regionally high water tables and the AEM Code disambiguation below, Dr. Elliot's interpretation is that land application of nutrient sources within certain land-parcels of CoR will be disallowed (under the AEM Code) until such time as the high water table does not allow direct transmission of nutrient sources/nutrient to adjacent watercourses, which – in some circumstances – would result in the land parcel and agricultural operation falling under one or more of the following categories:

- A. A complete mismatch of nutrient application timing window with crop needs (common case);
- B. A disallowance of nutrient application during the early planting season (moderate case);
- C. An outright disallowance of nutrient application during the growing season (worst case);

If only Category A is applicable, then the land is not suited to grow the operational crop or the crop will be limited to one rotation when two or more is possible based on all other factors, and the question then reverts to the standard soil importation decision making process. If Category B and C are applicable, then the portion of land determined to be limited by the excess water condition is essentially sterilized for agriculture –forcing importation of soil as the only reasonable pathway toward improving agricultural capability (due to either ineffectiveness of other options, as described in our Determinations 1 – 3 above).

The next question is how to distinguish what restrictions are resulting from AEM Code based on field-based evidence. For example, Madrone prepared a Land Capability for Agriculture assessment for an ALR property in the CoR to determine the type of agricultural limitation(s) that exist on Site. From that assessment, we found the native Lulu Soil Series (an organic Terric Mesisol – formed in areas of high groundwater and low

conveyance) overlies dense, fine-grained deltaic sediments (silt, clay). This essentially forms 'a bathtub' under the whole area.

Therefore, since the area described in the above example is not subject to seasonal floodwater (i.e. Fraser River freshet) and is instead subject to **seasonal high water table** (Land Capability Classification for Agriculture, LCA Class 'W' limitation), the AEM Code applies and limits application of nutrient sources to Category A (timing mismatch) and potentially C (complete disallowance) circumstances as indicated above, whereas Category B does not apply due to the intended perennial crops (that by definition, live for more than two years and after harvest, do not need to be replanted every year).

We believe that there are lands in the ALR which would benefit greatly from importation of soil so long as adequate (if not excessive, to account for Changing Climate) compensation of regional drainage capacity (through enlarged ditching requirements, such as installation of canals instead of ditches) is included in the process as a requirement.

Such a tactic would still result in increased (productive) agricultural lands, and increased capability for agriculture of said lands, while addressing the most common objection to soil importation, which is that regional drainage/flooding will be negatively impacted.

MINISTRY OF ENVIRONMENT & CLIMATE CHANGE STRATEGY RESPONSE

Dr. Thomas Elliot, P.Ag. has requested input from Margaret Crowley, M.Sc., P.Ag. with the Ministry of Environment & Climate Change Strategy (MoECCS). Ms. Crowley is one of the authors of the AEM Code.

Her perspective, as interpreted from written correspondence to Dr. Elliot, is that:

- Inundation due to flooding does not discount application of nutrient sources (fertilizers, compost, wood residue, etc.), which allows for continued use of floodplains as agricultural lands;
- Seasonal high water table at, near or above ground surface **would however**, restrict land application of nutrient sources both during times of water table above ground surface (which is not surprising, as fertilizing standing water isn't effective), but also during period of generally high water table whereby precipitation/infiltration/dispersion would result in direct transmission of nutrients to groundwater/nearby watercourse.

CONCLUSIONS

The Code of Practice for Agricultural Environmental Management in a regulation under the Environmental Management Act. The regulation was made law in the province in February of 2019. As such, it is less than one year old and may not be a familiar regulation to consultants nor to municipal staff tasked with a preparing and reviewing relevant development applications in the ALR, respectively.

Dr. Thomas Elliot of Madrone has reviewed the AEM Code and has found that the combination of high precipitation in the municipality of Richmond (which results in it being defined as a High Risk Area according to AEM Code criteria) and high seasonal water tables in many low-lying agricultural areas (that are not necessarily located on floodplains) results in very narrow windows for nutrient applications for agricultural operators of said lands.

In instances where agricultural operators and landowners wish to improve excess wetness due to high seasonal water tables by raising their land via soil importation, we believe special consideration should be made by the CoR of how the AEM Code may impact that particular property (and the proposed agricultural operation, if not pre-existing).

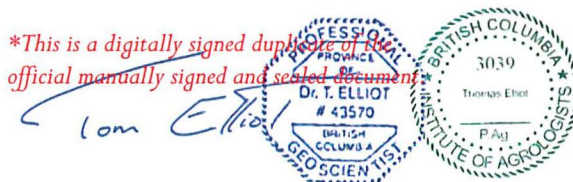
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Jessica Stewart, P.Ag., P.Geo. on behalf of:

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Thomas Elliot, PhD, P.Ag., P.Geo.



1081 Canada Ave
Duncan, BC V9L 1V2
p. 250.746.5545
f. 250.746.5850

#202 – 2790 Gladwin Road
Abbotsford, BC V2T 4S7
p. 604.504.1972
f. 604.504.1912

info@madrone.ca
www.madrone.ca

Attachment 13

March 9, 2020

Mr. Michael Morin, Soil Bylaw Officer
& Planning and Development
City of Richmond

Dear Mr. Morin

Re: Technical Memorandum: Significance of the Code of Practice for Agricultural Environmental Management (AEM Code) for low-lying agricultural land in the City of Richmond

INTRODUCTION

Madrone Environmental Services Ltd. (Madrone) is a multi-disciplinary scientific consulting firm with offices in both the Fraser Valley (Abbotsford) and Duncan, B.C. Since 2009, agrologists at our firm have prepared land capability assessments, soil deposit assessments (for both non-farm use and farm-use soil deposition on ALR Land), farm plans¹, and reclamation plans (including soil testing for contaminants, invasive species screening, fill removal plans) for landowners of properties in the City of Richmond (CoR, or 'the city'). Most, if not all, of these properties have been in the Agricultural Land Reserve (ALR).

Madrone continues to work with CoR planners and bylaw officers on such projects as a consultant and agent for applications by the respective landowners. Recently, Thomas Elliot, P.Ag. of Madrone has been engaged with the city in interpreting the significance of a new provincial regulation called the Code of Practice for Agricultural Environmental Management (AEM Code).

The AEM Code came into effect on February 28, 2019 and applies to all agricultural operations in the province². We emphasize that this applies to agricultural operations – not all agricultural land in the ALR has agricultural operations conducted on site (i.e. the land is completely fallow with no nutrient inputs, or the operation on site is not defined as an applicable agricultural operation in the AEM Code – the exact definition

¹ Madrone's first agricultural-related project in the City of Richmond was a farm plan prepared for the Shia Muslim Community of B.C. (8580 No. 5 Road, Richmond).

² <https://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture> Agricultural Environmental Management. Province of B.C. Accessed January 28, 2020

is in this memo, below). This code replaces the former Agricultural Waste Control Regulation (AWCR) for the province.

We (Jessica Stewart, P.Ag. and Thomas Elliot PhD, P.Ag.) at Madrone believe that the AEM Code should be considered when reviewing soil deposit applications for properties in the ALR, specifically, properties that are low-lying with little topographic relief and are subject to **high water tables**. We emphasize that there are instances in which properties subject to excess wetness (which is a defined agricultural limitation in the Land Capability Classification for Agriculture in B.C. MOE Manual 1)³ but are not on designated floodplains. In an effort to disambiguate, the City of Richmond Flood Plain Designation and Protection Bylaw No. 8204 defines a floodplain⁴ as:

"Floodplain means a lowland area, whether or diked or floodproofed, which, by reasons of land elevation, is susceptible to flooding from an adjoining watercourse, river, ocean, lake or other body of water, and that is designated as flood plain in Part 1 of this bylaw"

Whereas lands with excess wetness are resulting from a regionally high water table, either as a result of low elevation or due to a low-permeability soil-layer below ground, resulting in water that percolates through the soil and causes limitations to planting-season (i.e. early) machine access to the lands; ability to realize two crop-rotations within the prevalent climatic conditions in City of Richmond that allow for such; and also survivability of perennial crops.

The excess wetness experienced on these properties (due to high water tables) results in agricultural limitations that we believe can be improved by placement of a mineral soil layer to elevate the growing medium (which is typically, salvaged topsoil native to the property). The significance of the AEM Code to this stance is described as follows.

AEM CODE – PURPOSE AND SECTIONS OF NOTE

The AEM Code is a new regulation that falls under the Environmental Management Act (the 'Act')⁵. According to an expert with the British Columbia Organic Grower (Journal for The Certified Organic Associations of B.C.)⁶, it was developed as the old code (the Agricultural Waste Control Regulation, AWCR)

³ https://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/land_capability_classification_for_agriculture_in_bc_1983.pdf Land Capability Classification for Agriculture in British Columbia. MOE Manual 1. Accessed January 28, 2020

⁴ https://www.richmond.ca/shared/assets/Bylaw_8204_0410201225280.pdf Bylaw 8204 Flood plain designation and protection bylaw. City of Richmond. Accessed January 28, 2020

⁵ http://www.bclaws.ca/civix/document/id/complete/statreg/03053_00 Environmental Management Act. BC Laws. Accessed January 28, 2020

⁶ <http://bcorganicgrower.ca/2019/09/ask-an-expert-a-new-agricultural-environmental-management-regulation/> Ask An Expert: A New Agricultural Environmental Management Regulation. Published: September 1, 2019. Accessed January 28, 2020

was believed to be too vague for farm operators to follow and was not adequately protecting the environment. This expert with the Ministry of Environment & Climate Change Strategy (MoECSS) further stated:

"The new regulation includes provisions that aim to: ensure watercourses and groundwater are protected through proper storage and use of manure, other nutrient sources, and other materials, such as wood residue; prevent water quality impacts from contaminated run-off; prohibit direct discharges into watercourses; require nutrient management planning; allow for increased monitoring in high-risk areas; provide clear compliance expectations for agricultural operators for setbacks, storage, and nutrient applications; and, require record-keeping."

The AEM Code therefore ensures that agricultural practices do not impact drinking water, watercourses, air, or public health. According to the AEM Code⁷:

"...for the purpose of minimizing the introduction of waste into the environment and preventing adverse impacts to the environment and human health, this code requires persons to use environmentally responsible and sustainable agricultural practices when carrying out agricultural operations described in subsection (3)"

Section 2 (2) This code applies to an agricultural operation described in subsection (3) that is carried out in British Columbia

(a) on

(i) an agricultural land base that is owned, rented or leased, and managed, by the person who carries out the agricultural operation, and

(ii) land that is not zoned for residential purposes, and

(b) primarily for the purpose of distributing agricultural products to other persons, whether

(i) directly or indirectly,

(ii) with or without a fee, or

(iii) on a commercial or non-commercial basis.

Section 2 (3) Subject to subsection (4), the following are agricultural operations for the purposes of this code:

(a) rearing and keeping livestock or poultry, and growing and harvesting agricultural products, for

(i) consumption or use by humans, including as food, fibre or fuel,

(ii) use as animal feed,

⁷ http://www.bclaws.ca/civix/document/id/complete/statreg/8_2019#division_d1e5540 Code of Practice For Agricultural Environmental Management. BC Laws. Accessed January 28, 2020

- (iii) *use as breeding stock or to produce seedlings or flowers,*
 - (iv) *use in landscaping or for ornamental purposes, in the case of plants, or*
 - (v) *work or recreational purposes, in the case of horses;*
- (b) *storing*
 - (i) *nutrient sources and agricultural by-products, and*
 - (ii) *the primary products of livestock, poultry, insects, plants and fungi;*
- (c) *carrying out agricultural composting processes;*
- (d) applying nutrient sources to land;**
- (e) *washing, grading or packaging agricultural products, if carried out on the same agricultural land base as the livestock or poultry were reared or kept or the agricultural products were grown or harvested;*
- (f) *disposing of or incinerating mortalities and processing wastes, if carried out on the same agricultural land base as the livestock or poultry were reared or kept;*
- (g) *operating equipment in relation to*
 - (i) *an activity referred to in this subsection, or*
 - (ii) *other activities in relation to agriculture, other than processing primary products beyond the activities described in paragraph (e).*

Section 2 (4) *The following are **not** agricultural operations for the purposes of this code:*

- (a) *aquaculture and activities described in subsection (3) that are carried out in respect of aquaculture;*
- (b) *soil blending operations that bring manure, sand or other materials onto a parcel of land for the purpose of producing soil for use other than on that parcel.*

Therefore, there are properties in the ALR that are not agricultural operations under the AEM Code. The majority of the Lower Mainland (including the entirety of Richmond) is identified as a High-Risk Area⁸ under

⁸<https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=c16cde73574c43da877674f423304ae9> High Precipitation Areas Map Tool. Government of B.C. Accessed January 28, 2020

the AEM Code due to high precipitation, which is defined as 600 mm or more of precipitation between October 1st and April 30th.

The AEM Code stipulates that:

“a person must not apply nutrient sources to land:

- (a) in a high-precipitation area during the period that begins on November 1 and that ends on February 1 of the next year,***
 - (b) during strong, divergent windy conditions, unless the nutrient sources are applied***
 - (i) below the soil surface, or***
 - (ii) under a crop canopy having a height of at least 8 cm,***
 - (c) during storm events, or periods of short-term intense or high rainfall, or***
 - (d) during any high-risk conditions that are identified by a director under this Part and are relevant to the application of nutrient sources to land.***
- (2) A person must not apply nutrient sources, other than wood residue, to land in a high-precipitation area during February, March or October unless both of the following conditions are met:***
- (a) the nutrients are needed by, and will be available to, the intended crop;***
 - (b) a risk assessment is made in accordance with subsection (4) before application begins.***
- (3) Without limiting subsection (2), a person may apply nutrient sources to bare soil in a high-precipitation area in the fall only if the following conditions are met:***
- (a) a crop is planted before the winter non-growing season begins;***
 - (b) the application is to medium or fine-textured soils with a low risk of leaching;***
 - (b) the nutrients will not enter a watercourse or go below the seasonal high water table.***
- (4) A person must prepare a risk assessment, in writing and in the form and manner required by a director,***
- (a) for each field to which nutrient sources are to be applied, and***
 - (c) considering the special circumstances of the high-precipitation area and any high-risk conditions.***

[am. B.C. Reg. 8/2019, App. 3.]

Therefore, there are limitations to applying nutrients to land in high precipitation areas, including in the City of Richmond. The application window is smaller than elsewhere in the province where annual precipitation is not as high.

Furthermore, in Division 4, Nutrient Application and Management of the AEM Code, Section 49:

- (1) A person must not apply nutrient sources to land
 - (a) on which there is standing water or water-saturated soil,**
 - (b) on ground in which the top 5 cm of soil is frozen so as to be impenetrable to manually-operated equipment,
 - (c) on a field having at least 5 cm of ice or snow over at least 50% of its area, or
 - (d) at a rate of application, under meteorological, topographical or soil conditions,** or in a manner, that may cause nutrient sources or contaminated runoff, leachate or solids to **enter a watercourse**⁹, cross a property boundary or **go below the seasonal high water table.**
- (2) A person must not apply to land a material described in any of paragraphs (e) to (g) of the definition of "nutrient source" unless the material is treated, provided, used or produced, as applicable, in accordance with this code and the applicable regulation referred to in those paragraphs.

This requirement under the AEM code, combined with high precipitation in Richmond, further limits windows for nutrient applications that may be necessary for an agricultural operation.

SIGNIFICANCE OF THE AEM CODE TO CoR AGRICULTURAL LAND

Based on our experience assessing the agricultural capability of agricultural land in the CoR, and subsequently preparing soil deposit plans to elevate properties subject to excess wetness¹⁰, we have determined the following:

⁹ Such as a ditch – the CoR defines all ditches in the city as watercourses.

¹⁰ Dr. Elliot and Ms. Stewart have prepared such applications and reports since 2014.

- 1 There are several areas within CoR that are not subject to seasonal floodwaters (i.e. the classic definition of floodplain), but are generally low-lying (1 to 5 m above sea level), with fine-texture subsoil (such as silty clay loams) or bedrock which prevents vertical drainage into the subsurface;
- 2 The lack of vertical drainage coupled to the regionally high water table in the low-lying areas results in poor conveyance (i.e. local drainage) of water **out** of these areas – which is not otherwise improvable through installation of subsurface drain-tiles due to said drain-tile outfalls being **below** the water table; and
- 3 Pump-works may suppress the local elevation of water table, however the water will be required to be pumped to an area that will:
 - a. Receive the waters and not impact other agricultural lands; and
 - b. Receive the waters and not allow them to be communicated back to the field via subsurface or displacement within the regional drainage works.

Unfortunately, pump works are generally suitable for bermed (or dyked) areas, such as floodplains, whereby the inundation/excess water is not congruent with the regional high water table. In many circumstances within the CoR, the issue is more so related to high water table and regional conveyance rather than point-specific short-duration inundation-water sources (i.e. flooding during the late spring freshet of the Fraser River) that pumping is ideally suited to resolve.

With a known issue of regionally high water tables and the AEM Code disambiguation below, Dr. Elliot's interpretation is that land application of nutrient sources within certain land-parcels of CoR will be disallowed (under the AEM Code) until such time as the high water table does not allow direct transmission of nutrient sources/nutrient to adjacent watercourses, which – in some circumstances – would result in the land parcel and agricultural operation falling under one or more of the following categories:

- A. A complete mismatch of nutrient application timing window with crop needs (common case);
- B. A disallowance of nutrient application during the early planting season (moderate case);
- C. An outright disallowance of nutrient application during the growing season (worst case);

If only Category A is applicable, then the land is not suited to grow the operational crop or the crop will be limited to one rotation when two or more is possible based on all other factors, and the question then reverts to the standard soil importation decision making process. If Category B and C are applicable, then the portion of land determined to be limited by the excess water condition is essentially sterilized for agriculture –forcing importation of soil as the only reasonable pathway toward improving agricultural capability (due to either ineffectiveness of other options, as described in our Determinations 1 – 3 above).

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Therefore, since the area described in the above example is not subject to seasonal floodwater (i.e. Fraser River freshet) and is instead subject to **seasonal high water table** (Land Capability Classification for Agriculture, LCA Class 'W' limitation), the AEM Code applies and limits application of nutrient sources to Category A (timing mismatch) and potentially C (complete disallowance) circumstances as indicated above, whereas Category B does not apply due to the intended perennial crops (that by definition, live for more than two years and after harvest, do not need to be replanted every year).

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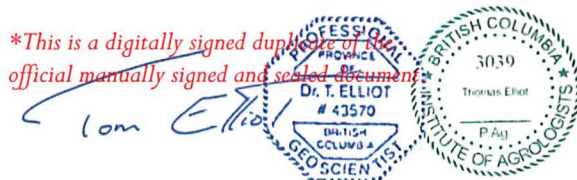
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Thomas Elliot, PhD, P.Ag., P.Geo.

Analysis of Perimeter Ditch Water from Property Located at
8511 #6 Road, Richmond, BC

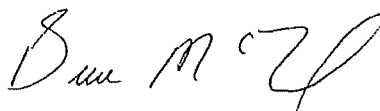
BCAA Legal: SEC 20 BLK4N RG5W PL 3109 Parcel A, Subsidy Lot 3, (J71246E)

Richmond File # 12-624176

Prepared for:

Bohan Jiang

Prepared by:



Bruce McTavish, MSc MBA, PAg, RPBio.
McTavish Resource & Management Consultants Ltd.
2858 Bayview St. Surrey, B.C. V4A 3Z4
bmct@intergate.ca
and



Hubert Timmenga, PhD, PAg, CMC
Timmenga & Associates Inc
292 E 56 Avenue, Vancouver BC V5X 1R3
htimmenga@telus.net

March 4 2015

Table of Contents

1.0	Introduction	1
2.0	Methodology.....	2
3.0	Results	2
4.0	Discussion.....	6
5.0	Conclusion.....	6
Appendix I	Laboratory Results	7

List of Tables

Table 1	Primary Ditch Water Quality Parameters	3
Table 2	CSR Total Metals in Water Samples	4
Table 3	Guidelines for Total Metals in Water	5

1.0 Introduction

The following report is the final report in a series of reports prepared by McTavish Resource & Management Consultants Ltd. on the property located at 8511 No 6 Road in Richmond BC. The series of reports are to provide information to the City of Richmond and the Agricultural Land Commission with respect to an application to import fill and topsoil onto the subject property. The following documents have been submitted to the City of Richmond:

- Original fill application was submitted in October 25, 2012 including supporting Agrologist's report;
- Reply letter from the City of Richmond December 13, 2012;
- Report on site drainage and leachate submitted December 14, 2013;
- Letter on wheel wash procedures submitted on December 15, 2013; and
- Letter on road access submitted February 5, 2014.

This report contains the water sampling results from the surrounding ditches as requested by the City of Richmond as part of due diligence review for the proposal import fill and topsoil to the subject property. This property contains historic buried wood waste that is estimated to be at least 30 years old. The remediation plan proposes to further cap the buried wood waste with topsoil and to direct surface run-off water to the municipal ditch system along No 6 Road.¹ The City of Richmond was concerned that any seepage from the historic buried wood waste would enter the municipal drainage system.

The site contains wood waste varying in depth of over 3 m at the east side of the property to 0.5m at the west side as shown during previous excavation and soil testing that was performed by McTavish Management and Consulting Ltd. The historic wood waste is covered with a layer of 0.2 - 0.5m of topsoil. The previous excavation results showed that the wood waste was virtually non-decomposed indicating that it is kept waterlogged in stagnant low oxygen water and was well preserved. An access road is present alongside the north lateral ditch and may restrict water flow to that ditch due to soil compaction.

Wood waste can exude leachate when water is percolating through it. Wood waste leachate is toxic to fish (Samis et. al, 1999)², has a high chemical oxygen demand and contains tannins and lignin (Tao et.al.

¹ McTavish B., H. Timmenga, 2012. Proposed Remediation of Land Located at 8511 #6 Road Richmond, BC.

² Samis, S.C, S.D Liu, B.G. Wernick and M.D. Nassichuk, 1999. Mitigation of fisheries impacts from the use and disposal of wood residue in British Columbia and the Yukon. Can. Tech. Rep. Fish. Aquat. Sci. 2296: viii and 91p. Part 1: http://www.for.gov.bc.ca/hfd/library/ffip/Samis_SC1999_pt1.pdf; Part 2: http://www.for.gov.bc.ca/hfd/library/ffip/Samis_SC1999_pt2.pdf.

2005).³ Both COD and tannins and lignin have been implicated in fish toxicity (Samis et.al., 1999). Metals have not been reported as an issue in wood waste leachate (Frankowski, 2000).⁴

2.0 Methodology

In order to check whether wood waste leachate was affecting the water in the lateral drainage ditches and to compare water quality in these ditches with the quality of water in the main City of Richmond ditch draining the area, water samples were taken in December 2014, during the Lower Mainland's wet period. Samples were analysed for the parameters that are characteristic for wood waste leachate. Emphasis was given to the potential toxicity of such leachate.

Samples were taken for the following tests:

- Fish toxicity (pass-fail test);
- Chemical oxygen demand;
- Tannins and lignins; and
- Total metals.

All sample analyses were performed by Maxxam Laboratories in Burnaby BC.

3.0 Results

Sampling took place December 8, 2014. The site was dry, and the lateral ditches to the north and south of the property contained water that was clear but yellow-brown in colour. The ditches contained organic matter in the form of grass and leaves. Both ditches appear stagnant at the time of sampling, and water smelled anaerobic. Dissolved Oxygen in these ditches appeared low at 1.6 and 2.4mg/L (see Maxxam Reports in Appendix I). The main drainage ditch to the west of No 6 Road was also sampled, both up-stream and down-stream of the subject property, beyond the existing drains of the lateral drainage ditches from the subject property. The main City of Richmond ditch flows north to south along the west side of No. 6 Road. Water in the City of Richmond ditch was clear and light yellow-brown in colour. The ditch contained organic matter and green plant growth. The dissolved oxygen was moderate at 4.9 and 5.8 mg/L.

The following results were obtained from the ditch water sampling. Results were compared with the wood waste leachate characteristics outlined in Tao et al, 2005. While Tao lists a range of concentrations for differently aged wood waste, we have selected the values of aged wood waste leachate (5 year old) as a comparison.

³ Tao W., Ken J.Hall, A Masbough, K Frankowski, and Sheldon J.B. Duff, 2005. Characterization of Leachate from a Woodwaste Pile. Water Quality Research Journal of Canada, Vol 40. No4:476-483. <https://www.caww.q.ca/journal/temp/article/279.pdf>

⁴ Frankowski, K.A., 2000. The Treatment of Wood Leachate Using Constructed Wetlands. MSc Thesis University of British Columbia. <https://circle.ubc.ca/handle/2429/10463>

Table 1 Primary Ditch Water Quality Parameters

Parameter	North Ditch on Subject Property	South Ditch On Subject Property	No. 6 Road Ditch Up-stream of Subject Property	No. 6 Road Ditch Down- stream of Subject Property	Typical wood waste leachate (5 year old pile; Tao et al, 2005)
Fish toxicity	pass	pass	pass	pass	Fail
COD	199	171	67	70	3908
Tannin/Lignin	9.09	8.18	4.04	3.65	1100

Table 2 Total Metals in Water Samples

Maxxam ID		LI1685	LI1686	LI1687	LI1688	
Sampling Date		2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30	
COC Number		G100417	G100417	G100417	G100417	
	Units	NORTH	SOUTH	UPSTREAM	DOWNSTREAM	RDL
Calculated Parameters						
Total Hardness (CaCO ₃)	mg/L	129	75.7	60.0	64.4	0.50
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	868	791	752	647	3.0
Total Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50
Total Arsenic (As)	ug/L	3.08	1.24	1.21	1.29	0.10
Total Barium (Ba)	ug/L	36.8	27.6	25.4	24.8	1.0
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.11	<0.10	0.10
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0
Total Boron (B)	ug/L	<50	<50	<50	<50	50
Total Cadmium (Cd)	ug/L	0.063	0.037	0.138	0.111	0.010
Total Chromium (Cr)	ug/L	2.7	1.8	1.7	1.6	1.0
Total Cobalt (Co)	ug/L	5.79	2.22	5.15	5.03	0.50
Total Copper (Cu)	ug/L	5.19	12.6	6.03	5.76	0.50
Total Iron (Fe)	ug/L	9330	4990	1310	1280	10
Total Lead (Pb)	ug/L	1.20	1.44	0.66	0.56	0.20
Total Lithium (Li)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0
Total Manganese (Mn)	ug/L	746	275	109	145	1.0
Total Mercury (Hg)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050
Total Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0
Total Nickel (Ni)	ug/L	12.3	4.9	11.1	11.6	1.0
Total Selenium (Se)	ug/L	0.25	0.12	0.10	<0.10	0.10
Total Silicon (Si)	ug/L	11700	7990	5580	5140	100
Total Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	0.020
Total Strontium (Sr)	ug/L	167	105	78.3	91.4	1.0
Total Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050
Total Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0
Total Titanium (Ti)	ug/L	20.7	11.7	7.0	5.6	5.0
Total Uranium (U)	ug/L	0.12	<0.10	0.14	0.14	0.10
Total Vanadium (V)	ug/L	7.4	<5.0	<5.0	<5.0	5.0
Total Zinc (Zn)	ug/L	24.8	14.8	26.6	67.9	5.0
Total Zirconium (Zr)	ug/L	0.83	<0.50	<0.50	0.52	0.50
Total Calcium (Ca)	mg/L	31.9	20.6	15.3	16.1	0.050
Total Magnesium (Mg)	mg/L	11.9	5.89	5.28	5.88	0.050
Total Potassium (K)	mg/L	7.20	4.74	5.97	7.15	0.050
Total Sodium (Na)	mg/L	17.7	3.57	5.33	6.72	0.050
Total Sulphur (S)	mg/L	18.3	4.8	9.6	13.4	3.0

Table 3 Guidelines for Total Metals in Water

	Units	CCME Irrigation ⁵	CCME Livestock	Canada Drinking Water ug/L ⁶	Exceed?
Calculated Parameters					
Total Hardness (CaCO ₃)	mg/L				
Total Metals by ICPMS					
Total Aluminum (Al)	ug/L	5000	5000		
Total Antimony (Sb)	ug/L			6	
Total Arsenic (As)	ug/L	100	25	10	
Total Barium (Ba)	ug/L			1000	
Total Beryllium (Be)	ug/L				
Total Bismuth (Bi)	ug/L				
Total Boron (B)	ug/L		5000		
Total Cadmium (Cd)	ug/L	5.1	80	5	
Total Chromium (Cr)	ug/L	8 / 4.9	50 / 50	50	
Total Cobalt (Co)	ug/L	50	1000		
Total Copper (Cu)	ug/L	200-1000	500-5000		
Total Iron (Fe)	ug/L	5000			North ditch likely due to natural conditions
Total Lead (Pb)	ug/L	200	100	10	
Total Lithium (Li)	ug/L	2500			
Total Manganese (Mn)	ug/L	200			North/south likely due to natural conditions
Total Mercury (Hg)	ug/L		3	1	
Total Molybdenum (Mo)	ug/L		500		
Total Nickel (Ni)	ug/L	200	1000		
Total Selenium (Se)	ug/L		50	50	
Total Silicon (Si)	ug/L				
Total Silver (Ag)	ug/L				
Total Strontium (Sr)	ug/L				
Total Thallium (Tl)	ug/L				
Total Tin (Sn)	ug/L				
Total Titanium (Ti)	ug/L				
Total Uranium (U)	ug/L	10	200	20	
Total Vanadium (V)	ug/L	100	100		
Total Zinc (Zn)	ug/L		50,000		
Total Zirconium (Zr)	ug/L				

⁵ Water Quality Guidelines for the Protection of Agriculture - CCME current document. <http://sts.ccme.ca/en/index.html> accessed December 19, 2014

⁶ Guidelines for Canadian Drinking Water Guidelines – current table. http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php#t2 accessed December 19, 2014

Total Calcium (Ca)	mg/L				
Total Magnesium (Mg)	mg/L				
Total Potassium (K)	mg/L				
Total Sodium (Na)	mg/L				
Total Sulphur (S)	mg/L				

4.0 Discussion

- 1) Ditch water in the lateral ditches and in the No 6 Road drainage ditch is not toxic to fish.
- 2) The COD in all ditch water is well below that in aged wood waste leachate; No guidelines for COD have been set.
- 3) The colour of the water in both lateral ditches and in the main City of Richmond drainage ditch is yellow brown, which is to be expected in an area with natural peat deposits and in stagnant ditches.
- 4) The tannins and lignin concentration in all ditch water is well below the typical values for aged wood waste leachate. Tannins and lignins are well below the BC Drinking water working criteria of 400ug/L, ⁷ but none is listed in the BC Approved Water Quality Guidelines.⁸
- 5) All metals in ditch water are below the Canada Drinking Water standard. Only iron and manganese may be over the irrigation or livestock guidelines, however samples reflect total metals, not dissolved metals, which typically are lower. The iron and manganese may be related to clay particles in the water sample or to the soil on the property that may be naturally high in iron or manganese. Metals are not typically related to wood waste leachate.

5.0 Conclusion

Sampling results have shown that the quality of the ditch water of the lateral drainage ditches on the subject property and in the main City of Richmond ditch is not affected by wood waste leachate and is not toxic to fish.

⁷ Nagpal, N.K., L.W. Pommen, L.G. Swain, 2006. A Compendium of Working Water Quality Guidelines for British Columbia. BC Ministry of Environment, Science and Information Branch – Water Quality.
<http://www.env.gov.bc.ca/wat/wq/BCguidelines/working.html> Accessed December 22, 2014.

⁸ <http://www2.gov.bc.ca/gov/topic.page?id=044DD64C7E24415D83D07430964113C9>

Appendix I Laboratory Results

Client : 9844 Corporate Client - Maxxam Burnaby

Job Number: B4B1245

Client Project Name & Number:

Test Result:

96 hrs LC50 % vol/vol (95% CI): >100 (N/A) Statistical Method: Visual

Sample Name: NORTH

Description: dark amber

Sample Collected: Dec 08, 2014 10:30 AM

Sampling Method : N/A

Sample Number: U1685-04

Site Collection: N/A

Sample Collected By: N/A

Volume Received: 1 x 20CB

Temp. Upon Arrival: 11 °C Storage: 1-7 °C

Sample Received: Dec 08, 2014 02:00 PM

pH: 5.7

Dissolved Oxygen: 1.6 mg/L

Analysis Start: Dec 09, 2014 12:30 PM

Temperature : 14.9 °C

Sample Conductance: 283 µS/cm²

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity µS/cm ²	Mortality (%)	Mortality (%)	Atypical Behaviour (#)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	15.2	15.0	10.0	9.6	7.1	7.2	36	0	0	0
100	14.9	15.0	7.2	9.6	6.0	7.8	280	0	0	0

Comments: At test initiation the fish in 100% concentration were surfacing and had slow respiration. For the remainder of the test all fish appeared and behaved normally.

Culture/Control/Dilution Water: Burnaby Municipal Dechlorinated Water

Hardness (EDTA Method): 20 mg/L CaCO₃ Other parameters available on request.

Test Conditions

Test concentration : 0,100 (% vol/vol)

Organisms per Vessel : 10

Test Temperature : 15 ± 1 °C

Solution Depth : >15 cm

Total # of Organisms Used : 20

Pre-aeration Time : 60 min.

Rate of Pre-aeration : 6.5±1 mL/min/L

Test Volume : 15 L

Vessel Volume : 20L

Test pH Adjusted: No

Loading Density : 0.33 g/L

Photoperiod : 16:8 (light: dark)

Test Organism:

Rainbow Trout (*Oncorhynchus mykiss*)

Source :

Lyndon Fish Hatcheries Inc.

Culture Temperature : 15 ± 2 °C

Weight (Mean) ± SD : 0.50 ± 0.13 g

Length (Mean) ± SD : 4.01 ± 0.35 cm

Culture Water Renewal : ≥ 1L/min/kg fish

Weight (Range) : 0.35 – 0.82 g

Length (Range) : 3.50 – 4.70 cm

Culture Photoperiod : 16:8 (light: dark)

% Mortality within 7 days : 0.25%

Feeding rate and frequency : daily: 1-5% biomass of trout.

Reference chemical:

Zinc

Test Date:

Nov 17, 2014

Test Endpoint 96 hrs LC50 (95% confidence interval) :

0.16 (0.13, 0.20) mg/L

Statistical Method :

Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits) :

0.11 (0.05, 0.24) mg/L

Concentration : 0,0.04,0.08,0.16,0.32,0.64 mg/L

Test Method

Maxxam's BBY2SOP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations :

None.

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Michael Brassil

Kimberly Tamaki

Verified By : Kimberly Tamaki, BBY QA Coordinator

Date: Dec 17, 2014 01:21 PM

Client: 9844 Corporate Client - Maxxam Burnaby

Job Number: B4B1245

Client Project Name & Number:

Test Result:

96 hrs LC50 % vol/vol (95% CI): >100 (N/A) Statistical Method: Visual

Sample Name: SOUTH

Description: dark amber

Sample Number: U11686-04

Sample Collected: Dec 08, 2014 10:30 AM

Sampling Method: N/A

Site Collection: N/A

Sample Collected By: N/A

Volume Received: 1 x 20CB

Temp. Upon Arrival: 11 °C Storage: 1-7 °C

Sample Received: Dec 08, 2014 02:00 PM

pH: 5.5

Dissolved Oxygen: 2.4 mg/L

Analysis Start: Dec 09, 2014 12:30 PM

Temperature: 14.8 °C

Sample Conductance: 166 µS/cm²

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity µS/cm²	Mortality (#)	Mortality (%)	Atypical Behaviour (#)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	15.2	15.0	10.0	9.6	7.1	7.2	36	0	0	0
100	14.9	15.1	7.1	9.6	5.8	7.7	164	0	0	0

Comments: At test initiation the fish in 100% concentration were surfacing, and had slow respiration. For the remainder of the tests all fish appeared and behaved normally.

Culture/Control/Dilution Water: Burnaby Municipal Dechlorinated Water

Hardness (EDTA Method): 20 mg/L CaCO₃

Other parameters available on request.

Test Conditions

Test concentration: 0,100 (% vol/vol)

Organisms per Vessel: 10

Test Temperature: 15 ± 1 °C

Solution Depth: >15 cm

Total # of Organisms Used: 20

Pre-aeration Time: 60 min.

Rate of Pre-aeration: 6.5±1 mL/min/L

Test Volume: 15 L

Vessel Volume: 20L

Test pH Adjusted: No

Loading Density: 0.33 g/L

Photoperiod: 16:8 (light: dark)

Test Organism: Rainbow Trout (*Oncorhynchus mykiss*) Source: Lyndon Fish Hatcheries Inc.

Culture Temperature: 15 ± 2 °C

Weight (Mean) ± SD: 0.50 ± 0.13 g

Length (Mean) ± SD: 4.01 ± 0.35 cm

Culture Water Renewal: ≥ 1L/min/kg fish

Weight (Range): 0.35 – 0.82 g

Length (Range): 3.50 – 4.70 cm

Culture Photoperiod: 16:8 (light: dark)

% Mortality within 7 days: 0.25%

Feeding rate and frequency: daily: 1-5% biomass of trout.

Reference chemical:

Zinc

Test Date:

Nov 17, 2014

Test Endpoint 96 hrs LC50 (95% confidence interval):

0.16 (0.13, 0.20) mg/L

Statistical Method:

Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits):

0.11 (0.06, 0.24) mg/L

Concentration: 0, 0.04, 0.08, 0.16, 0.32, 0.64 mg/L

Test Method

Maxxam's BBY2SOP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations:

None.

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst: Michael Brassil

K. Emali

Verified By: Kimberly Tarnaki, BBY QA Coordinator

Date: Dec 17, 2014 01:22 PM

Client : 9844 Corporate Client - Maxxam Burnaby

Job Number: B4B1245

Client Project Name & Number:

Test Result:

96 hrs LC50 % vol/vol (95% CI): >100 (N/A) Statistical Method: Visual

Sample Name: UPSTREAM

Description: light amber

Sample Number: LI1687-04

Sample Collected: Dec 08, 2014 10:30 AM

Sampling Method: N/A

Site Collection: N/A

Sample Collected By: N/A

Volume Received: 1 x 20CB

Temp. Upon Arrival: 11 °C Storage: 1-7 °C

Sample Received: Dec 08, 2014 02:00 PM

pH: 5.6

Dissolved Oxygen: 4.9 mg/L

Analysis Start: Dec 09, 2014 12:10 PM

Temperature: 14.9 °C

Sample Conductance: 135 µS/cm²

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity µS/cm²	Mortality (%)	Mortality (%)	Atypical Behaviour (#)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	15.2	15.0	10.0	9.6	7.1	7.2	36	0	0	0
100	15.1	15.2	7.1	9.4	5.9	7.5	134	0	0	0

Comments: All fish appeared and behaved normally during the test.

Culture/Control/Dilution Water

Burnaby Municipal Dechlorinated Water

Hardness (EDTA Method):

20 mg/L CaCO₃

Other parameters available on request.

Test Conditions

Test concentration: 0,100 (% vol/vol)

Organisms per Vessel:

10

Test Temperature:

15 ± 1 °C

Solution Depth:

>15 cm

Total # of Organisms Used:

20

Pre-aeration Time:

40 min.

Rate of Pre-aeration:

6.5±1 mL/min/L

Test Volume:

15 L

Vessel Volume:

20L

Test pH Adjusted:

No

Loading Density:

0.33 g/L

Photoperiod:

16:8 (light: dark)

Test Organism:

Rainbow Trout (*Oncorhynchus mykiss*)

Source:

Lyndon Fish Hatcheries Inc.

Culture Temperature:

15 ± 2 °C

Weight (Mean) ± SD:

0.50 ± 0.13 g

Length (Mean) ± SD:

4.01 ± 0.35 cm

Culture Water Renewal:

≥ 1L/min/kg fish

Weight (Range):

0.35 – 0.82 g

Length (Range):

3.50 – 4.70 cm

Culture Photoperiod:

16:8 (light: dark)

% Mortality within 7 days: 0.25%

Feeding rate and frequency:

daily: 1-5% biomass of trout.

Reference chemical:

Zinc

Test Date:

Nov 17, 2014

Test Endpoint 96 hrs LC50 (95% confidence interval):

0.16 (0.13, 0.20) mg/L

Statistical Method:

Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits):

0.11 (0.06, 0.24) mg/L

Concentration: 0,0.04,0.08,0.16,0.32,0.64 mg/L

Test Method

Maxxam's 8BY2SOP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations:

None.

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst: Michael Brassil

K. Tamaki

Verified By: Kimberly Tamaki, BBY QA Coordinator

Date: Dec 17, 2014 01:24 PM

Client: 9844 Corporate Client - Maxxam Burnaby

Job Number: B481245

Client Project Name & Number:

Test Result:

96 hrs LC50 % vol/vol (95% CI): >100 (N/A) Statistical Method: Visual

Sample Name: DOWNSTREAM

Description: light amber

Sample Collected: Dec 08, 2014 10:30 AM

Sampling Method: N/A

Sample Number: L11688-04

Site Collection: N/A

Sample Collected By: N/A

Volume Received: 1 x 20CB

Temp. Upon Arrival: 11 °C Storage: 1-7 °C

Sample Received: Dec 08, 2014 02:00 PM

pH: 5.7

Dissolved Oxygen: 5.8 mg/L

Analysis Start: Dec 09, 2014 12:00 PM

Temperature: 14.9 °C

Sample Conductance: 152 µS/cm²

Concentration	Temperature (°C)	Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (mg/L)	pH	pH	Conductivity µS/cm²	Mortality (H)	Mortality (%)	Atypical Behaviour (H)
% vol/vol	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	Initial	96 hrs	96 hrs	96 hrs
0	15.2	15.0	10.0	9.6	7.1	7.2	36	0	0	0
100	15.1	15.2	7.3	9.4	6.1	7.5	151	0	0	0

Comments: All fish appeared and behaved normally during the test.

Culture/Control/Dilution Water

Burnaby Municipal Dechlorinated Water

Hardness (EDTA Method):

20 mg/L CaCO₃

Other parameters available on request.

Test Conditions

Test concentration: 0,100 (% vol/vol)

Organisms per Vessel: 10

Test Temperature: 15 ± 1 °C

Solution Depth: >15 cm

Total # of Organisms Used: 20

Pre-aeration Time: 30 min.

Rate of Pre-aeration: 6.5±1 mL/min/L

Test Volume: 15 L

Vessel Volume: 20L

Test pH Adjusted: No

Loading Density: 0.33 g/L

Photoperiod: 16:8 (light: dark)

Test Organism:

Rainbow Trout (*Oncorhynchus mykiss*)

Source: Lyndon Fish Hatcheries Inc.

Culture Temperature: 15 ± 2 °C

Weight (Mean) ± SD: 0.50 ± 0.13 g

Length (Mean) ± SD: 4.01 ± 0.35 cm

Culture Water Renewal: ≥ 1L/min/kg fish

Weight (Range): 0.35 – 0.82 g

Length (Range): 3.50 – 4.70 cm

Culture Photoperiod: 16:8 (light: dark)

% Mortality within 7 days: 0.25%

Feeding rate and frequency: daily: 1-5% biomass of trout.

Reference chemical:

Zinc

Test Date:

Nov 17, 2014

Test Endpoint 96 hrs LC50 (95% confidence interval):

0.16 (0.13, 0.20) mg/L

Statistical Method:

Untrimmed Spearman-Kärber

Historical Mean LC50 (warning limits):

0.11 (0.06, 0.24) mg/L

Concentration: 0,0.04,0.08,0.16,0.32,0.64 mg/L

Test Method

Maxxam's BBY25QP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations:

None.

Note: The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst: Michael Brassil

Kimberly Tamaki

Verified By: Kimberly Tamaki, BBY QA Coordinator

Date: Dec 17, 2014 01:28 PM

Your C.O.C. #: G100417

Attention: Hubert Timmenga
Timmenga & Associates
292 E 56 Ave
Vancouver, BC
CANADA V5X 1R3

Report Date: 2014/12/17
Report #: R1718510
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4B1245
Received: 2014/12/08, 14:00

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
COD by Colorimeter	4	2014/12/09	2014/12/10	BBY6SOP-00024	SM 22.5220 D m
Hardness Total (calculated as CaCO ₃)	4	N/A	2014/12/17	BBY7SOP-00002	EPA 6020a R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	2014/12/08	2014/12/17	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (total)	4	2014/12/11	2014/12/16	BBY7SOP-00002	EPA 6020A R1 m
Rainbow Trout 96 hr LC50 @ 100%	4	N/A	2014/12/09	BBY2SOP-00004	EPS 1/RM/13 m
Tannin & Lignin (Total)	4	N/A	2014/12/11	BRN SOP-00221 R1.0	SM-5550 B

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key



Shanaz Akbar

19 Dec 2014 11:18:03 -08:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Shanaz Akbar, Project Manager
Email: SAKbar@maxxam.ca
Phone# (604) 734 7276

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages: 1
Page 1 of 7

Maxxam Analytics International Corporation c/o Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone (604) 734-7276 Fax (604) 731-2386

Maxxam Job #: B4B1245
Report Date: 2014/12/17

Timmenga & Associates

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		LI1685	LI1686	LI1687	LI1688		
Sampling Date		2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30		
COC Number		G100417	G100417	G100417	G100417		
	Units	NORTH	SOUTH	UPSTREAM	DOWNSTREAM	RDL	QC Batch
Demand Parameters							
Chemical Oxygen Demand	mg/L	199	171	67	70	10	7747711
MISCELLANEOUS							
Tannins and Lignins	mg/L	9.09	8.18	4.08 (1)	3.65	0.10	7750831
Rainbow Trout Bioassay							
LC50	% vol/vol	ATTACHED	ATTACHED	ATTACHED	ATTACHED	N/A	7756260
RDL = Reportable Detection Limit							
N/A = Not Applicable							
(1) Matrix Spike invalid due to high sample concentration.							

CSR TOTAL METALS IN WATER (WATER)

Maxxam ID		U1685	U1686	U1687	U1688		
Sampling Date		2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30	2014/12/08 10:30		
COC Number		G100417	G100417	G100417	G100417		
	Units	NORTH	SOUTH	UPSTREAM	DOWNSTREAM	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO ₃)	mg/L	129	75.7	60.0	64.4	0.50	7746841
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	868	791	752	647	3.0	7750767
Total Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	7750767
Total Arsenic (As)	ug/L	3.08	1.24	1.21	1.29	0.10	7750767
Total Barium (Ba)	ug/L	36.8	27.6	25.4	24.8	1.0	7750767
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.11	<0.10	0.10	7750767
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	7750767
Total Boron (B)	ug/L	<50	<50	<50	<50	50	7750767
Total Cadmium (Cd)	ug/L	0.063	0.037	0.138	0.111	0.010	7750767
Total Chromium (Cr)	ug/L	2.7	1.8	1.7	1.6	1.0	7750767
Total Cobalt (Co)	ug/L	5.79	2.22	5.15	5.03	0.50	7750767
Total Copper (Cu)	ug/L	5.19	12.6	6.03	5.76	0.50	7750767
Total Iron (Fe)	ug/L	9330	4990	1310	1280	10	7750767
Total Lead (Pb)	ug/L	1.20	1.44	0.66	0.56	0.20	7750767
Total Lithium (Li)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7750767
Total Manganese (Mn)	ug/L	746	275	109	145	1.0	7750767
Total Mercury (Hg)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	7750767
Total Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	7750767
Total Nickel (Ni)	ug/L	12.3	4.9	11.1	11.6	1.0	7750767
Total Selenium (Se)	ug/L	0.25	0.12	0.10	<0.10	0.10	7750767
Total Silicon (Si)	ug/L	11700	7990	5580	5140	100	7750767
Total Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	7750767
Total Strontium (Sr)	ug/L	167	105	78.3	91.4	1.0	7750767
Total Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	7750767
Total Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	7750767
Total Titanium (Ti)	ug/L	20.7	11.7	7.0	5.6	5.0	7750767
Total Uranium (U)	ug/L	0.12	<0.10	0.14	0.14	0.10	7750767
Total Vanadium (V)	ug/L	7.4	<5.0	<5.0	<5.0	5.0	7750767
Total Zinc (Zn)	ug/L	24.8	14.8	26.6	67.9	5.0	7750767
Total Zirconium (Zr)	ug/L	0.83	<0.50	<0.50	0.52	0.50	7750767
Total Calcium (Ca)	mg/L	31.9	20.6	15.3	16.1	0.050	7746842
Total Magnesium (Mg)	mg/L	11.9	5.89	5.28	5.88	0.050	7746842
Total Potassium (K)	mg/L	7.20	4.74	5.97	7.15	0.050	7746842
Total Sodium (Na)	mg/L	17.7	3.57	5.33	6.72	0.050	7746842
Total Sulphur (S)	mg/L	18.3	4.8	9.6	13.4	3.0	7746842
RDL = Reportable Detection Limit							

Maxxam Job #: B4B1245
Report Date: 2014/12/17

Timmenga & Associates

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	11.3°C
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Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7747711	Chemical Oxygen Demand	2014/12/10	95	80 - 120	107	80 - 120	<10	mg/L	NC	20
7750767	Total Aluminum (Al)	2014/12/16	107	80 - 120	116	80 - 120	<9.0	ug/L	NC	20
7750767	Total Antimony (Sb)	2014/12/16	109	80 - 120	112	80 - 120	<0.50	ug/L	NC	20
7750767	Total Arsenic (As)	2014/12/16	100	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
7750767	Total Barium (Ba)	2014/12/16	102	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
7750767	Total Beryllium (Be)	2014/12/16	104	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
7750767	Total Bismuth (Bi)	2014/12/16	108	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
7750767	Total Boron (B)	2014/12/16					<50	ug/L	NC	20
7750767	Total Cadmium (Cd)	2014/12/16	103	80 - 120	102	80 - 120	<0.010	ug/L	NC	20
7750767	Total Chromium (Cr)	2014/12/16	112	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
7750767	Total Cobalt (Co)	2014/12/16	106	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
7750767	Total Copper (Cu)	2014/12/16	108	80 - 120	110	80 - 120	<0.50	ug/L	NC	20
7750767	Total Iron (Fe)	2014/12/16	NC	80 - 120	113	80 - 120	<10	ug/L	11	20
7750767	Total Lead (Pb)	2014/12/16	107	80 - 120	103	80 - 120	<0.20	ug/L	NC	20
7750767	Total Lithium (Li)	2014/12/16	102	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
7750767	Total Manganese (Mn)	2014/12/16	NC	80 - 120	108	80 - 120	<1.0	ug/L	5.9	20
7750767	Total Mercury (Hg)	2014/12/16	113	80 - 120	114	80 - 120	<0.050	ug/L		
7750767	Total Molybdenum (Mo)	2014/12/16	104	80 - 120	115	80 - 120	<1.0	ug/L	NC	20
7750767	Total Nickel (Ni)	2014/12/16	104	80 - 120	105	80 - 120	<1.0	ug/L	NC	20
7750767	Total Selenium (Se)	2014/12/16	98	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
7750767	Total Silicon (Si)	2014/12/16					<100	ug/L	13	20
7750767	Total Silver (Ag)	2014/12/16	90	80 - 120	92	80 - 120	<0.020	ug/L	NC	20
7750767	Total Strontium (Sr)	2014/12/16	NC	80 - 120	104	80 - 120	<1.0	ug/L	10	20
7750767	Total Thallium (Tl)	2014/12/16	100	80 - 120	92	80 - 120	<0.050	ug/L	NC	20
7750767	Total Tin (Sn)	2014/12/16	107	80 - 120	114	80 - 120	<5.0	ug/L	NC	20
7750767	Total Titanium (Ti)	2014/12/16	99	80 - 120	84	80 - 120	<5.0	ug/L	NC	20
7750767	Total Uranium (U)	2014/12/16	106	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
7750767	Total Vanadium (V)	2014/12/16	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7750767	Total Zinc (Zn)	2014/12/16	NC	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
7750767	Total Zirconium (Zr)	2014/12/16					<0.50	ug/L	NC	20

QUALITY ASSURANCE REPORT (CONT'D)

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7750831	Tannins and Lignins	2014/12/11	NC	80 - 120	96	80 - 120	<0.10	mg/L	0.78	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).



1000 Cascade Way, Burnaby, BC Canada V5D 1A5 Tel: 604 724 7274 Tel Fax: 1 877 855 8556 Fax: 604 724 7274

CHAIN OF CUSTODY RECORD

Page: 1 of 1

G100417

Maxxam Job#: B4B1245

Invoice To: ☒ Regular Report ☐ No
Company Name: TIMMENA & ASSOCIATES
Contact Name: Hubert Timmen
Address: 299 E 56 Ave
Edmonton AB T5X 1B3
Phone / Fax: 604 321-1242
E-mail: htimmen@telus.net

Report To:
Company Name: Hubert Timmen
Contact Name: Hubert Timmen
Address: 299 E 56 Ave
Edmonton AB T5X 1B3
Phone / Fax: 604 321-1242
E-mail: htimmen@telus.net

PO #:	
Order #:	
Project #:	
Prod. Name:	
Location:	
Sampled By:	

REGULATORY REQUIREMENTS SERVICE REQUESTED:

☐ CSN ☒ Regular Turn Around Time (TAT)
(5 days for most tests)
☐ CCNE
☐ DO Water Quality ☐ RUSH (Please contact this lab)
☐ Other ☐ 1 Day ☐ 2 Day ☐ 3 Day
☐ DRINKING WATER Date Required: _____

Special Instructions:
Refrain Cooler: ☐ Ship Sample Bottles (please specify): ☐

ANALYSIS REQUESTED														
TEST	UNIT	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME
1	NORTH	11:00	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30
2	SOUTH	11:00	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30
3	UPSTREAM	11:00	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30
4	DOWNSTREAM	11:00	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30	14/12/08	10:30

Received by: <u>[Signature]</u>	Date (YY/MM/DD): <u>14/12/08</u>	Time: <u>2:00 PM</u>	Received by: <u>[Signature]</u>	Date (YY/MM/DD): <u>14/12/08</u>	Time: <u>14:00</u>	Temperature on Receipt (°C): <u>13.0</u>	Control Seal Intact on Code? <u>Yes</u>
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City of Richmond

Report to Committee

To: General Purposes Committee **Date:** September 14, 2020
From: Barry Konkin **File:** 08-4045-00/Vol 01
Director, Policy Planning
Re: **Amendments to Official Community Plan Bylaw Preparation Consultation Policy 5043 (Update to Referrals to the Board of Education of School District No. 38 (Richmond)) and New Policy on Independent School Referral to the Board of Education of School District No. 38 (Richmond)**

Staff Recommendation

1. That Council Policy 5043 "OCP Bylaw Preparation Consultation Policy" be amended to update the Board of Education of School District No. 38 (Richmond) referral process to lower the criteria for Richmond Official Community Plan Bylaw 9000 Amendment applications being forwarded to the Board of Education of School District No. 38 from 50 additional school-aged children to 25 additional school-aged children, and undertake minor administrative updates as outlined in the report dated September 14, 2020, from the Director of Policy Planning.
2. That the new proposed Council Policy "Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools" be approved to address referring Independent School proposals requiring a development application to the Board of Education of School District No. 38 (Richmond) as outlined in the report dated September 14, 2020, from the Director of Policy Planning.

Barry Konkin
Director, Policy Planning
(604-276-4139)

Att. 3

REPORT CONCURRENCE		
ROUTED TO: Development Applications	CONCURRENCE <input checked="" type="checkbox"/>	CONCURRENCE OF GENERAL MANAGER
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

At the open Planning Committee meeting of September 4, 2019, the following referral motion was passed:

“That staff explore options to amend the consultation policy to inform the Richmond School District No. 38 of all multiple family units and refer the amended consultation policy to the Council/School Board Liaison Committee.”

A separate referral motion was also passed at the December 3, 2019 Planning Committee meeting:

“That:

- (1) staff inform the Richmond School District No. 38 of any plans for rezoning applications involving future private schools in Richmond at the beginning of the planning process; and*
- (2) the above recommendation be referred to the Council/School Board Liaison Committee.”*

This report responds to both referrals and brings forward amendments to Council Policy 5043 (OCP Bylaw Preparation Consultation Policy) as a result of consultation with the Board of Education of School District No. 38 (Richmond) (Richmond Board of Education) and School District staff. Staff propose to amend Council Policy 5043 to revise the criteria for when the City refers Official Community Plan (OCP) amendments involving residential development to the Richmond Board of Education and make minor administrative revisions to reflect changes in legislation and update external agencies to reflect current organization names.

This report also presents a proposed Council Policy (Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools), which has been drafted for Council’s consideration in response to the December 3, 2019 Planning Committee referral.

This report supports Council’s Strategic Plan 2018-2022 Strategy #5 Sound Financial Management:

Accountable, transparent, and responsible financial management that supports the needs of the community into the future.

5.4 Work cooperatively and respectfully with all levels of government and stakeholders while advocating for the best interests of Richmond.

This report supports Council’s Strategic Plan 2018-2022 Strategy #6 Strategic and Well-Planned Growth:

Leadership in effective and sustainable growth that supports Richmond's physical and social needs.

6.1 Ensure an effective OCP and ensure development aligns with it.

Findings of FactExisting Council Policy 5043 (OCP Bylaw Preparation Consultation Policy)

Council Policy 5043, adopted in May 2005, provides direction to both staff and Council on when the City should consult with external agencies that may be affected by the enactment, repeal or amendment of the OCP or related Area Plans.

Residential development proposals that only require a rezoning (i.e., conform to the OCP Land Use Plan) are not referred to the Richmond Board of Education based on the School District's review and endorsement of the OCP. The City's OCP was drafted in consultation with the Richmond Board of Education and the School District's population and student enrollment projections reflect the allowable population growth provided by current OCP land use designations. Accordingly, these development applications that comply with the OCP are not referred to the Richmond Board of Education.

Furthermore, residential development information is provided to Richmond School District staff quarterly through the transfer of School Site Acquisition funds collected by the City on behalf of the School District. School District staff have communicated that the existing approach is sufficient and that all residential development proposals do not need to be forwarded to them.

With respect to consultation with the Richmond Board of Education in accordance with Council Policy 5043, the City refers OCP amendment applications for residential development where the proposal results in an additional 295 multi-family dwelling units or 200 single-family dwelling units above what the existing OCP allows for in terms of growth and development. For reference, the 295 multi-family units or 200 single-family dwelling units is equivalent to having the potential to generate enrolment for approximately 50 school-aged children.

Independent Schools – Zoning Information

Private or independent schools are institutions that generally provide for education within the Provincial curriculum of Kindergarten to Grade 12 (K-12). Independent schools are permitted in the "education" use definition of the Zoning Bylaw. Generally, independent schools being developed on sites that permit "education" would only require a Building Permit.

AnalysisResidential Development Information Provided to School District Staff

Residential development information, including the number of dwelling units and their location, is provided quarterly to Richmond School District staff through the process of transferring funding associated with School Site Acquisition Charges that are collected by the City on behalf of the School District from development. Information provided to the School District is as follows:

- Address/location of residential development.
- Total number of dwelling units.
- School Site Acquisition Charges collected.

Based on discussions with School District staff, the information provided on residential developments that conform to the OCP through the School Site Acquisition Charge transfer of funds is adequate to inform projected student enrolment.

Richmond Board of Education Referral Process – Proposed Amendments to Council Policy 5043

The proposed revisions will amend the criteria in the Policy to indicate that residential developments for projects involving 150 new multi-family dwelling units or 60 new single-family dwelling units above what the OCP currently permits, will be referred to the Richmond Board of Education. This scale of development has the potential to generate enrollment for approximately 25 school-aged children.

Proposed Administrative Amendments to Council Policy 5043

Administrative amendments are also proposed to Council Policy 5043 to ensure consistency with Provincial legislation (*Local Government Act*) and update the list of external agencies and stakeholders to reflect current organization names.

Proposed Council Policy – Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools

In response to the December 3, 2019 Planning Committee referral, staff propose a new Council Policy that would require the referral of any independent school proposals that require a development application (i.e., rezoning, temporary use permit application, and/or Agricultural Land Reserve – ALR non-farm use application) to the Richmond Board of Education for information purposes only. Sites with existing zoning that allows for an independent school where no development application is required would not be referred to the Richmond Board of Education. The new proposed Council Policy is contained in Attachment 3. A summary of the provisions contained in the proposed Council Policy is summarized as follows:

- Development applications (i.e., rezoning, temporary use permit and/or ALR non-farm use applications) for proposed independent schools will be referred to the Richmond Board of Education for information purposes.
- Prior to Council's consideration of the application, City staff will coordinate with Richmond School District staff to facilitate the referral of the proposed independent school to the Richmond Board of Education as part of the processing of the application.
- Any comments from the Richmond Board of Education and/or Richmond School District staff, including project responses, will be provided in the staff report to Council on the application.

Consultation with Richmond School District

City staff have discussed amendments to Council Policy 5043 with the Council/School Board Liaison Committee and School District staff who support the amended criteria and revised policy as the basis for referrals. Residential development information will continue to be provided to the School District quarterly through the transfer of School Site Acquisition Charges collected by the City.

The Council/School Board Liaison Committee were notified of the December 3, 2019 Planning Committee motion about being informed about independent school proposals at their meeting on December 4, 2019, with direction provided to City and Richmond School District staff to develop a suitable approach.

The drafted amendments to Council Policy 5043 and new policy on referring independent school proposals to the Richmond Board of Education incorporates all feedback from Richmond School District staff.

Financial Impact

None.

Conclusion

This report responds to separate Planning Committee referrals from September 4, 2019 and December 3, 2019. Based on consultation undertaken with Richmond Board of Education and School District staff, the following is being recommended for Council's consideration:

- Approve amendments to the existing Council Policy 5043 (OCP Bylaw Preparation Consultation Policy) to amend the criteria for referring residential developments involving an OCP amendment to the Richmond Board of Education from 50 additional school-aged children to 25 school-aged children, and undertake minor administrative changes to the Policy; and
- Approve a New Council Policy (Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools) to refer independent school development applications to the Richmond Board of Education, which is consistent with the direction provided by Planning Committee on December 3, 2019.

The recommended amendments to Council Policy 5043 and new Council Policy will ensure excellent communication is maintained between the City and Richmond School District on residential development and development applications for proposed new independent schools.



Kevin Eng
Planner 2
(604-247-4626)
KE:

- Att. 1: Existing Council Policy 5043 (OCP Bylaw Preparation Consultation Policy)
2: Proposed Amended Council Policy 5043 (OCP Bylaw Preparation Consultation Policy)
3: Proposed New Council Policy (Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools)



Page 1 of 2	OCP Bylaw Preparation Consultation Policy	Policy 5043
	Adopted by Council: May 9, 2005 Amended by Council: April 24, 2006	

POLICY 5043:

It is Council Policy that:

1. PURPOSE

In accordance with the requirements of the *Local Government Act* section 879 and section 881 that require a local government to consider opportunities for consultation during the presentation, repeal or amendment of an Official Community Plan (OCP), this policy provides direction to City staff and Council.

2. CONSULTATION CONSIDERATIONS

It is Council policy that, where the development, repeal or amendment of an Official Community Plan (OCP) (including an Area Plan) bylaw is proposed:

- 1) Staff will consider consultation with persons, organizations and authorities that may be affected by the enactment, repeal or amendment of the Official Community Plan bylaw (e.g. where the other parties' land use, programming, servicing, transportation and environmental interests may be affected).
- 2) Staff will consider early and ongoing consultation with the external agencies listed below and with any other persons, organizations and authorities, as deemed appropriate:

External Agencies which will be Considered for Consultation
<input type="checkbox"/> The Board of the Greater Vancouver Regional District (GVRD)
<input type="checkbox"/> The Councils of adjacent Municipalities
<input type="checkbox"/> First Nations (e.g., Sto:lo, Tsawwassen, Musqueam)
<input type="checkbox"/> TransLink
<input type="checkbox"/> Port Authorities (Fraser River, North Fraser, Steveston Harbour Authority)
<input type="checkbox"/> Vancouver International Airport Authority (VIAA) (Federal Government Agency)
<input type="checkbox"/> BC Land Reserve Commission
<input type="checkbox"/> Richmond School Board
<input type="checkbox"/> Richmond Coastal Health Authority
<input type="checkbox"/> Community Groups and Neighbours
<input type="checkbox"/> All relevant Federal and Provincial Government Agencies



Page 2 of 2	OCP Bylaw Preparation Consultation Policy	Policy 5043
	Adopted by Council: May 9, 2005 Amended by Council: April 24, 2006	

3) School Board Consultation

- a) City staff shall refer proposed OCP amendments to the Richmond School Board where the OCP amendment involves a residential development which would have the potential to generate for 50 or more school aged children (e.g., 295 or more multiple family housing units and/or 200 or more single-family housing units).
 - b) Where in a calendar year, should there be no OCP bylaw amendment that meets this criteria, City staff will consult with the School Board, on the overall OCP and its implications on the School Board (e.g., school needs) at the beginning of each school term in September of each year.
 - c) The City and the School Board have agreed to share information (e.g., statistics, maps, reports) to co-ordinate City and School Board interests and facilitate consultations.
- 4) Prior to the first reading of a proposed Official Community Plan Bylaw, Council will consider, through the receipt of a staff report summarizing the consultation undertaken, if additional consultation with external agencies, persons, organizations and authorities is required.
- 5) Consultation may involve a variety of methods, including information meetings, dialogue and/or written correspondence.



Page 1 of 2	OCP Bylaw Preparation Consultation Policy	Policy 5043
	Adopted by Council: May 9, 2005 Amended by Council: April 24, 2006 Amended by Council:	

POLICY 5043:

It is Council Policy that:

1. PURPOSE

In accordance with the requirements of the *Local Government Act* section 475, 476 and section 477 that require a local government to consider opportunities for consultation during the presentation, repeal or amendment of an Official Community Plan (OCP), this policy provides direction to City staff and Council.

2. CONSULTATION CONSIDERATIONS

It is Council policy that, where the development, repeal or amendment of an Official Community Plan (OCP) (including an Area Plan) bylaw is proposed:

- 1) Staff will consider consultation with persons, organizations and authorities that may be affected by the enactment, repeal or amendment of the Official Community Plan bylaw (e.g. where the other parties' land use, programming, servicing, transportation and environmental interests may be affected).
- 2) Staff will consider early and ongoing consultation with the external agencies listed below and with any other persons, organizations and authorities, as deemed appropriate:

External Agencies which will be Considered for Consultation
<input type="checkbox"/> The Board of Metro Vancouver
<input type="checkbox"/> The Councils of adjacent Municipalities
<input type="checkbox"/> First Nations (e.g., Sto:lo, Tsawwassen, Musqueam)
<input type="checkbox"/> TransLink
<input type="checkbox"/> Port Authorities (Vancouver Fraser Port Authority and Steveston Harbour Authority)
<input type="checkbox"/> Vancouver International Airport Authority (VIAA) (Federal Government Agency)
<input type="checkbox"/> Agricultural Land Commission
<input type="checkbox"/> Board of Education of School District No. 38 (Richmond)
<input type="checkbox"/> Vancouver Coastal Health Authority
<input type="checkbox"/> Community Groups and Neighbours
<input type="checkbox"/> All relevant Federal and Provincial Government Agencies



Page 2 of 2	OCP Bylaw Preparation Consultation Policy	Policy 5043
	Adopted by Council: May 9, 2005 Amended by Council: April 24, 2006 Amended by Council:	

- 3) Board of Education of School District No. 38 (Richmond) Consultation
 - a) City staff shall refer proposed OCP amendments to the Board of Education of School District No. 38 (Richmond) where the OCP amendment involves a residential development proposing an additional 150 or more multiple family housing units or 60 or more single-family housing units, above what the current OCP allows for.
 - b) As needed, City staff will consult with the Board of Education of School District No. 38 (Richmond) on the overall OCP and its implications (e.g., school needs).
 - c) The City and the Board of Education of School District No. 38 (Richmond) have agreed to share information (e.g., statistics, maps, reports) to co-ordinate interests and facilitate consultations.
- 4) Prior to the first reading of a proposed Official Community Plan Bylaw, Council will consider, through the receipt of a staff report summarizing the consultation undertaken, if additional consultation with external agencies, persons, organizations and authorities is required.
- 5) Consultation may involve a variety of methods, including information meetings, dialogue and/or written correspondence.



Page 1 of 1	Referrals to the Board of Education of School District No. 38 (Richmond) for Development Applications Involving Independent Schools	Policy 5XXX
	Adopted by Council: <date>	

POLICY 5XXX:

It is Council policy that:

Development applications involving proposed independent schools will be referred to the Board of Education of School District No. 38 (Richmond) for information purposes as part of the processing of the application. The following criteria and processes will apply:

1. Types of applications to be referred to the Board of Education of School District No. 38 (Richmond) – Development applications involving a proposed independent school requiring a:
 - a. Rezoning application;
 - b. Temporary Use Permit application; and/or
 - c. Agricultural Land Reserve Non-Farm Use application.
2. Only those independent schools requiring a development application identified above will be covered under this policy.
3. While referrals made to the Board of Education of School District No. 38 (Richmond) will be for information purposes only, School District staff may provide comments if desired.
4. Referrals to the Board of Education of School District No. 38 (Richmond) will be made during the City staff processing of a development application involving an independent school, prior to Richmond City Council consideration of the proposal.
5. Summary information on any response to the referral of the independent school development application from the School District will be provided in the City staff report to Council on the proposal.



City of Richmond

Report to Committee

To: General Purposes Committee
From: James Cooper, Architect AIBC
Director, Building Approvals

Date: September 21, 2020
File: 08-4430-01/2020-Vol 01

Barry Konkin
Director, Policy Planning

Re: Referral Response: Regulating Fencing Materials

Staff Recommendations

1. That Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, respecting changes to fence regulations (including the prohibition of masonry as a permitted fence material for lands regulated under Section 14.1 of the Agriculture Zone), be revised as outlined in this report.
2. That Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, respecting changes to fence regulations (including the prohibition of masonry as a permitted fence material for lands regulated under Section 14.1 of the Agriculture Zone), as revised, be given second reading.
3. That staff be directed to maintain the current bylaw regulations for fence materials – including masonry – in all zones in urban areas that permit single detached residential uses.

James Cooper, Architect AIBC
Director, Building Approvals

Barry Konkin
Director, Policy Planning

BK/JC:bk
Att. 1

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS:	APPROVED BY CAO

Staff Report

Origin

This staff report responds to two separate Council referrals.

At the April 14, 2020 Council meeting, Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122 received first reading, and the following referral was passed:

That staff examine the use of concrete, masonry, and metal products for fencing and/or walls, including form, structure, content of materials, and report back.

At the May 19, 2020 Public Hearing for Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, the following referral was passed by Council:

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10122 be referred back to staff to remove the use of masonry materials in the ALR within the Zoning Bylaw.

This report responds to these referrals, and presents proposed amending bylaws to Richmond Zoning Bylaw No. 8500, and to the City's Building Regulation Bylaw No. 7230 to provide updated regulations regarding permitted fence construction and materials for development on lands regulated by Section 14.1 of the Richmond Zoning Bylaw No. 8500 - the Agriculture Zone. This report also recommends that no changes to fence regulations and materials in all zones in urban areas that permit single detached residential use be considered.

This report supports Council's Strategic Plan 2018-2022 Strategy #6 Strategic and Well-Planned Growth:

Leadership in effective and sustainable growth that supports Richmond's physical and social needs.

6.1 Ensure an effective OCP and ensure development aligns with it.

Analysis

Based on the Council referrals listed above, staff propose that Council endorse the following:

- Revised Bylaw 10122 to amend Richmond Zoning Bylaw No. 8500 to regulate fence construction and materials, with specific regulations for lots regulated under Section 14.1 of Richmond Zoning Bylaw No. 8500 - the Agriculture Zone.

This report also recommends that following a Public Hearing for revised Bylaw 10122, Council consider final adoption to Bylaw 10144 to amend Building Regulation Bylaw No. 7230 to address a number of construction and permit issues associated with fences. This Bylaw was previously given first, second and third readings, at the April 14, 2020 Council meeting. No Public Hearing is required for this bylaw amendment.

Staff have reviewed the referral from the April 14, 2020 Council meeting regarding regulation of fence materials in all zones in urban areas that allow single detached residential use, and are of

the opinion that there is little advantage in prohibiting masonry, brick, stone and stone-like materials, and decorative metal as fencing materials in all zones in urban areas that permit single detached residential use. This is largely due to fence durability of masonry fences and single detached house design trends which utilize a wide range of fence materials. It is recommended that no additional changes to fence regulations for properties in urban areas that permit single detached residential use be considered.

Should Council wish to proceed with regulations for all zones in urban areas which permit single detached residential uses, Council direction on the scope and nature of regulatory changes desired would be appropriate.

For other residential development (i.e., multi-family), the character of fencing type, form, character and height are addressed in conjunction with applicable design guidelines and Development Permit requirements as per the Official Community Plan; moreover, fence character is secured through a Rezoning application, and subsequent Development Permit. The development application review process provides the opportunity for staff to ensure that fencing is consistent with endorsed design guidelines.

Staff have conducted an environmental scan of fencing regulation in nearby municipalities (Vancouver, Burnaby, New Westminster, Surrey and Delta) and found that none of these jurisdictions currently regulate materials for fencing. This is noted in an attachment to the staff report dated March 5, 2020 (Attachment 1).

Local Government Act and Fence Regulation

As context for the discussion of fence character and materials, staff note that it is unlawful for the City to prohibit a land owner to install a fence along any property line for securing their property, but as per the *Local Government Act*, Council is able to regulate these structures, including materials, siting, height and setbacks. Further to these *Local Government Act* powers, the City can regulate fence materials, so long as regulations do not conflict with the guidance of the *BC Building Act*.

Proposed Bylaw Amendments for Agriculture Zone (Bylaw 10122)

Fencing Regulations

As directed by Council at the May 19, 2020 Public Hearing, staff have made amendments to proposed Bylaw 10122, to provide new regulations for fencing construction and materials in Section 14.1 of Richmond Zoning Bylaw No. 8500 – the Agricultural Zone. Specific amendments proposed include:

- Removal of the provision to allow masonry fencing and any associated concrete and metal decorative elements along the portion of the farm home plate that fronts onto the closest road. The use of below ground concrete (poured concrete footings) shall be limited to provision of structural stability only. This will ensure that fences in the Agriculture Zone are constructed of a limited palette of materials, which capture the agrarian character of these areas.

- Fencing for lands regulated by Section 14.1 of Richmond Zoning Bylaw 8500 – the Agriculture Zone – is limited to fencing of an agrarian character, as described in the previous staff report (Attachment 1). Masonry piers or gate posts will also not be permitted.

The recommended bylaw amendment to remove provisions regarding use of masonry for fences along the farm home plate frontage (as recommended in the staff report dated March 5, 2020 in Attachment 1) specifically addresses the comments and direction provided by Council at the May 19, 2020 Public Hearing.

As presented to Council and considered at the Public Hearing on May 19, 2020, other amendments such as limiting fences to agrarian materials, as well as height measurement for fences have been retained in revised Richmond Zoning Bylaw No. 8500 Amendment Bylaw 10122.

Additional Bylaw Amendments in all zones in urban areas that permit single detached residential use (Not Recommended)

Staff are of the opinion that there is little advantage in prohibiting masonry, brick, stone and stone-like materials, and decorative metal as fencing materials in all zones in urban areas that permit single detached residential use. It is recommended that no changes to fence regulation in all zones in urban areas that permit single detached residential use be considered.

Staff would like to provide some information that Council might bear in mind when considering regulations for fences in all zones in urban areas that permit single detached residential use.

Fence durability

There are positive attributes associated with the use of other more durable materials than wood for fencing. With the damp climate of the Lower Mainland, the life span of a wooden fence can be reduced, particularly in recent years, as first growth cedar for fencing is scarce, and the more open grain of contemporary second growth cedar products is less resilient and more susceptible to rot.

Masonry, including brick and stone, or a combination of these materials, is often used in combination with metal bars or pickets spanning between piers offers a fence with a longer lifespan, reducing long-term costs to the homeowner. With proper construction methods and detailing – including soil compaction under piers / pillars, masonry, wood and metal fences will not sag or collapse.

Single Detached House Design Trends

The use of masonry and like material for fences has become a common aspect of single detached dwelling construction. Regulation of permitted fencing materials would be a unique regulation in the Lower Mainland and would limit the range of personal choice for homeowners and the design community. This may result in less diversity and opportunity to provide innovative solutions tailored to homeowners and fence style and materials compatible with existing neighbourhood character. There may be opposition from the building community and homeowners arising from such a change, as limiting the choice of materials for fencing in single

detached zones also has potential to result in homogeneity in fence materials and streetscape, reducing the variation and character achieved by allowing a wider palette of materials.

Staff recommend that no changes to fence materials in all zones in urban areas that permit single detached residential use be considered. In order to ensure that fences – including masonry - are well built and constructed properly, staff recommend approval of Building Regulation Bylaw No. 7230, Bylaw Amendment 10144 which will require a Building Permit application for all fences and elements requiring a concrete foundation in order to validate proper construction. Currently, Building Regulation Bylaw No. 7230 does not require an application for any fence construction.

Should Council wish to consider options for regulation of fences in all zones in urban areas that permit single detached residential use, staff have identified two options for Council consideration for regulating fence materials in all zones which permit single detached residential use.

1. Status quo (*Recommended*):

Staff have reviewed the issue of materials regulation for fences in all zones in urban areas that permit single detached residential use, and are of the opinion that with better construction methods as required by application for Building Permit, the amendments provided in Building Bylaw No. 7230 Amendment Bylaw 10144, unsightly fences can be avoided, while preserving the opportunity for homeowners' personal design choice.

2. Amend all zones which allow single detached residential use to prohibit masonry fences (*Not Recommended*):

Should Council wish to proceed with regulations for all zones in urban areas which permit single detached residential uses, staff would request Council direction on the scope and nature of regulatory changes desired. If so directed, staff will report back with recommended bylaw changes.

Amendments to Richmond Building Regulation Bylaw No. 7230 – Amendment Bylaw 10144

The attached Richmond Building Regulation Bylaw No. 7230, Amendment Bylaw 10144 is the same bylaw that was presented to Committee and Council previously. This bylaw received first, second, and third reading on April 14, 2020, and may be considered for final adoption, once Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, has been adopted. There are no changes proposed to Bylaw 10144, but there are aspects of this bylaw which staff feel are important to note again at this time.

Definition of Structure

The proposed Building Regulation Bylaw No. 7230, Amendment Bylaw 10144 includes a revised definition of 'structure' which captures a masonry wall or fence, ensuring that a Building Permit is required for these structures. As the recommended amendments in this report deal with fencing in those zones which allow single detached residential use, this amendment is still required to ensure that walls and fences in multi-family residential and other zones will require a Building Permit.

Building Permit Requirements

While the amendments to Richmond Zoning Bylaw No. 8500 proposed in this report will prohibit the construction of masonry fences on lands regulated by Section 14.1 of the Richmond Zoning Bylaw 8500 – the Agriculture Zone, staff recommend that a Building Permit be required for a masonry fence in all zones that allow single detached residential use. This will ensure that masonry fences in all zones in urban areas that allow single detached residential uses are constructed properly and safely.

In addition, it should be noted that if Council approves the recommended amendments to fence regulations for properties regulated under Section 14.1 of the Richmond Zoning Bylaw 8500 – the Agriculture Zone – as outlined in this report, there is still an opportunity for property owners to apply for a Development Variance Permit (DVP) for fencing regulations.

Further, if Council wishes to prohibit masonry and metal for fences in all zones in urban areas that permit single detached residential use, it would not preclude a homeowner from applying for a DVP to permit a masonry fence to be constructed.

Financial Impact or Economic Impact

None.

Conclusion

As directed by Council at the May 19, 2020 Public Hearing, staff have reviewed revisions to fencing regulations, including specific regulations for fencing for properties located within the Agriculture Zone. Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122 has been revised to remove any provisions to allow masonry fencing in this zone. All fence materials in the Agriculture Zone will be of an agrarian nature.

It is recommended that Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, be revised to include the prohibition of masonry as a permitted fence material for lands regulated under Section 14.1 of the Agriculture Zone, and be given second reading. Staff are of the opinion that the regulation of fencing materials in all zones in urban areas that permit single detached residential use has a number of disadvantages, and would recommend that no changes be made at this time.

Should Council wish to proceed with regulations for all zones in urban areas which permit single detached residential uses, staff would request Council direction on the scope and nature of regulatory changes desired. If so directed, staff will report back with recommended bylaw changes.

September 21, 2020

- 7 -

In order to regulate the construction of fences as described in this report, it is further recommended that Building Regulation Bylaw No. 7230, Amendment Bylaw 10144, be adopted following the adoption of Richmond Zoning Bylaw No. 8500, Amendment Bylaw 10122, as revised.



Serena Trachta
Manager, Plan Review



John Hopkins
Program Manager, Policy Planning

BK/JC:bk

Attachment 1: Staff Report Dated March 5, 2020



City of Richmond

To Council - Apr 14, 2020

Report to Committee

To Planning - Apr 7, 2020

To: Planning Committee
From: James Cooper, Architect AIBC
Director, Building Approvals

Barry Konkin
Director, Policy Planning

Date: March 5, 2020

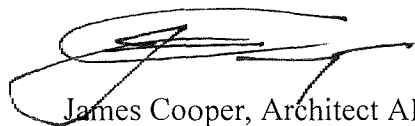
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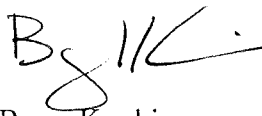
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Re: Fence Regulations Addressing Height and Materials

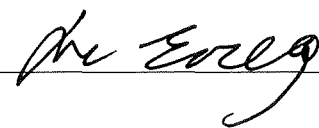


Staff Recommendation

1. That Richmond Zoning Bylaw No. 8500, Amendment Bylaw No. 10122, respecting changes to fence regulations, be introduced and given first reading, and
2. That Building Regulation Bylaw No. 7230, Amendment Bylaw No. 10144, requiring a permit for fences constructed with concrete foundations, be introduced and given first, second and third readings.


James Cooper, Architect AIBC
Director, Building Approvals
(604-247-4606)


Barry Konkin
Director, Policy Planning
(604-276-4139)

Att. 4

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Law	<input checked="" type="checkbox"/>	
Finance	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO 

Staff Report

Origin

At the November 5, 2019 Planning Committee meeting, the following referral motion was passed:

That staff review Richmond Zoning Bylaw No. 8500 to examine:

- 1) regulations for building fences and walls, including the definition of a fence and a wall;*
 - 2) materials that can be used, including the possible elimination of masonry and iron; and*
 - 3) tree planting restrictions;*
- and report back.*

This report supports Council's Strategic Plan 2018-2022 Strategy #6 Strategic and Well-Planned Growth:

Leadership in effective and sustainable growth that supports Richmond's physical and social needs.

6.1 Ensure an effective OCP and ensure development aligns with it.

The referral was a result of public concerns regarding unpermitted construction of a concrete planter along the 181 m (594 ft) frontage of a property on No. 2 Road, which is zoned "Agriculture (AG1)." This report responds to the referral by providing information on current fence regulations in the City of Richmond and presents a bylaw for Council's consideration which would amend current fence regulations.

After investigating provisions to regulate tree planting, staff have determined that there are legal issues regarding imposition of regulations for fencing in the Agricultural Land Reserve (ALR) that are more appropriately addressed by the City Solicitor in a separate memorandum to Council offering legal advice on the matter.

Findings of Fact

Current Fence Regulations

Fences and walls are different types of structures. Richmond Zoning Bylaw No. 8500 and Building Regulation Bylaw No. 7230 contains existing interpretations and regulations for fences. Currently, both Richmond Zoning Bylaw No. 8500 and Building Regulation Bylaw No. 7230 provide a definition of 'fence,' but not 'wall.'

Bylaw No. 8500 Section 3.4 defines a fence:

“Fence means a structure used as an enclosure or for screening purposes around all or part of a lot.”

Bylaw No. 7230 Section 3.4 defines a fence:

“Fence means a structure bounding an area of land designed to limit access to or from the area or to screen the area from view.”

Fence regulations are provided in Section 6 of Richmond Zoning Bylaw No. 8500 and limit fence heights along arterial roads and in residential and non-residential zones. Barbed wire, razor wire and barbed tape obstacle, and electrified wire are prohibited in residential zones and permitted in other zones under certain conditions. Other materials, including masonry and iron (ornamental metal), are not currently regulated. See Attachment 1 for an excerpt of Richmond Zoning Bylaw No. 8500 current fence regulations.

In addition, in a report to committee dated June 6, 2017, staff noted that it is unlawful for the City to prohibit front yard fences or gates, but as per the *Local Government Act*, Council is able to regulate these structures, including siting, height, materials and setbacks.

Fence Regulation Research

In examining Richmond’s fence regulations, staff have conducted an environmental scan of fence requirements in other municipalities in and around Metro Vancouver (Attachment 2). The results of the scan indicate the following:

- Some municipalities do not define ‘fence’; however, some definitions of ‘structure’ include fences.
- Most municipalities do not define ‘wall.’
- All municipalities limit fence height in residential zones.
- Some municipalities limit fence height in agricultural zones.
- Most municipalities do not regulate fence material with the exception of Coquitlam which has prohibited unadorned cast in place concrete which is termed “wall” and not fence.

Following the environmental scan, staff examined the City’s current regulations and identified a series of recommended bylaw amendments for Council’s consideration. The proposed amendments are included in Bylaw No. 10122.

Analysis

The public and Council recently raised concerns regarding concrete supported structures on agriculturally zoned properties and how such structures are regulated by existing zoning definitions. In order to address the November 5, 2019 Planning Committee referral, staff have examined existing fencing regulations and related definitions in Richmond Zoning Bylaw No. 8500, to identify areas where these regulations could be improved.

Based on the analysis, it is recommended that regulations pertaining to fence construction in agriculture zones be amended to achieve the intended agrarian character of these areas. Ornate or masonry style fences will be prohibited in agricultural zones outside of the street frontage associated with the principal dwelling. Fencing materials outside of the street frontage shall be agrarian in character consisting of materials and dimensions as defined in this report. This report also proposes amendments to clarify how the vertical height of fences is measured. Proposed Bulletins 43 and 44 (Attachments 3 and 4) have been created to clarify this information for the public.

Amendments to Richmond Zoning Bylaw No. 8500

Staff have identified opportunities to improve regulations to provide more clarity regarding fencing. The following amendments to Richmond Zoning Bylaw No. 8500 are recommended:

Amendments to Section 3.4 – Use and Term Definitions (Applicable to All Zones)

Proposed Amendments	Comments
<p>Height, fence Means the vertical distance between the average finished site grade measured at a point 1.0 m from both sides of the property line to the top of the fence.</p>	<ul style="list-style-type: none"> - Replacement of 'average landscape grade' with 'average finished site grade.' Finished site grade is consistent with the language in the zoning bylaw and is defined. - Replacement of 'both sides of the fence' to 'both sides of the property line.' This accounts for fences that may be built 1.0 m or more from the property line. - This amendment will be applicable in all zones.
<p>Agrarian Materials, fence The following are suitable materials and design for construction of agrarian fencing in the agriculture zones.</p> <ol style="list-style-type: none"> 1. Wood Post and Rail, minimum spacing between horizontal members shall be 0.3 m; <ol style="list-style-type: none"> a. Diagonal cross bracing permitted if bracing between posts; 2. Metal post and rail, minimum 0.3 m spacing between horizontal members; 3. Wood Post and welded wire mesh; 4. Steel Post and welded wire mesh; 5. Wood pickets, 8 cm minimum distance between pickets. 	<ul style="list-style-type: none"> - No current definition exists.

Amendments to Section 6.8 – Fence Limitations in Residential Zones

Proposed Amendments	Comments
<p>6.8.3 Fence height shall be measured at the average finished site grade between points measured 1.0 m from both sides of the property line to the top of the fence.</p>	<p>- Replacement of 'measured at the point at which the fence intersects the ground' to reflect the same fence height measurements as prescribed in the definition of 'height, fence.'</p>

Amendments to Section 6.9 – Fence Limitations in All Other Zones

Proposed Amendments	Comments
<p>6.9.1 No fence constructed in the agricultural zones and site specific zones that govern farm businesses shall exceed 2.4 m in height, with the following exceptions:</p> <ul style="list-style-type: none"> a) Fence height shall not exceed 2.0 m where the fence is located in the side yard of a single detached housing unit; b) Fence height shall not exceed 1.2 m where the fence is located in the front yard (or yard fronting a public way) of a single detached housing unit. 	<p>- Amend the height limitations from 2.0 m to 1.2 m in the front yard of a single detached housing unit on agricultural properties, to create consistency of height in the front yard.</p>
<p>6.9.3 Fence height shall be measured at the average finished site grade 1.0 m from both sides of the property line to the top of the fence.</p>	<p>- Addition of the same fence height provision in Section 6.8.3 to regulate fence height in non-residential zones as well.</p>
<p>6.9.4 The following are suitable materials and design for construction of agrarian fencing in the agriculture zones.</p> <ul style="list-style-type: none"> a) Wood Post and Rail, minimum spacing between horizontal members shall be 0.3 m; <ul style="list-style-type: none"> i. Diagonal cross bracing permitted if bracing between posts; b) Metal post and rail, minimum 0.3 m spacing between horizontal members; c) Wood Post and welded wire mesh; d) Steel Post and welded wire mesh; e) Wood pickets, 8 cm minimum distance between pickets. 	<p>- No current definition exists.</p>

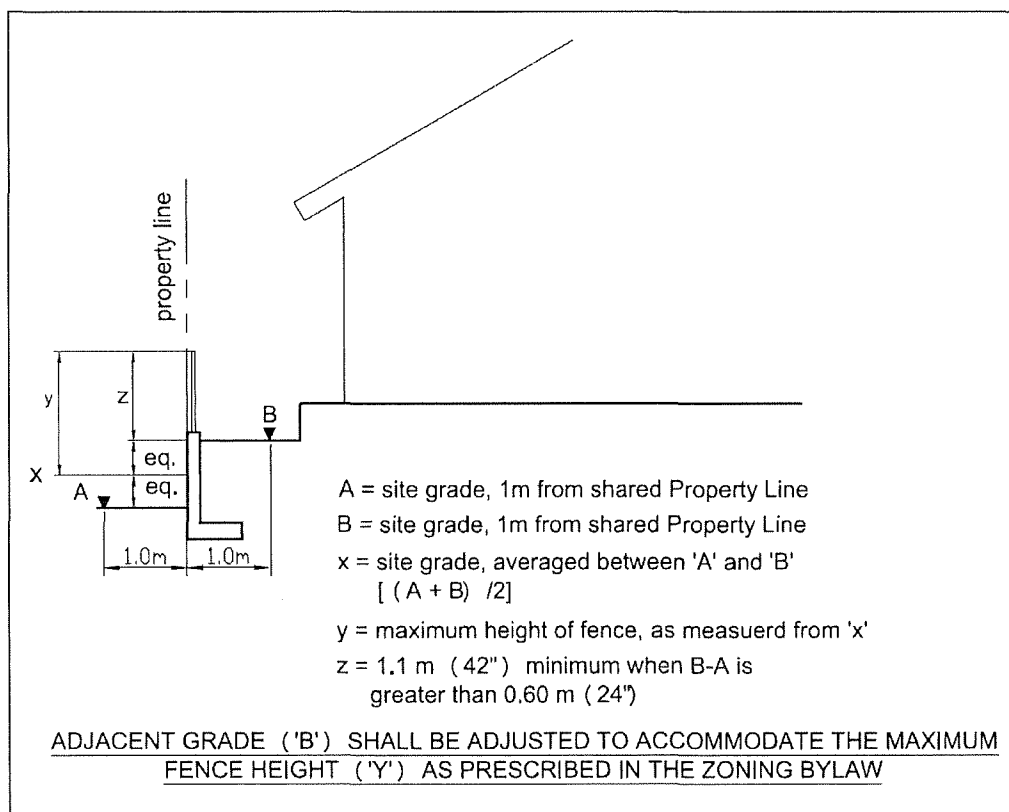
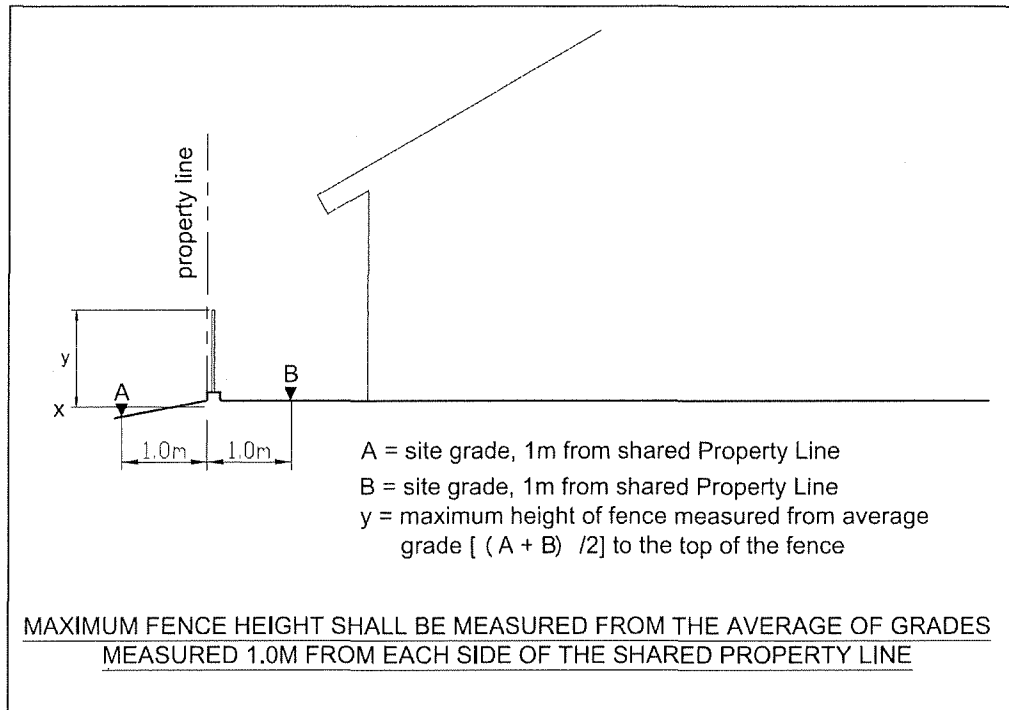
6.9.5	<p>In agricultural zones,</p> <ul style="list-style-type: none"> a) The fence shall be constructed of materials limited to fence agrarian materials, to the satisfaction of the Director, Building Approvals. b) Any gate providing farm access (even when such gate also provides access to a single detached housing unit) is required to comply with the agrarian materials. c) Masonry fences shall only be permitted along property lines fronting a public road. <ul style="list-style-type: none"> i. No masonry fence or its above grade components shall exceed 1.2 m in height and 0.3 m in width. Height to include an additional 0.15 m appurtenance allowance for piers spaced no closer than 3.65 m edge to edge. ii. No masonry fence below grade components shall exceed 0.43 m in width of fence footing and 0.8 m square for pier footings. iii. Total masonry fence length shall be further limited to the width of the single detached dwelling fronting the public road plus 6 m. 	<ul style="list-style-type: none"> - Addition of provisions to regulate the materials, height, width, and location of fences in agricultural zones.
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Amendments to Section 4 – General Development Regulations (4.12 Projections into Yards in All Zones)

Proposed Amendments	Comments
<p>4.12.1 No building, structure, feature or portion thereof shall be developed, used, occupied, constructed, erected, modified, converted, enlarged, reconstructed, altered, placed, maintained or added to within any required yard except as follows, provided that they meet the provisions of the British Columbia Building Code. The exceptions below do not apply to the 4 m side yard setback in properties with an AG1 agricultural zone when that same setback is used to accommodate farm access."</p>	<ul style="list-style-type: none"> - Amend the projections into side yards such that they do not apply to farm access roads that are 4 m or less.

In order to provide clarity, Staff have created the following diagrams to illustrate some aspects of the Amendments. These illustrations will be contained in proposed Bulletins 43 & 44.

Illustrations clarifying the Amendments:



Amendments to Building Regulation Bylaw No. 7230

Current Building Regulation Bylaw No. 7230 does not require a permit for a fence. In order to enforce proposed limitations on the footing sizes as recommended in Richmond Zoning Bylaw No. 8500, and encourage applicants to limit the use of concrete, the following amendment to Building Regulation Bylaw No. 7230 is recommended to require that a building permit be secured for fencing with a concrete foundation.

Amendments to Part SIXTEEN – INTERPRETATION

Proposed Amendments		Changes to Existing Provisions
Structure	Means all or part of a construction, whether fixed to, supported by, sunk into, or located in land, water or airspace, and includes freestanding sign structures over 3.0 m in height and supporting structures for such signs, and includes a sewage holding tank, but excludes landscaping, paving, a fence without concrete foundations, or a retaining wall under 1.0m in height.	- Clarifying that a fence with a concrete foundation requires a permit.

Financial Impact

None.

Conclusion

This report responds to a Council referral to examine regulations for fences and fence materials, particularly masonry. Staff recommend regulating fence heights and materials in agricultural zones. It is recommended that Richmond Zoning Bylaw No. 8500, Amendment Bylaw No. 10122 be introduced and given first reading and that Richmond Building Bylaw No. 7230, Amendment Bylaw No. 10144 be introduced and given first, second and third readings.



Serena Trachta
Manager, Plan Review
(604-204-8515)



John Hopkins
Senior Policy Coordinator
(604-276-4279)

ST:aa

- Attachment 1: Excerpt from Richmond Zoning Bylaw No. 8500 of Current Fence Regulations
- Attachment 2: Summary Table of Environmental Scan
- Attachment 3: Building Bulletin 43 Residential Zones: Fence Heights
- Attachment 4: Building Bulletin 44 Agricultural Zones: Fence Heights and Materials

Current Fence Regulations in Richmond Zoning Bylaw No. 8500

Section 3.4 – Use and Term Definitions

- Fence** Means a structure used as an enclosure or for screening purposes around all or part of a lot.
- Height, fence** Means the vertical distance between the average landscape grade 1.0 m from both sides of the fence to the top of the fence.
- Screen** Means a continuous wall, fence, compact evergreen hedge or combination thereof, supplemented with landscape planting, which would effectively screen from view the area that it encloses.
- Structure** Means a construction of any kind whether fixed to or supported by or sunk into land or water including towers, flag poles, swimming pools, docks, signs and tanks, but does not include areas of hard-surfacing.

Section 6 – Landscaping and Screening

6.2 General

- 6.2.9 For a lot fronting onto a local arterial road or a major arterial road, a solid masonry or brick fence up to a maximum fence height of 1.2 m is permitted within the required front yard setback area, but any mechanical or manual gate must be located at least 6.0 m from the front lot line.

6.8 Fence Limitations in Residential Zones

- 6.8.1 No fence constructed in residential zones and site specific zones that include residential uses shall exceed 2.0 m in height. Furthermore, a fence located in the front yard, or any part of a yard between the principal building and the front lot line, shall not exceed 1.2 m in height.
- 6.8.2 Where a fence is located along a lot line that abuts:
- a) a zone other than a residential zone; or
 - b) a site specific zone that governs residential uses;
- the maximum fence height shall be 2.4 m along that lot line only.
- 6.8.3 Fence height shall be measured at the point at which the fence intersects the ground.
- 6.8.4 An outdoor play space provided on a property zoned for residential child care use shall be enclosed by a solid fence of a minimum height of 1.2 m but not exceeding a maximum height of 2.0 m. The minimum and maximum heights apply to all fences enclosing the outdoor play space, including fences located in the front yard of the zoned property, notwithstanding Section 6.8.1.

- 6.8.5 The use of barbed wire, electrified wire, razor wire and barbed tape obstacles as fencing material is prohibited in all the residential zones or site specific zones that govern single detached housing.

6.9 Fence Limitations in All Other Zones

- 6.9.1 No fence constructed in the agricultural zones and site specific zones that govern farm businesses shall exceed 2.4 m in height. Furthermore, a fence shall not exceed 2.0 m in height where:

- a) the fence is located in the front yard and side yard of a single detached housing unit;
- b) the fence extends in the front of the foremost portion or portions of the single detached housing unit; and
- c) the single detached housing unit is situated on a lot that is used as a farm business, and the lot is assessed as a “farm” under the *Assessment Act*.

- 6.9.2 No fence constructed in all the other zones shall exceed a maximum height of 2.4 m.

- 6.9.3 The use of electrified wire as a fencing material is prohibited except where it is used to confine domestic farm animals.

- 6.9.4 Barbed wire, razor wire and barbed tape obstacle, and electrified wire may only be used as a fencing material:

- a) where it is used to confine domestic farm animals; or
- b) the purpose of the fence is to limit access to a lawful commercial, industrial, community or institutional use of land, provided that the wire component of the fence is no closer to the ground than 2.0 m.

Current Fence Regulations in Building Regulation Bylaw No. 7230

Part Sixteen: Interpretation

Fence means a structure bounding an area of land designed to limit access to or from the area or to screen the area from view.

Structure means all or part of a construction, whether fixed to, supported by, sunk into, or located in, land, water or airspace, and includes freestanding sign structures over 3.0 m in height and supporting structures for such signs, and includes a sewage holding tank, but excludes landscaping, paving, a fence, or a retaining wall under 1.0 m in height.

Summary Table of Environmental Scan

Municipality	Definition of 'Fence'	Definition of 'Wall'	General Height Limitations in Residential Zones				General Height Limitations in Agricultural Zones		Regulated Fence Materials Other than Wire (Barbed, Razor, Electrified)
			Front Yards	All Other Locations	Front Yards	All Other Locations			
Richmond	A structure used as an enclosure or for screening purposes around all or part of a lot	N/A	1.2 m	2.0 m 2.4 m on lot lines abutting non-residential zones	2.0 m	2.4 m	N/A		
Richmond Proposed	No change	No change	No change	No change	1.2 m	2.0 m	Agrarian (Rural Farm) materials required in AG zones.		
Burnaby	N/A	N/A	1.07 m	1.8 m	N/A	N/A	Open mesh / chain link		
Coquitlam	A structure, not being a building, intended for the purpose of total or partial physical and/or visual separation or enclosure of a property or portion thereof; includes a wall, not being part of a building, intended for the purpose of total or partial physical and/or visual separation or enclosure of a property, does not include retaining wall. Materials used to construct a fence are limited to wood, masonry materials (excluding poured concrete), metal, pre-cast manufactured perforated or decorative concrete blocks or panels, and any combination thereof.	Any building element with a slope of 60 degrees or more to the horizontal; does not include a wall which is utilized as a fence, or a retaining wall.	1.3 m	1.8 m	N/A	3.1 m	See definition of fence.		
Delta	A structure used as an enclosure or for screening purposes, and includes gates and walls, but excludes retaining walls and arbors.	N/A	1.2 m	1.8 m 2.4 m on lot lines abutting non-residential zones	1.2 m	2.4 m	Chain link Concrete blocks for retaining walls		
City of Langley	N/A	N/A	N/A	2.0 m	N/A	N/A	N/A		
Township of Langley	N/A	N/A	1.0 m	2.0 m	N/A	N/A	N/A		
Maple Ridge	A structure constructed of materials including wood, masonry, concrete, or metal, intended for the purpose of total or partial physical and/or visual separation or enclosure of a property or portion thereof, and includes chain link fences, however	N/A	1.2 m	2.0 m	1.2 m 3.6 m	2.0 m 3.6 m	N/A		

Municipality	Definition of 'Fence'	Definition of 'Wall'	General Height Limitations in Residential Zones		General Height Limitations in Agricultural Zones		Regulated Fence Materials Other than Wire (Barbed, Razor, Electrified)
			Front Yards	All Other Locations	Front Yards	All Other Locations	
	does not include retaining walls.						
New Westminster	<i>Closed fence:</i> one that has more than fifty percent (50%) of its area closed.	N/A	1.22 m	1.83 m	N/A	N/A	Open mesh / chain link
City of North Vancouver	<i>Structure, accessory:</i> a structure used for an accessory use, including fences, radio and television antennae and satellite dishes.	N/A	1.22 m	1.829 m	-	-	N/A
District of North Vancouver	N/A	N/A	1.8 m	2.4 m	-	-	N/A
Pitt Meadows	A structure used as an enclosure or as a visual barrier around all or part of a lot	N/A	1.2 m	1.8 m 2.4 m on lot lines abutting agricultural or industrial zones	1.8 m,	2.4 m	N/A
Port Coquitlam	A vertical structure used for enclosure or screening where the thickness is equal to or less than 8 cm (0.26 ft) excluding top and bottom rails and posts.	A vertical structure used for enclosure, screening or soil retention constructed of brick, masonry, stone, or timbers or any other material where the thickness of the wall is greater than 8 cm (0.26 ft).	1.2 m	2.5 m	1.2 m	N/A	See definition of wall.
Surrey	N/A	N/A	1.2 m	1.8 m	N/A	N/A	For properties on railway land, stones, cement, bricks, similar durable materials, chain link, or combination thereof.
Vancouver	Includes arbors, archways, boundary fences, gates, pergolas, screens, trellises, walls and similar structures.	N/A	1.2 m	1.9 m	N/A	N/A	Permitted: wood, brick, concrete block, metal
West Vancouver	A vertical structure used as an enclosure or a screen of all or part of a site, not exceeding 0.08 metre in thickness, excluding posts and rails, but shall not include a garden wall.	A vertical structure used as an enclosure or screening about all or part of a site constructed of concrete masonry, timbers, rock, or any other material where the thickness is more than 0.08 metre.	1.2 m 1.8 m	1.8 m 2.4 m	-	-	See definition of wall.



**City of
Richmond**

Bulletin
Building Approvals Department
6911 No. 3 Road, Richmond, BC V6Y 2C1

www.richmond.ca

This information is provided for clarification purposes only and is not in substitution of any applicable City Bylaws or Provincial or Federal Codes or laws. In the case of any contradictions, legislative Codes, laws or Bylaws take precedence. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws.

Residential Zones: Fence Heights

No.: BUILDING-43
Last Revised: 2020/02/06
Date Created: 2020/02/06

This bulletin is to inform Owners and Builders of the height regulations for fences in residential zones recently adopted in Richmond Zoning Bylaw No. 8500, Amendment Bylaw No. 10122 and Building Regulation Bylaw No. 7230, Amendment Bylaw No. 10144.

Summary

- Definition of fence height has been clarified to identify measurement parameters.
- Maximum fence heights in residential zones have been clarified.

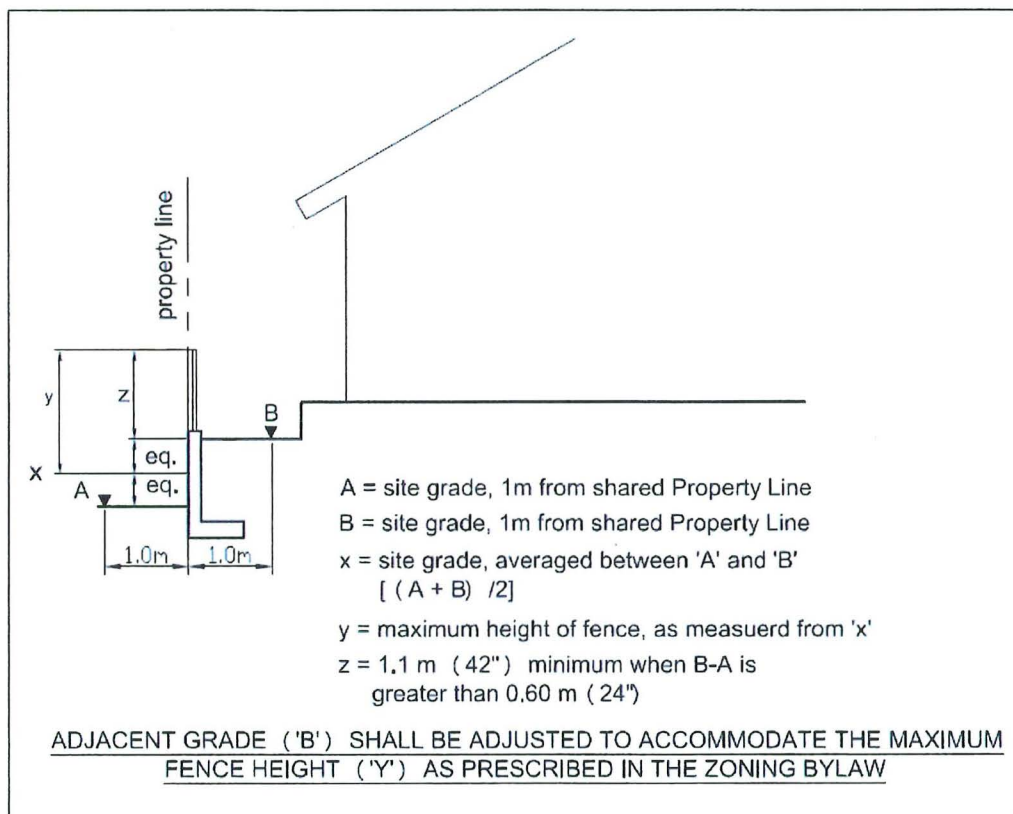
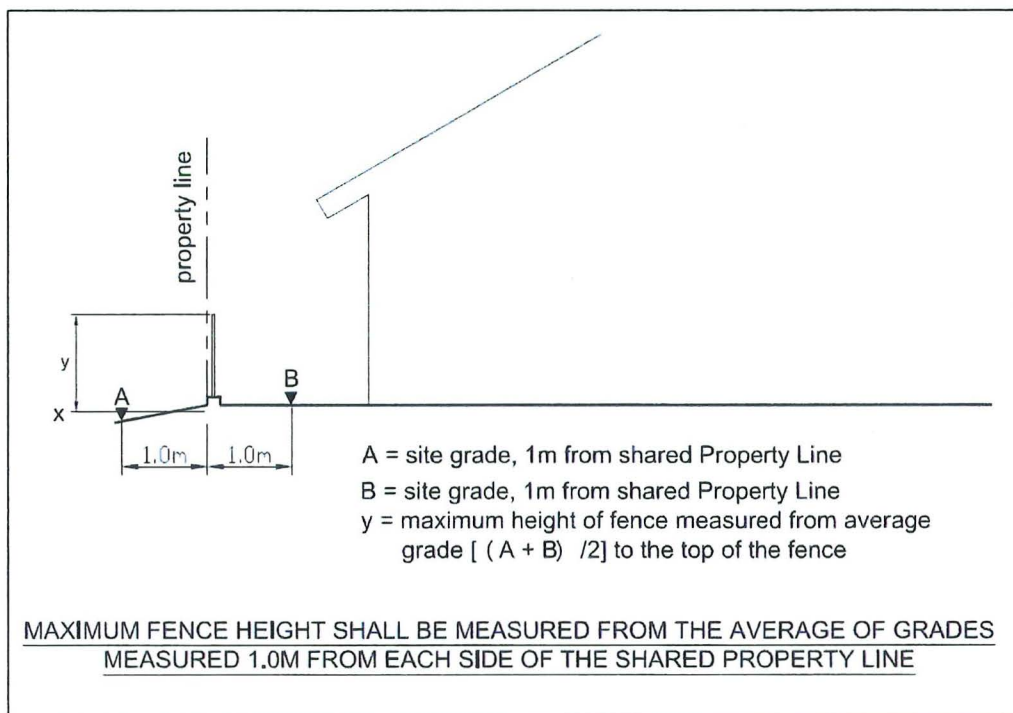
Fence Height Requirements

- The maximum fence height of 2.0 metres (m) is permitted for fences constructed in residential zones and site specific zones that include residential uses. (Richmond Zoning Bylaw No.8500:6.8.1)
 - A maximum fence height of 1.2 m is permitted for fences located in the front yard or between the principal dwelling unit and the front property line or public road.
 - A maximum fence height of 1.83 m is permitted for fences when located elsewhere within a required yard. (Richmond Zoning Bylaw No. 8500:Residential Zones)
- The use of barbed wire, electrified wire, razor wire, and barbed tape obstacles as fencing material is prohibited in all residential zones and in site specific zones that govern single detached housing. (Richmond Zoning Bylaw No. 8500:6.8.5)
- A building permit is required for any fence construction with concrete foundations. (Building Regulation Bylaw No. 7230:16.1)

Measuring Fence Height

- Fence height is determined by measuring the vertical distance between the average finished site grade, measured 1.0 m from both sides of the property line, to the top of the fence. (Richmond Zoning Bylaw No. 8500:6.8.3)
- Grading must be strategically managed to avoid impact with the maximum fence height limit shown.
- Please refer to the diagrams attached.

Should you have any questions, comments, or suggestions concerning this bulletin, please reference the Bulletin number and email building@richmond.ca or call the Building Approvals General Inquiries line at **604-276-4118**.



References

Please see Bulletin BUILDING-44 for regulations regarding fences in agricultural zones.

City of Richmond Zoning Bylaw, Landscaping and Screening:

<https://www.richmond.ca/shared/assets/LandscapingScreening24225.pdf>

Should you have any questions, comments, or suggestions concerning this bulletin, please reference the Bulletin number and email building@richmond.ca or call the Building Approvals General Inquiries line at **604-276-4118**.



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Agricultural Zones: Fence Heights and Materials

No.: BUILDING-44

Last Revised: 2020/02/06

Date Created: 2020/02/06

This bulletin is to inform Owners and Builders of the fence height and material regulations in agricultural zones recently adopted in Richmond Zoning Bylaw No. 8500, Amendment Bylaw No. 10122 and Building Regulations Bylaw No. 7230, and Amendment Bylaw No. 10144.

Summary

- Definition of fence height has been clarified to identify measurement parameters.
- Maximum fence heights in agricultural zones have been clarified.
- Acceptable materials for use in agricultural zones have been clarified in order to promote and maintain the agrarian character.

General Requirements

- The maximum fence height of 2.4 metres(m) is permitted for fences constructed in agricultural zones and site specific zones that govern farm businesses. (Richmond Zoning Bylaw No. 8500:6.9.1)
 - A maximum fence height of 1.2 m is permitted for fences located in the front yard or between the single detached housing unit and the front property line or public road.
 - A maximum fence height of 2.0 m is permitted for fences located in the side yard or between the single detached housing unit and the side property line.
- The use of barbed wire, electrified wire, razor wire, and barbed tape obstacles as fencing material is prohibited in all residential zones and in site specific zones that govern single detached housing. (Richmond Zoning Bylaw No. 8500: 6.8.5)
- A building permit is required for any fence construction with concrete foundations. (Building Regulation Bylaw No. 7230:16.1)

Measuring Fence Height

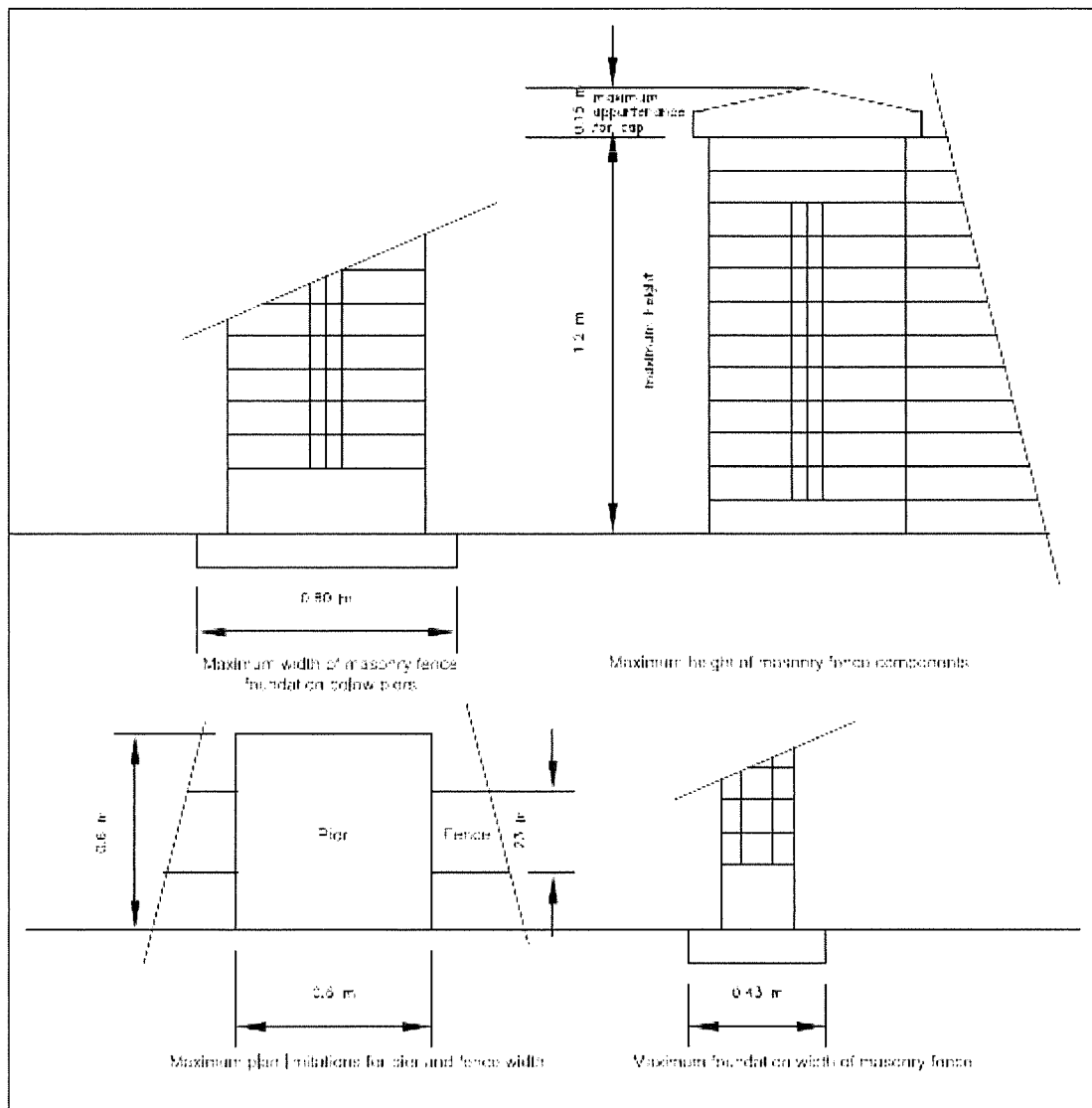
- Fence height is determined by measuring the vertical distance between the average finished site grade, measured 1.0 m from both sides of the property line, to the top of the fence. (Richmond Zoning Bylaw No. 8500:6.9.3)
- Grading must be strategically managed to avoid impact with the maximum fence height limit shown. See Building Bulletin-43 for additional information.

Material Regulations

- The following are suitable materials and design for construction of agrarian fencing in the Agriculture zones. (Richmond Zoning Bylaw No. 8500:6.9.4)
 - Wood Post and Rail, minimum spacing between horizontal members shall be 0.3 m;

Should you have any questions, comments, or suggestions concerning this bulletin, please reference the Bulletin number and email building@richmond.ca or call the Building Approvals General Inquiries line at **604-276-4118**.

- Diagonal cross bracing permitted if bracing between posts;
 - Metal post and rail, minimum 0.3 m spacing between horizontal members;
 - Wood Post and welded wire mesh;
 - Steel Post and welded wire mesh; and/or
 - Wood pickets, 8 cm minimum distance between pickets.
- Fences in agriculture zones shall be constructed of materials limited to fence agrarian materials, except as noted below (Zoning Bylaw 8500:6.9.5):
 - Masonry and concrete fences shall only be permitted along property lines fronting a public road.
 - Masonry and concrete fences are defined as fences composed either partially or entirely of stone, brick, concrete, concrete block, or other similar building materials.
 - No masonry or concrete fence or its components shall exceed 1.2 m in height.
 - An appurtenance allowance of 0.15 m for pier caps is permitted provided the piers are spaced no closer than 0.365 m edge to edge.
 - The width of the masonry fence shall not exceed 0.3 m in width.
 - Footings shall limited as shown in the attached diagrams.
 - Total masonry fence length shall be further limited to the width of the single detached dwelling fronting the public road plus 6 m.
 - Beyond that length, fences shall be constructed of materials limited to agrarian materials.
- Please refer to the diagrams attached for additional information.



Should you have any questions, comments, or suggestions concerning this bulletin, please reference the Bulletin number and email building@richmond.ca or call the Building Approvals General Inquiries line at **604-276-4118**.



**Building Regulation Bylaw No. 7230,
Amendment Bylaw No. 10144**

The Council of the City of Richmond enacts as follows:

1. Building Regulation Bylaw No. 7230, as amended, is further amended at Section 16.1 by deleting the definition of Structure and replacing it with the following:

“Structure means all or part of a **construction**, whether fixed to, supported by, sunk into, or located in, land, water or airspace, and includes freestanding sign structures over 3.0 m in height and supporting structures for such signs, and includes a **sewage holding tank**, but excludes landscaping, paving, a **fence** without concrete foundations, or a retaining wall under 1.0 m in height.”.

2. This Bylaw is cited as **“Building Regulation Bylaw No. 7230, Amendment Bylaw No. 10144”**.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

APR 14 2020

APR 14 2020

APR 14 2020

CITY OF
RICHMOND

APPROVED
for content by
originating
Division

59

APPROVED
for legality
by Solicitor

BRS

MAYOR

CORPORATE OFFICER



**Richmond Zoning Bylaw No. 8500
Amendment Bylaw No. 10122 (Fence Regulations)**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 3.4 [Use and Term Definitions] by deleting the definitions of “Height, fence” in its entirety and replacing it with the following:

“Height, fence means the vertical distance between the average **finished site grade** measured at a point 1.0 m from both sides of the **property line** to the top of the **fence**.”

2. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 3.4 [Use and Term Definitions] by inserting the following definition in alphabetical order:

“Agrarian materials, fence The following are suitable materials and design for the construction of agrarian fencing in **agriculture zones**.

1. Wood Post and Rail, minimum spacing between horizontal members shall be 0.3 m.
 - a. Diagonal cross bracing permitted if bracing between posts.
2. Metal post and rail, minimum 0.3 m spacing between horizontal members.
3. Wood Post and welded wire mesh.
4. Steel Post and welded wire mesh.
5. Wood pickets, 8 cm minimum distance between pickets.”

3. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 6.8 [Fence Limitations in Residential Zones] by deleting Section 6.8.3 in its entirety and replacing it with the following:

“6.8.3 Fence height shall be measured at the average **finished site grade** measured at a point 1.0 m from both sides of the **property line** to the top of the **fence**.”

4. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 6.9 [Fence Limitations in All Other Zones] by deleting Section 6.9.1 in its entirety and replacing it with the following:

“6.9.1 No **fence** constructed in the **agricultural zones** and **site specific zones** that govern **farm businesses** shall exceed 2.4 m in **height**. Furthermore, a fence shall not:

- a) exceed 2.0 m in **height** where the **fence** is located in the **exterior side yards** of a **single detached housing unit**; or
- b) exceed 1.2 m in **height** where the **fence** is located in the **front yard** (or yard fronting a public street) of a **single detached housing unit**.”

5. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 6.9 [Fence Limitations in Residential Zones] by deleting Section 6.9.3 in its entirety and replacing it with the following:

“6.9.3 **Fence height** shall be measured at the average **finished site grade** measured at a point 1.0 m from both sides of the **property line** to the top of the **fence**.”

6. Richmond Zoning Bylaw No. 8500, as amended, is further amended at Section 6.9 [Fence Limitations in All Other Zones] by inserting the following, in numerical order, and adjusting the numbers thereafter:

“6.9.4 The following are suitable **fence agrarian materials** for the design and construction of fencing in **agriculture zones**.

- a) Wood Post and Rail, minimum spacing between horizontal members shall be 0.3 m.
 - i. Diagonal cross bracing permitted if bracing between posts.
- b) Metal post and rail, minimum 0.3 m spacing between horizontal members.
- c) Wood Post and welded wire mesh.
- d) Steel Post and welded wire mesh.
- e) Wood pickets, 8 cm minimum distance between pickets.

6.9.5 In **agricultural zones**:

- a) **Fences** shall be constructed of materials limited to farm **agrarian materials** for fencing to the satisfaction of the Director, Building Approvals.
- b) Any gate providing farm **access** (even if also serving the **single detached housing unit**) is required to comply with the **agrarian materials**.

- c) Masonry **fences** shall only be permitted along **property lines** fronting a public road.
- a. No masonry **fence** or its above **grade** components shall exceed 1.2 m in **height** and 0.3 m in width. **Height** may increase an additional 0.15 m as an appurtenance allowance for piers spaced no closer than 3.65 m edge to edge.
 - b. No masonry **fence** below **grade** components shall exceed 0.43 m in width for **fence** footing and 0.8 m square for pier footings.
 - c. Total masonry **fence** length shall be further limited to the width of the house fronting the public road plus 6 m.”
7. Richmond Zoning Bylaw No. 8500, as amended, is further amended as Section 4.12.1 [Projections into Yards in All Zones] by deleting Section 4.12.1 in its entirety and replacing it with the following:
- “4.12.1
- a) No **building, structure**, feature or portion thereof shall be developed, used, occupied, constructed, erected, modified, converted, enlarged, reconstructed, altered, placed, maintained or added to within any required **yard** except as follows, provided that they meet the provisions of the British Columbia Building Code. The exceptions below do not apply to the 4 m **side yard setback** in properties with an AG1 **agricultural zone** when that same **setback** is used to accommodate farm **access**.”
8. This Bylaw is cited as “**Richmond Zoning Bylaw No. 8500, Amendment Bylaw No. 10122**”.

FIRST READING

PUBLIC HEARING

SECOND READING

THIRD READING

ADOPTED

APR 14 2020

CITY OF RICHMOND
APPROVED by 
APPROVED by Director or Solicitor 

MAYOR_____
CORPORATE OFFICER



City of Richmond

Report to Committee

To: General Purposes Committee

Date: September 21, 2020

From: Wayne Craig
Director, Development

File: RZ 19-881151

Re: Application by Kulbinder Dhesi, Rajbinder Aujla and Paulveer Aujla for Rezoning at 10160 Williams Road from the "Single Detached (RS1/E)" Zone to the "Compact Single Detached (RC2)" Zone

Staff Recommendation

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10206, for the rezoning of 10160 Williams Road from the "Single Detached (RS1/E)" zone to the "Compact Single Detached (RC2)" zone, be introduced and given first reading.

Wayne Craig
Director, Development
(604-247-4625)

WC:na
Att. 7

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Affordable Housing	<input checked="" type="checkbox"/>	

Staff Report

Origin

Kulbinder Dhesi, Rajbinder Aujla and Paulveer Aujla – the owners of the property, have applied to the City of Richmond for permission to rezone 10160 Williams Road from the “Single Detached (RS1/E)” zone to the “Compact Single Detached (RC2)” zone, to permit a subdivision to create two single detached lots, with vehicle access from the rear lane (Attachment 1). The site survey and proposed subdivision plan is attached (Attachment 2).

Findings of Fact

A Development Application Data Sheet providing details about the development proposal is attached (Attachment 3).

Surrounding Development

The subject property is located on the south side of Williams Road, between No. 4 Road and Aquila Road. The existing house on site is currently owner occupied. In recent years, the south side of this block of Williams Road has undergone redevelopment to smaller lots through rezoning and subdivision.

To the North: Across Williams Road, are two dwellings zoned “Compact Single Detached (RC1)” that were part of an approved rezoning and subdivision application from 2006 (RZ 06-350258 and SD 06-350259).

To the South: Directly across the rear lane, is a large lot zoned “Single Detached with Granny Flat or Coach House - Edgemere (RE1)”.

To the East: A single-family dwelling zoned “Compact Single Detached (RC2)” that was part of an approved rezoning and subdivision application from 2012 (RZ 12-610058 and SD 12-610059).

To the West: A single-family dwelling zoned “Compact Single Detached (RC1)” that was part of an approved rezoning and subdivision application from 2007 (RZ 07-386470 and SD 07-386469).

Related Policies & Studies

Official Community Plan (OCP) Designation

The OCP’s Generalized Land Use Map designation for this property is “Neighbourhood Residential”. This redevelopment proposal is consistent with this designation.

Arterial Road Land Use Policy

The Arterial Road Land Use Policy identifies the subject property for Compact Lot Single Detached development. This policy permits rezoning and subdivision along this section of Williams Road where there is an existing operational rear lane. This redevelopment proposal to rezone and subdivide a single-family lot into two compact single-family lots is consistent with the Arterial Road Redevelopment Policy.

Lot Size Policy 5443

The subject property is located within the area covered by Lot Size Policy 5443 (adopted by Council in 1990; amended in 2006). This Policy permits rezoning and subdivision of lots along this section of Williams Road in accordance with the provisions of Single-Family Housing District (R1-0.6) or Coach House District (R9) provided there is access to an operational rear lane (Attachment 4). These Districts are equivalent to the “Compact Single Detached (RC2)” and “Coach House (RCH)” zones of the current Zoning Bylaw 8500). This redevelopment proposal would allow for the creation of two lots, each approximately 10 m wide and 336 m² in area, which is consistent with the Lot Size Policy.

Floodplain Management Implementation Strategy

The proposed redevelopment must meet the requirements of the Richmond Flood Plain Designation and Protection Bylaw 8204. Registration of a flood indemnity covenant on title is required prior to final adoption of the rezoning bylaw.

Public Consultation

A rezoning sign has been installed on the subject property. Staff have not received any comments from the public about the rezoning application in response to the placement of the rezoning sign on the property.

Should Council grant first reading to the rezoning bylaw, the bylaw will be forwarded to a Public Hearing, where any area resident or interested party will have an opportunity to comment. Public notification for the Public Hearing will be provided as per the *Local Government Act*.

Analysis

This redevelopment proposes to rezone and subdivide one existing single-family property into two new compact single-family lots with vehicular access from the rear laneway. This rezoning and subdivision is consistent with the lot fabric and vehicular access of the adjacent lots on Williams Road. Similar applications to rezone and subdivide properties have been approved in recent years on both sides of this block of Williams Road, between No. 4 Road and Aquila Road.

Transportation and Site Access

Vehicular access to Williams Road is not permitted in accordance with Bylaw No. 7222 and therefore will be restricted to the rear lane only. Secondary suite parking will also be provided as required by Bylaw 8500, adjacent to the garages of the primary units and accessed from the rear lane. Based on the attached architectural drawings, both lots would provide a garage with side-by-side parking with an additional 3rd parking space provided for the use of the secondary suite.

Tree Retention and Replacement

The applicant has submitted a Certified Arborist's Report; which identifies on-site and off-site tree species, assesses tree structure and condition, and provides recommendations on tree retention and removal relative to the proposed development. The Report assesses five bylaw-sized trees on the subject property; one non-bylaw sized tree on neighbouring property, and one bylaw sized street tree on City property.

The City's Tree Preservation Coordinator has reviewed the Arborist's Report and supports the Arborist's findings, with the following comments:

- The City's Tree Preservation Coordinator concurs with the Arborist's recommendations for the removal of the five on-site trees (tag# 446, 447, 448, 449, 450) based on their very poor condition as a result of sparse canopy foliage and historical topping. The on-site trees are not good candidates for retention and should be removed and replaced.
- The City's Parks Arborist recommends that the one 23cm dbh Liquidambar Styraciflua street tree (tag# C01) in the boulevard on City-owned property should be retained and protected prior to demolition and construction on the subject site and a \$5,000.00 tree survival security be required.
- One tree (tag# N01) located on adjacent neighbouring properties is identified to be retained and protected and a \$5,000.00 tree survival security be required. Provide tree protection as per City of Richmond Tree Protection Information Bulletin Tree-03.

Tree Replacement

The applicant wishes to remove five on-site trees (Trees # 446, 447, 448, 449, 450) that are in very poor condition. The 2:1 replacement ratio would require a total of 10 replacement trees. The applicant has agreed to plant five trees on each lot proposed; for a total of ten trees. The required replacement trees are to be planted and sized as illustrated on Landscape Plan in Attachment 5.

Tree Protection

One tree (tag# N01) on neighbouring properties is to be retained and protected. The applicant has submitted a tree protection plan showing the trees to be retained and the measures taken to protect them during development stage (Attachment 6). The applicant has provided a site plan and landscape plan demonstrating their ability to plant five trees on each of the resulting lots (Attachment 5). To ensure that the trees identified for retention are protected at development stage, the applicant is required to complete the following items:

- Prior to final adoption of the rezoning bylaw, submission to the City of a contract with a Certified Arborist for the supervision of all works conducted within or in close proximity to tree protection zones. The contract must include the scope of work required, the number of proposed monitoring inspections at specified stages of construction, any special measures required to ensure tree protection, and a provision for the arborist to submit a post-construction impact assessment to the City for review.
- Prior to final adoption of the rezoning bylaw, submission to the City of a Tree Survival Security to the City in the amount of \$10,000.00 (\$5,000 each) for the two (2) trees (tag# C01, N01) to be retained.
- Prior to demolition of the existing dwelling on the subject site, installation of tree protection fencing around all trees to be retained. Tree protection fencing must be installed to City standard in accordance with the City's Tree Protection Information Bulletin Tree-03 prior to any works being conducted on-site, and remain in place until construction and landscaping on-site is completed.

Affordable Housing Strategy

The applicant is required to comply with the City's Affordable Housing Strategy. The applicant proposes to provide a legal secondary suite on both future lots at the subject site. To ensure that the two-storey one-bedroom secondary suites of approximately 42.3 m² (455ft²) are built to the satisfaction of the City in accordance with the City's Affordable Housing Strategy, the applicant is required to enter into a legal agreement registered on title, stating that no final Building Permit inspection will be granted until the secondary suite is constructed to the satisfaction of the City in accordance with the BC Building Code and the City's Zoning Bylaw. This legal agreement is a condition of rezoning adoption.

Site Servicing

At Subdivision stage, the applicant will be required to pay Development Cost Charges (City and GVS & DD & TransLink), Cost Recovery Bylaw Charge of \$26,309.54 for lane improvements, School Site Acquisition Charge, Address Assignment Fee, and Servicing Costs. Construction works for upgrades will be performed via a City Work Order at the time of subdivision.

Financial Impact or Economic Impact

The rezoning application results in an insignificant Operational Budget Impact (OBI) for off-site City infrastructure (such as roadworks, waterworks, storm sewers, sanitary sewers, street lights, street trees and traffic signals).

Conclusion

This rezoning application to permit subdivision of 10160 Williams Road into two single-family lots complies with all applicable land use designations and policies contained within the OCP, and is consistent with Lot Size Policy 5443, which allows rezoning and subdivision to “Compact Single Detached (RC2)”. This rezoning application is consistent with the established pattern of redevelopment in the neighbourhood.

The list of rezoning considerations is included at Attachment 7, which has been agreed to by the applicant (signed concurrence on file).

On this basis, it is recommended that Richmond Zoning Bylaw 8500, Amendment Bylaw 10206 be introduced and given first reading.



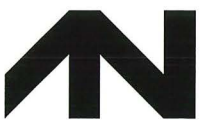
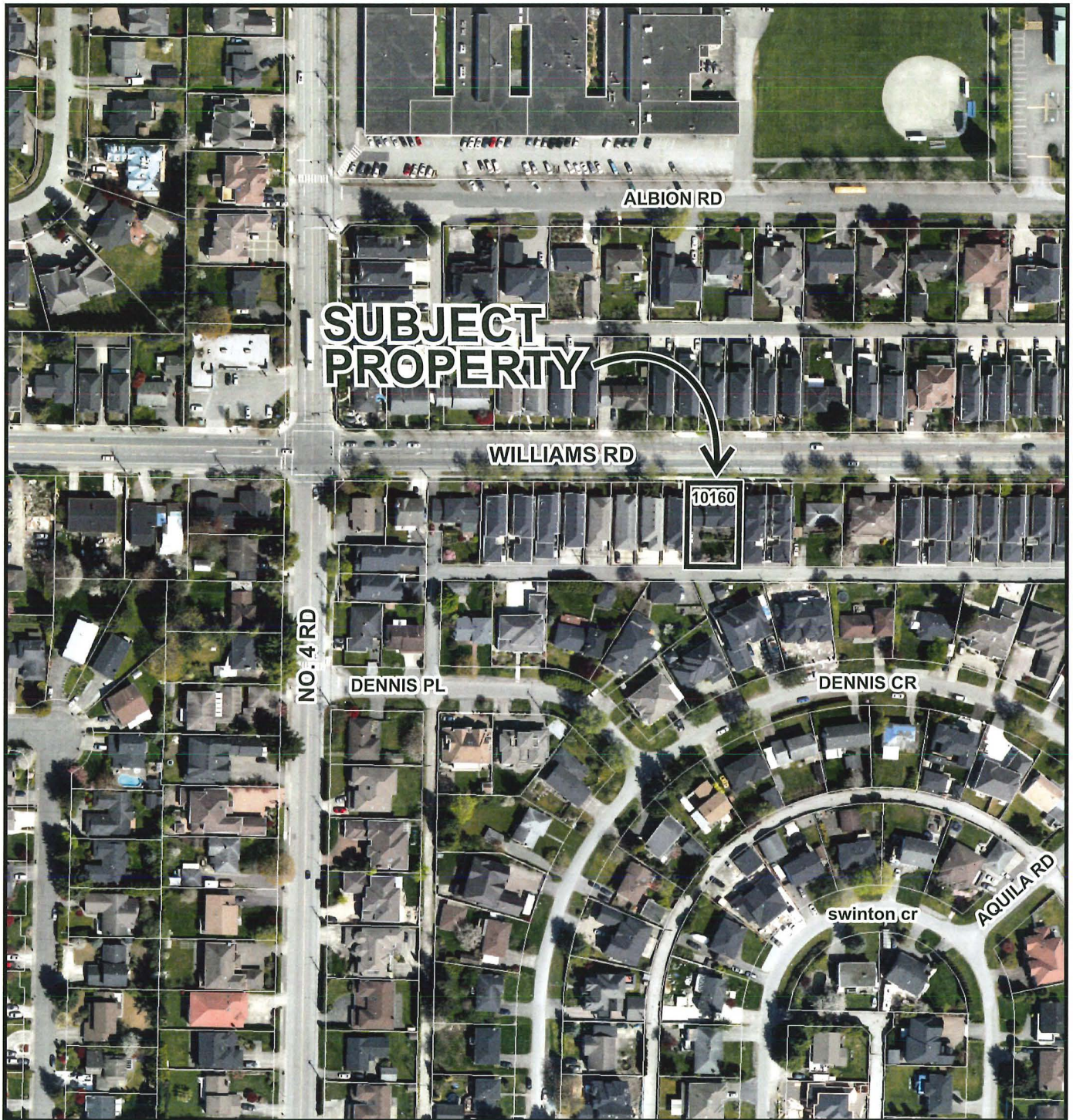
Nathan Andrews
Planning Technician
(604-247-4911)

NA:blg

Attachment 1: Location Map/Aerial Photo
Attachment 2: Site Survey and Subdivision Plan
Attachment 3: Development Application Data Sheet
Attachment 4: Lot Size Policy 5443
Attachment 5: Site Plan and Landscape Plan
Attachment 6: Tree Retention Plan
Attachment 7: Rezoning Considerations



City of Richmond



RZ 19-881151

Original Date: 01/09/20

Revision Date:

Note: Dimensions are in METRES

**TOPOGRAPHIC SURVEY AND PROPOSED SUBDIVISION OF
LOT 28 BLOCK 1 SECTION 35 BLOCK 4 NORTH RANGE 6 WEST
NEW WESTMINSTER DISTRICT PLAN 18549**

#10160 WILLIAMS ROAD,
RICHMOND, B.C.
P.I.D. 004-305-728

NOTE:

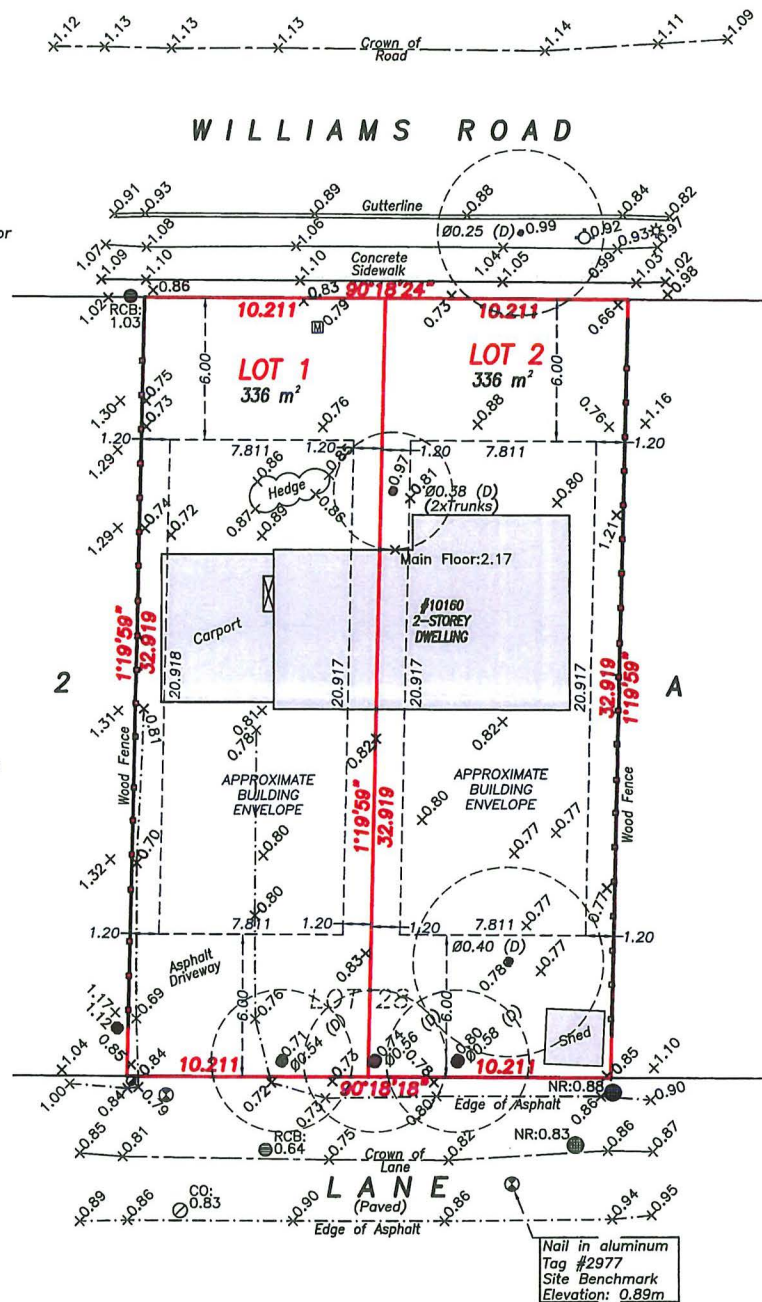
Elevations shown are based on
City of Richmond HPN
Benchmark network.
Benchmark: HPN #190
Control Monument 94H1624
Elevation: 2.353m
Benchmark: HPN #191
Control Monument 02H2453
Elevation: 1.664m

NOTE:

Use site Benchmark Tag #2977 for
construction elevation control.

LEGEND:

- (D) denotes deciduous
- ⊙ denotes round catch basin
- ⊞ denotes water meter
- ⊙ denotes manhole
- ⊙ denotes cleanout
- ⊙ denotes fire hydrant
- ⊙ denotes street light
- ⊙ denotes power post



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J. C. Tam and Associates
Canada and B.C. Land Surveyor
115 - 8833 Odlin Crescent
Richmond, B.C. V6X 3Z7
Telephone: (604) 214-8928
Fax: (604) 214-8929
E-mail: office@jctam.com
Website: www.jctam.com
Job No. 7382
FB-360 P53-55; FB-375 P144
Drawn By: WK

SCALE: 1:200



ALL DISTANCES ARE IN METRES AND DECIMALS
THEREOF UNLESS OTHERWISE INDICATED

CERTIFIED CORRECT:
LOT DIMENSION ACCORDING TO
FIELD SURVEY

JOHNSON C. TAM, B.C.L.S., C.L.S.

AUGUST 6th, 2019.

DWG No. 7382-Topo

GP-187



RZ 19-881151

Attachment 3

Address: 10160 Williams Road

Applicant: Kulbinder Dhesi, Rajbinder Aujla and Paulveer Aujla

Planning Area(s): Shellmont

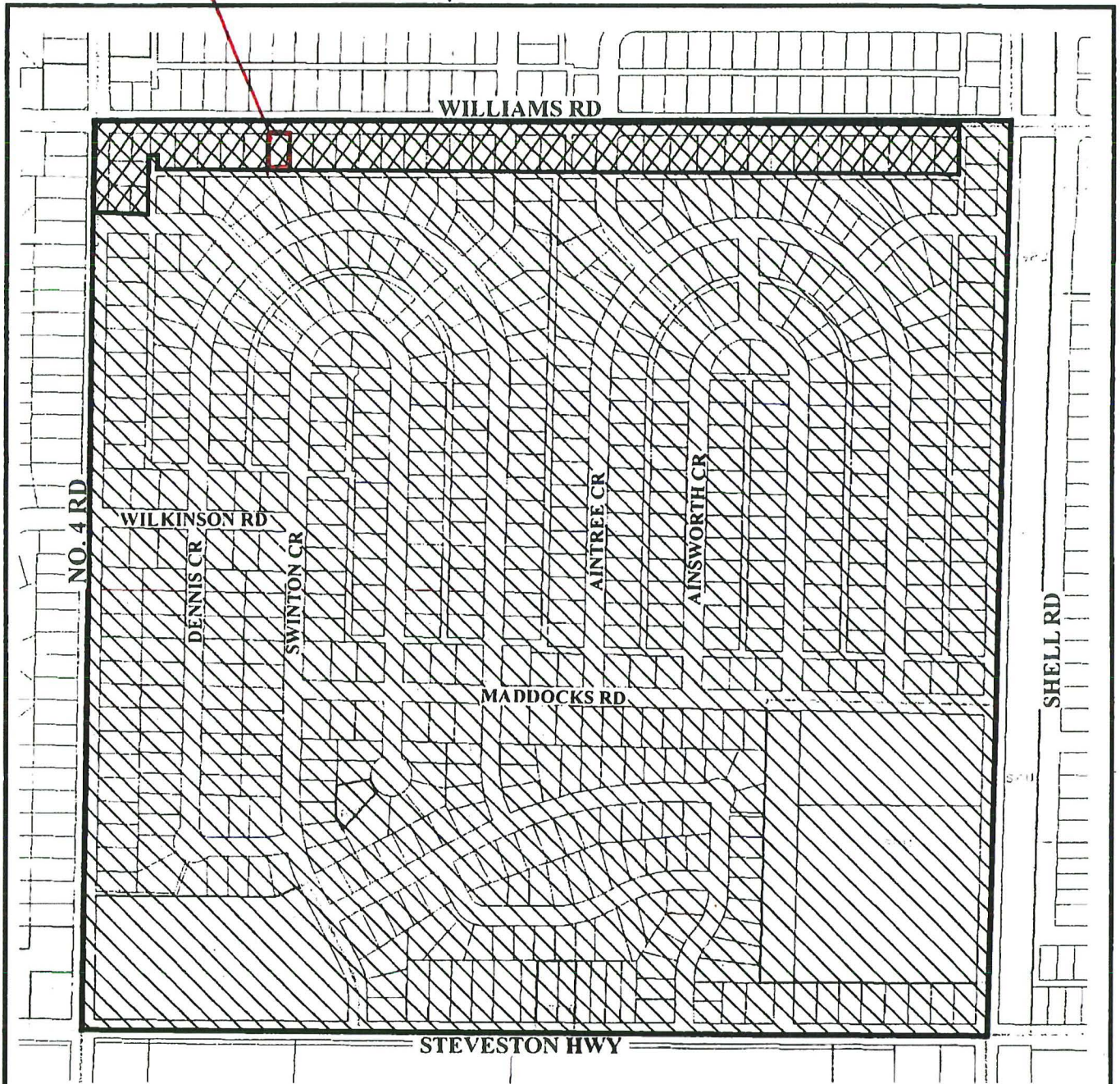
	Existing	Proposed
Owner:	Kulbinder Dhesi Rajbinder Aujla Paulveer Aujla	To be determined
Site Size (m²):	672 m ² (7,234 ft ²)	Two lots, each approximately 336 m ² (3,617 ft ²)
Land Uses:	One single detached dwelling	Two single detached dwellings
OCP Designation:	Neighbourhood Residential	No change
Area Plan Designation:	N/A	No change
702 Policy Designation:	Lot Size Policy 5443 permits rezoning and subdivision of lots along the south side of this section of Williams Road to "Compact Single Detached (RC2)" or "Coach House (RCH)".	No change
Zoning:	Single Detached (RS1/E)	Compact Single Detached (RC2)
Number of Units:	1	2
Other Designations:	The Arterial Road Redevelopment Policy permits rezoning and subdivision to smaller lots along the south side of this section of Williams Road due to the existing operational rear lane.	No change

On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Floor Area Ratio:	Max. 0.6	Max. 0.6	none permitted
Buildable Floor Area (m ²):*	Lot A: Max. 201.60 m ² (2,170 ft ²) Lot B: Max. 201.60 m ² (2,170 ft ²)	Lot A: Max. 201.23 m ² (2,166 ft ²) Lot B: Max. 201.23 m ² (2,166 ft ²)	none permitted
Lot Coverage (% of lot area):	Building: Max. 50% Non-porous Surfaces: Max. 70% Lot Landscaping with live plant material: Min. 20%	Building: Max. 50% Non-porous Surfaces: Max. 70% Lot Landscaping with live plant material: Min. 20%	none
Lot Size:	Min. 270 m ²	336 m ²	none
Lot Dimensions (m):	Width: 9.0 m Depth: 24.0 m	Width: 10.21 m Depth: 32.92 m	none

On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Setbacks (m):	Front: Min. 6.0 m Rear: Min. 6.0 m Side: Min. 1.2 m	Front: Min. 6.0 m Rear: Min. 6.0 m Side: Min. 1.2 m	none
Height (m):	Max. 9.0 m (2.5 storeys)	9.0 m	none
On-site Vehicle Parking with Secondary Suite:	3 per lot	Lot A: 3 Lot B: 3	none

Other: Tree replacement compensation required for loss of significant trees.

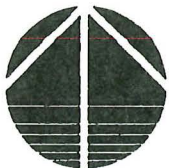
* Preliminary estimate; not inclusive of garage; exact building size to be determined through zoning bylaw compliance review at Building Permit stage.



Subdivision permitted as per **R1/E**.



Subdivision permitted as per R1-0.6 or R9 provided that access is to a constructed lane and not to the arterial road.



Policy 5443
Section 35, 4-6

Adopted Date: 12/17/90

Amended Date: 12/18/06

0160 Williams Road in Monday, July 13, 2020 4:56 PM



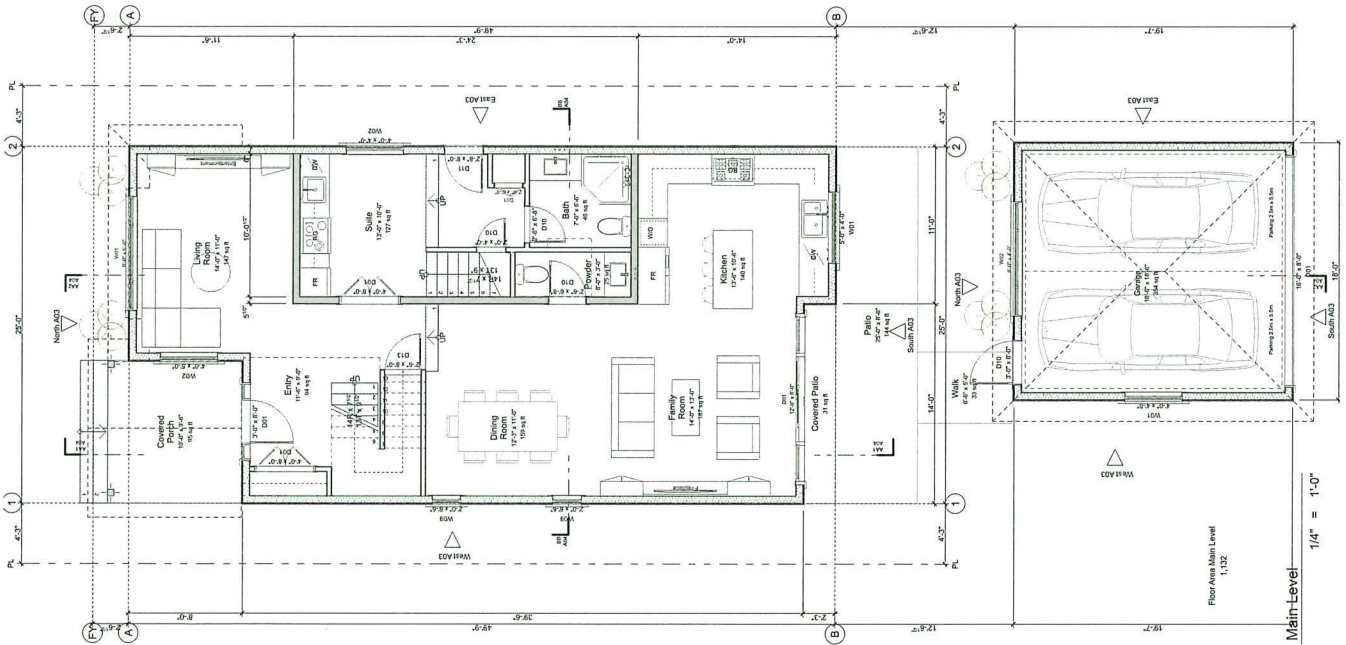
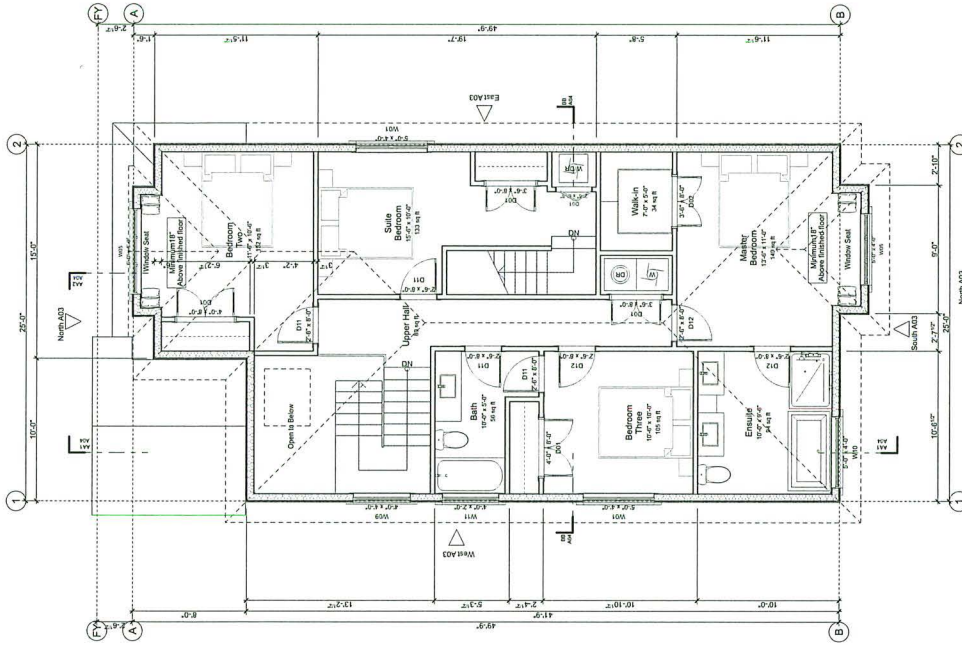
Bradley Doré
604.702.8340
brad.dore@reine.com

Consulting Architectural & Engineering
10160 Williams Road, Suite 100
Richmond, BC V6V 1W7

Dhesi Houses
10160 Williams Road
Richmond, BC

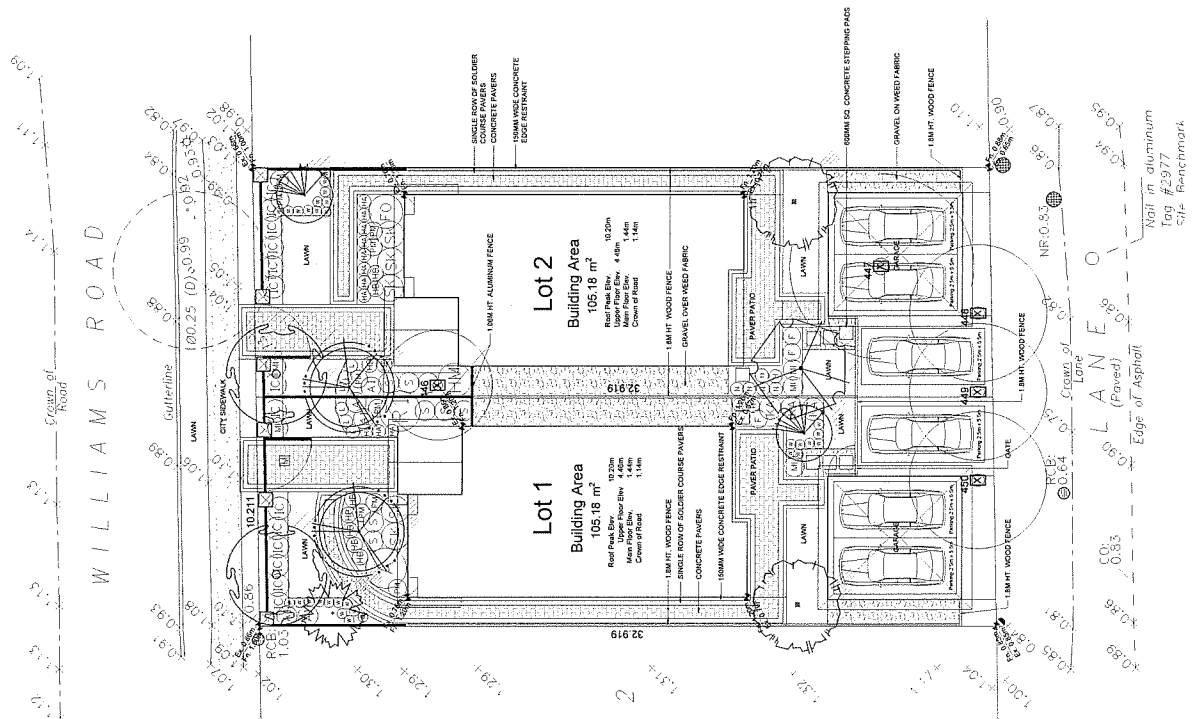
The design and construction of all drawings
conform to BCAC 2018

Floor Plans	
Scale	Date
Based for Reasoning	2020-07-13
A02	



SEAL

PLANT SCHEDULE		PMG PROJECT NUMBER: 20-076	
NO.	SYMBOL	COMMON NAME	PLANTED SIZE / REMARKS
1	(Symbol)	CERISE CAMANISSE 'POMME D'OR'	50cm CAL. BAR
2	(Symbol)	COINGS 'FLORIDA FLORIDA'	50cm CAL. BAR
3	(Symbol)	PRINCE OF WALES 'PRINCE OF WALES'	2.5m HT. BAR
4	(Symbol)	STYRA JAPANESE 'STYRA JAPANESE'	50cm CAL. 1.5m STD. BAR
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L1

OF 2

20-076



2019-12-20

PROJECT:
PROPOSED SUBDIVISION
10160 WILLIAMS ST
RICHMOND, B.C.

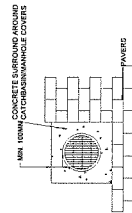
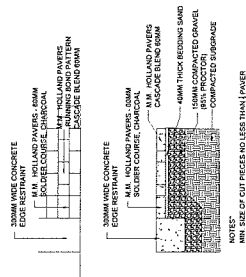
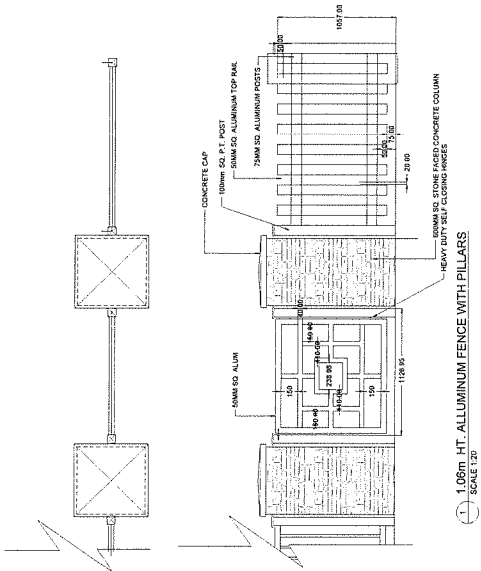
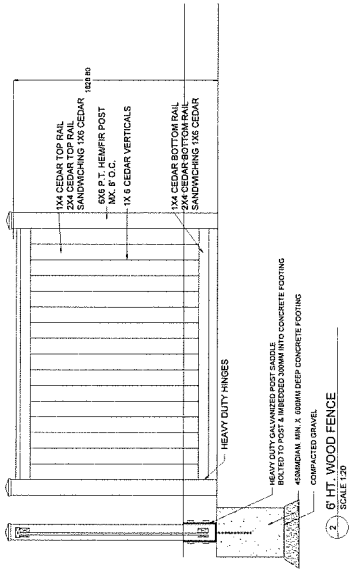
DRAWING TITLE
LANDSCAPE
PLAN

DRAWING NUMBER
L1
DATE: 20 JUN 11
SCALE: 1:100
DRAWN: MM
DESIGN: MM
CHECK: NCT

PMG PROJECT NUMBER
20-076

NO.	DATE	REVISION DESCRIPTION	BY
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9	2011-06-20	ISSUED FOR PERMIT	MM
10	2011-06-20	ISSUED FOR PERMIT	MM

CLIENT



NO.	DATE	REVISION DESCRIPTION	BY
1.	2020-11	REVISION	EN
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PROJECT:

PROPOSED SUBDIVISION
10360 WILLIAMS ST
RICHMOND, B.C.

DRAWING TITLE
LANDSCAPE
DETAILS

DATE: 20 JUN 11
SCALE: 1:20
DRAWN: MM
DESIGN: MM
CHECK: MM
PROJECT NUMBER: 20-076
DRAWING NUMBER: L2
OF 2



2019-2-23P



Address: 10160 Williams Road

File No.: RZ 19-881151

Prior to final adoption of Richmond Zoning Bylaw 8500, Amendment Bylaw 10206, the developer is required to complete the following:

1. Submission of a Landscape Plan, prepared by a Registered Landscape Architect, to the satisfaction of the Director of Development, and deposit of a Landscaping Security based on 100% of the cost estimate provided by the Landscape Architect, including installation costs. The Landscape Plan should:
 - comply with the guidelines of the OCP's Arterial Road Policy and should not include hedges along the front property line;
 - include a mix of coniferous and deciduous trees;
 - include the dimensions of tree protection fencing as illustrated on the Tree Retention Plan attached to this report; and
 - include the ten (10) required replacement trees to be planted and sized as illustrated on Landscape Plan in Attachment 5 of the Rezoning Report.

If required replacement trees cannot be accommodated on-site, a cash-in-lieu contribution in the amount of \$750/tree to the City's Tree Compensation Fund for off-site planting is required.
2. Submission of a Contract entered into between the applicant and a Certified Arborist for supervision of any on-site works conducted within the tree protection zone of the trees to be retained. The Contract should include the scope of work to be undertaken, including: the proposed number of site monitoring inspections, and a provision for the Arborist to submit a post-construction assessment report to the City for review.
3. Submission of a Tree Survival Security to the City in the amount of \$10,000.00 (\$5,000 each) for the two (2) trees (tag# C01, N01) to be retained.
4. Registration of a flood indemnity covenant on title.
5. Registration of a legal agreement on Title to ensure that no final Building Permit inspection is granted until a minimum one-bedroom secondary suite of approximately 42.3 m² (455ft²) is constructed on both of the future lots, to the satisfaction of the City in accordance with the BC Building Code and the City's Zoning Bylaw.

Prior to Demolition Permit Issuance, the developer must complete the following requirements:

1. Installation of appropriate tree protection fencing around all trees to be retained as part of the development prior to any construction activities, including building demolition, occurring on-site.

Prior to Building Permit Issuance, the developer must complete the following requirements:

1. Submission of a Construction Parking and Traffic Management Plan to the Transportation Department. Management Plan shall include location for parking for services, deliveries, workers, loading, application for any lane closures, and proper construction traffic controls as per Traffic Control Manual for works on Roadways (by Ministry of Transportation) and MMCD Traffic Regulation Section 01570.
2. Obtain a Building Permit (BP) for any construction hoarding. If construction hoarding is required to temporarily occupy a public street, the air space above a public street, or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. For additional information, contact the Building Approvals Department at 604-276-4285.

At Subdivision* stage, the developer must complete the following requirements:

1. Pay Development Cost Charges (City and GVS & DD & Translink), Cost Recovery Bylaw Charge of \$26,309.54 for lane improvements, School Site Acquisition Charge, Address Assignment Fee, and Servicing Costs.
2. At the developer's sole cost complete the following works via a City Work Order:

Water Works:

- a) Using the OCP Model, there is 748.0 L/s of water available at a 20 psi residual at the Williams Road frontage. Based on your proposed development, your site requires a minimum fire flow of 95 L/s.
- b) At Developer's cost, the Developer is required to:
 - i) Submit Fire Underwriter Survey (FUS) or International Organization for Standardization (ISO) fire flow calculations to confirm development has adequate fire flow for onsite fire protection. Calculations must be signed and sealed by a Professional Engineer and be based on Building Permit Stage building designs.
- c) At Developer's cost, the City will:
 - i) Cut and cap the existing water service connection to the existing parcel, and remove water meter.
 - ii) Install one new water service connection for each proposed lot, complete with meter and meter box.

Storm Sewer Works:

- d) At Developer's cost, the City will:
 - i) Install a new storm service connection to the east lot, complete with inspection chamber.
 - ii) For the existing building, confirm the capacity and condition of the existing storm connection. If the existing storm connection is adequate to be reused, it may be retained; if not, it shall be replaced by the City at the developer's cost.

Sanitary Sewer Works:

- e) At Developer's cost, the City will:
 - i) Cut and cap the service connection to the existing parcel. Retain the inspection chamber to serve adjacent properties.
 - ii) Install one new sanitary service connection complete with inspection chamber and dual service leads.

Frontage Improvements:

- f) At Developer's cost, the Developer is required to:
 - i) Coordinate with BC Hydro, Telus and other private communication service providers:
 - (1) To pre-duct for future hydro, telephone and cable utilities along all road frontages.
 - (2) Before relocating/modifying any of the existing power poles and/or guy wires within the property frontages.
 - ii) Complete other frontage improvements as per Transportation requirements.

General Items:

- g) At Developer's cost, the Developer is required to:
 - i) Comply with and pay the determined costs under Schedule 5 of the Works and Services Cost Recovery Bylaw #8752 at subdivision.
 - ii) Enter into, if required, additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering, including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.

Note:

* This requires a separate application.

- Where the Director of Development deems appropriate, the preceding agreements are to be drawn not only as personal covenants of the property owner but also as covenants pursuant to Section 219 of the Land Title Act.

All agreements to be registered in the Land Title Office shall have priority over all such liens, charges and encumbrances as is considered advisable by the Director of Development. All agreements to be registered in the Land Title Office shall, unless the Director of Development determines otherwise, be fully registered in the Land Title Office prior to enactment of the appropriate bylaw.

The preceding agreements shall provide security to the City including indemnities, warranties, equitable/rent charges, letters of credit and withholding permits, as deemed necessary or advisable by the Director of Development. All agreements shall be in a form and content satisfactory to the Director of Development.

- Additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering may be required including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.
- Applicants for all City Permits are required to comply at all times with the conditions of the Provincial *Wildlife Act* and Federal *Migratory Birds Convention Act*, which contain prohibitions on the removal or disturbance of both birds and their nests. Issuance of Municipal permits does not give an individual authority to contravene these legislations. The City of Richmond recommends that where significant trees or vegetation exists on site, the services of a Qualified Environmental Professional (QEP) be secured to perform a survey and ensure that development activities are in compliance with all relevant legislation.

Signed

Date



**Richmond Zoning Bylaw 8500
Amendment Bylaw 10206 (RZ 19-881151)
10160 Williams Road**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation of the following area and by designating it **“COMPACT SINGLE DETACHED (RC2)”**.

P.I.D. 004-305-728

Lot 28 Block 1 Section 35 Block 4 North Range 6 West New Westminster District Plan 18549

2. This Bylaw may be cited as **“Richmond Zoning Bylaw 8500, Amendment Bylaw 10206”**.

FIRST READING

A PUBLIC HEARING WAS HELD ON

SECOND READING

THIRD READING

OTHER CONDITIONS SATISFIED

ADOPTED

CITY OF RICHMOND
APPROVED by 
APPROVED by Director or Solicitor 

MAYOR

CORPORATE OFFICER



Monday, November 16, 2020 – 7 pm

**Council Chambers, 1st Floor, Richmond City Hall
6911 No. 3 Road, Richmond, BC V6Y 2C1**

Richmond Zoning Bylaw 8500, Amendment Bylaw 10206 (RZ 19-881151)

Location/s: 10160 Williams Road

Applicant/s: Kulbinder Dhesi, Rajbinder Aujla, and Paulveer Aujla

Purpose: To rezone the subject property from “Single Detached (RS1/E)” to “Compact Single Detached (RC2)”, to permit development of two single-family lots with vehicle access from a rear lane.

City Contact: Nathan Andrews, 604-247-4911, Planning and Development Division

How to obtain further information:

- **By Phone:** If you have questions or concerns, please call the CITY CONTACT shown above.
- **On the City Website:** Public Hearing Agendas, including staff reports and the proposed bylaws, are available on the City Website at <http://www.richmond.ca/cityhall/council/agendas/hearings/2020.htm>
- **At City Hall:** Copies of the proposed bylaw, supporting staff and Committee reports and other background material, are also available for inspection at the Planning and Development Division at City Hall, between the hours of 8:15 am and 5 pm, Monday through Friday, except statutory holidays, commencing November 6, 2020 and ending November 16, 2020, or upon the conclusion of the hearing.
- **By FAX or Mail:** Staff reports and the proposed bylaws may also be obtained by FAX or by standard mail, by calling 604-276-4007 between the hours of 8:15 am and 5 pm, Monday through Friday, except statutory holidays, commencing November 6, 2020 and ending November 16, 2020.

Participating in the Public Hearing process:

- The health and wellness of our residents, staff and Council remain our priority. Please be advised that measures will be taken at the meeting to respect physical distancing requirements and adhere to recommended preventative measures to limit the spread of COVID-19.
- During the COVID-19 Pandemic, the Public Hearing is open to members of the public who may be affected by the proposed bylaw and wish to make a presentation.
- Due to the public health concerns and social distancing requirements, the public is encouraged to submit written comments in advance of the Public Hearing, or register to participate remotely via telephone, instead of attending the meeting in person if possible.
- Registration to participate remotely via telephone is available starting on the Friday prior to the Public Hearing until 1:00 pm on the date of the Hearing. Information on how to register is available on the City website: <https://www.richmond.ca/cityhall/council/phone-participation.htm>
- Written comments may be submitted to the City Clerk's Office by 4:00 pm on the date of the Public Hearing as follows:
 - **By E-mail:** using the on-line form at <http://www.richmond.ca/cityhall/council/hearings/about.htm>
 - **By Standard Mail:** 6911 No.3 Road, Richmond, BC, V6Y 2C1, Attention: Director, City Clerk's Office
 - **By Fax:** 604-278-5139, Attention: Director, City Clerk's Office
- **Public Hearing Rules:** For information on public hearing rules and procedures, please consult the City

website at <http://www.richmond.ca/cityhall/council/hearings/about.htm> or call the City Clerk's Office at 604-276-4007.

- All submissions will form part of the record of the hearing. **Once the Public Hearing has concluded, no further information or submissions can be considered by Council.** It should be noted that the rezoned property may be used for any or all of the uses permitted in the "new" zone.

Claudia Jesson
Director, City Clerk's Office



City of Richmond

Report to Committee

To: General Purposes Committee

Date: September 21, 2020

From: Wayne Craig
Director, Development

File: RZ 20-898600

Re: Application by Raman Kooner for Rezoning at 3540 Lockhart Road from the
"Single Detached (RS1/E)" Zone to the "Single Detached (RS2/B)" Zone

Staff Recommendation

That Richmond Zoning Bylaw 8500, Amendment Bylaw 10211, for the rezoning of 3540 Lockhart Road from the "Single Detached (RS1/E)" zone to the "Single Detached (RS2/B)" zone, be introduced and given first reading.

Wayne Craig
Director, Development
(604-247-4625)

WC:na
Att. 7

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Affordable Housing	<input checked="" type="checkbox"/>	

Staff Report

Origin

Raman Kooner has applied to the City of Richmond on behalf of 1254396 B.C. Ltd (Akkalan Holdings Inc. (Directors – Amit Robbie Sharda and Bhupinder Kooner)) for permission to rezone 3540 Lockhart Road (Attachment 1) from the “Single Detached (RS1/E)” zone to the “Single Detached (RS2/B)” zone in order to create two new single-family residential lots. The proposed subdivision is shown in Attachment 2.

Findings of Fact

A Development Application Data Sheet providing details about the development proposal is attached in Attachment 3.

Subject Site Existing Housing Profile

There is a non-conforming two-unit dwelling on the site currently and which will be demolished. One unit is currently occupied by the previous owner of the property until the end of September and the other unit is vacant.

Surrounding Development

The area is an established residential neighbourhood containing a mix of older and newer single-family and two-unit dwelling lots.

- | | |
|---------------|--|
| To the North: | Across Lockhart Road, two single-family lots zoned “Single Detached (RS1/B)” that were part of an approved rezoning and subdivision application from 2006 (RZ 06-344783 and SD 06-344786). |
| To the South: | A duplex on property zoned “Two-Unit Dwellings (RD1)”. |
| To the East: | A single-family dwelling on property zoned “Single Detached (RS1/B)”. |
| To the West: | A single-family dwelling that was part of an approved rezoning and subdivision application from 2006 (RZ 06-345319 and SD 06-345321) zoned “Single Detached (RS1/B)”. |

Related Policies & Studies

Official Community Plan

The subject property is located in the Quilchena neighbourhood of the Seafair planning area (Attachment 4). The Official Community Plan (OCP) land use designation for the subject property is “Neighbourhood Residential”. The proposed rezoning is compliant with this designation.

Lot Size Policy 5447

The subject property is located within the area covered by Single-Family Lot Size Policy 5447 (Attachment 5). This Single-Family Lot Size Policy permits subdivision consistent with the requirements of the “Single Detached (RS2/B)” zone. The proposed rezoning and subdivision would allow for the creation of two lots; each 12.19 m in width and 467 m² (5027 ft²) in area, consistent with the requirements of the “Single Detached (RS2/B)” zone.

Floodplain Management Implementation Strategy

The proposed redevelopment must meet the requirements of the Richmond Flood Plain Designation and Protection Bylaw 8204. Registration of a flood indemnity covenant on title is required prior to final adoption of the rezoning bylaw.

Public Consultation

A rezoning sign has been installed on the subject property. Staff have not received any comments from the public about the rezoning application in response to the placement of the rezoning sign on the property.

Should Council grant first reading to the rezoning bylaw, the bylaw will be forwarded to a Public Hearing, where any area resident or interested party will have an opportunity to comment. Public notification for the Public Hearing will be provided as per the *Local Government Act*.

AnalysisExisting Legal Encumbrances

There is an existing 3.0 m-wide statutory right-of-way (SRW) for sanitary services registered on title (K86910) within the rear yard of the subject lot, which will not be impacted by the proposed rezoning and subdivision. The applicant is aware that encroachment and construction works are not permitted in the SRW.

Transportation and Site Access

The property frontage was recently upgraded to meet City standards. Vehicle access will be provided from Lockhart Road via separate driveway crossings to each new lot.

Tree Retention and Replacement

The applicant has submitted a Certified Arborist’s Report; which identifies on-site and off-site tree species, assesses tree structure and condition, and provides recommendations on tree retention and removal relative to the proposed development. The Report assesses one bylaw-sized tree on the subject property, one bylaw-sized tree on neighbouring property, and one street tree on City property.

The City’s Tree Preservation Coordinator has reviewed the Arborist’s Report and supports the Arborist’s findings, with the following comments:

- One 33 cm Douglas Fir (tag#1601) on-site is in good condition and therefore should be retained and protected. A \$10,000.00 Tree Survival security will be required.
- Two trees (tag#Os1 (25 cm dbh Sycamore Maple) and tag#City-1 (0.08 cm dbh Katsura tree) located on adjacent neighbouring and City properties are identified to be retained and protected. Both trees will each require a \$5,000.00 Tree Survival Security. Provide tree protection as per City of Richmond Tree Protection Information Bulletin Tree-03.

Tree Replacement

No trees are proposed to be removed. As per the Richmond Zoning Bylaw 8500, on a lot that is subject to a building permit application, each new lot will provide two new trees and comply with the minimum planting sizes specified in the City's Tree Protection Bylaw 8057 where trees are being planted. To ensure that each new lot will have a minimum of two new trees on-site, a Landscape security of \$3,000.00 for four new trees (\$750/tree) will be required.

Tree Protection

Two off-site trees (one neighbouring tree tag#Os1 and one City tree tag#City-1) are to be retained and protected. The applicant has submitted a tree protection plan showing the trees to be retained and the measures taken to protect them during development stage (Attachment 6). Three hedges are also highlighted and tagged (tag# Hedge1, Hedge2, OsHedge) as part of the tree protection plan. While hedges are not required to be retained these hedges are in good condition and the applicant has agreed to retain them. To ensure that the trees identified for retention are protected at development stage, the applicant is required to complete the following items:

- Prior to final adoption of the rezoning bylaw, submission to the City of a contract with a Certified Arborist for the supervision of all works conducted within or in close proximity to tree protection zones. The contract must include the scope of work required, the number of proposed monitoring inspections at specified stages of construction, any special measures required to ensure tree protection, and a provision for the arborist to submit a post-construction impact assessment to the City for review.
- Prior to final adoption of the rezoning bylaw, submission of a Tree Survival Security to the City in the amount of \$20,000.00 for the three (3) trees to be retained (on-site: tag# 1601; off-site: tag# Os1, City-1).
- Prior to demolition of the existing dwelling on the subject site, installation of tree protection fencing around all trees to be retained. Tree protection fencing must be installed to City standard in accordance with the City's Tree Protection Information Bulletin Tree-03 prior to any works being conducted on-site, and remain in place until construction and landscaping on-site is completed.

Affordable Housing Strategy

The Affordable Housing Strategy for single-family rezoning applications requires a secondary suite or coach house on 100% of new lots created; a secondary suite or coach house on 50% of new lots created together with a cash-in-lieu contribution to the City's Affordable Housing Reserve Fund of \$4.00/ft² of the total buildable area of the remaining lots; or, where a secondary

suite cannot be accommodated in the development, a cash-in-lieu contribution to the Affordable Housing Reserve Fund of \$4.00/ft² of the total buildable area of the development.

Consistent with the Affordable Housing Strategy, the applicant has proposed to provide a one-bedroom secondary suite of minimum 36 m² (388 ft²) in each of the dwellings to be constructed on the new lots, for a total of two suites. Prior to final adoption of the rezoning bylaw, the applicant must register a legal agreement on title to ensure that no final Building Permit inspection is granted until a minimum one-bedroom secondary suite is constructed on each of the two future lots, to the satisfaction of the City in accordance with the BC Building Code and the City's Zoning Bylaw.

Site Servicing and Frontage Improvements

At the Subdivision stage, the applicant will pay a voluntary \$31,097.00 cash-in-lieu contribution for the road widening, concrete sidewalk, concrete curb, treed boulevard, and driveway crossings completed by the City Capital Project along Lockhart Road. The applicant is also required to pay the current year's taxes, Development Cost Charges (City and GVS & DD & Translink), School Site Acquisition Charge, Address Assignment Fees, and other costs associated with the completion of the servicing works as described in Attachment 7 via a City Work Order.

Financial Impact or Economic Impact

The rezoning application results in an insignificant Operational Budget Impact (OBI) for off-site City infrastructure (such as roadworks, waterworks, storm sewers, sanitary sewers, street lights, street trees and traffic signals).

Conclusion

The purpose of this application is to rezone 3540 Lockhart Road from the "Single Detached (RS1/E)" zone to the "Single Detached (RS2/B)" zone, to permit the property to be subdivided to create two single-family lots, each with a secondary suite, with vehicle access from Lockhart Road.

This application is consistent with all applicable land use designations and policies, and is consistent with the established subdivision pattern in the surrounding area.

The list of rezoning considerations is included in Attachment 7, which has been agreed to by the applicant (signed concurrence on file).

On this basis, staff support the application and it is recommended that Richmond Zoning Bylaw 8500, Amendment Bylaw 10211 be introduced and given first reading.



Nathan Andrews
Planning Technician

September 21, 2020

- 6 -

RZ 20-898600

(604-247-4911)

NA:blg

Attachments:

Attachment 1: Location Map and Aerial Photo

Attachment 2: Survey Plan and Proposed Subdivision Plan

Attachment 3: Development Application Data Sheet

Attachment 4: Seafair Planning Area Land Use Map

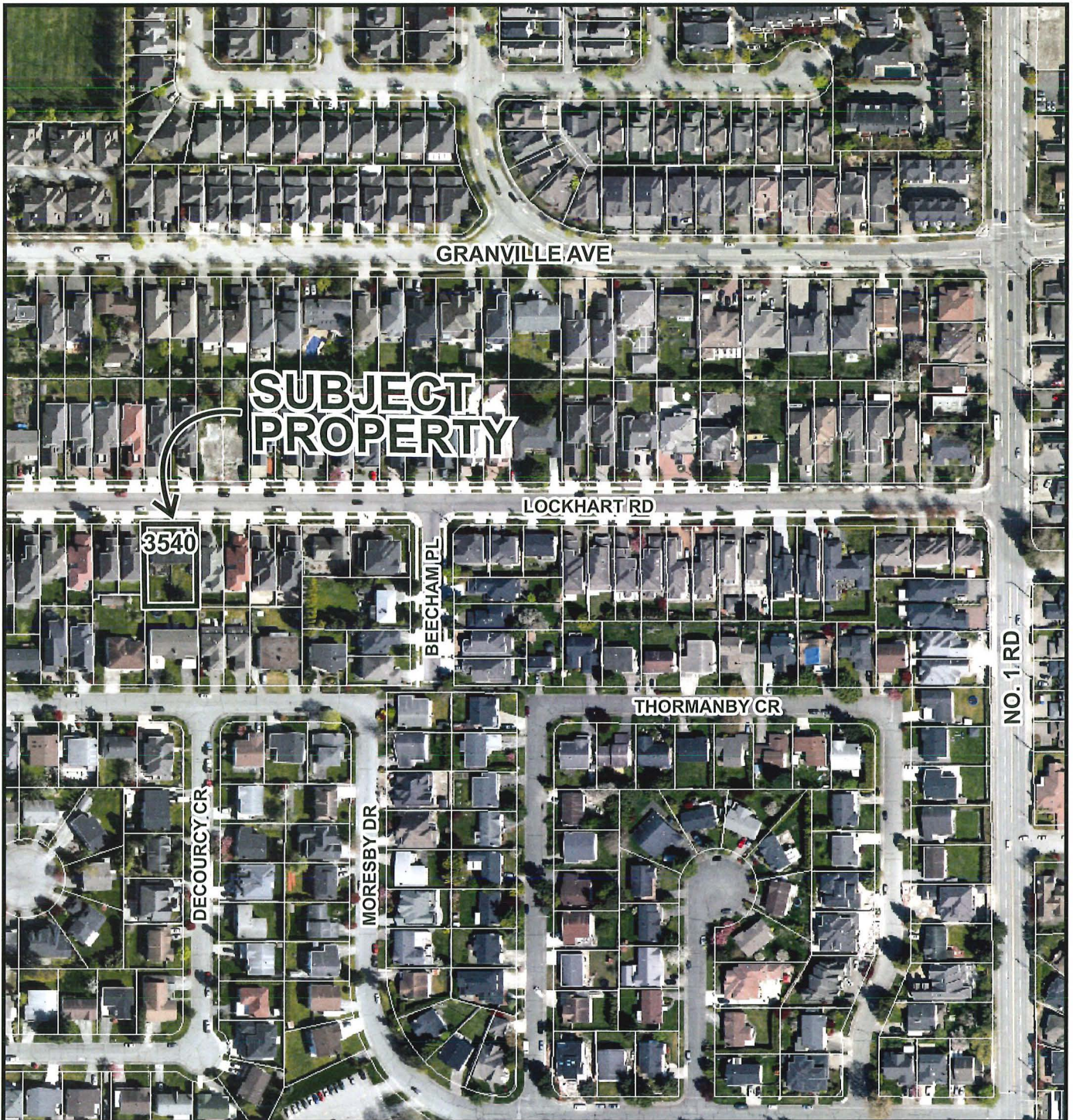
Attachment 5: Lot Size Policy 5447

Attachment 6: Tree Retention Plan

Attachment 7: Rezoning Considerations



City of Richmond



RZ 20-898600

Original Date: 04/14/20

Revision Date:

Note: Dimensions are in METRES

**TOPOGRAPHIC SURVEY AND PROPOSED SUBDIVISION OF LOT 49
EXCEPT THE SOUTH 120 FEET SECTION 15 BLOCK 4 NORTH
RANGE 7 WEST NEW WESTMINSTER DISTRICT PLAN 15447**

#3540 LOCKHART ROAD,
RICHMOND, B.C.
P.I.D. 003-502-899

NOTE:

Elevations shown are based on
City of Richmond HPN
Benchmark network.

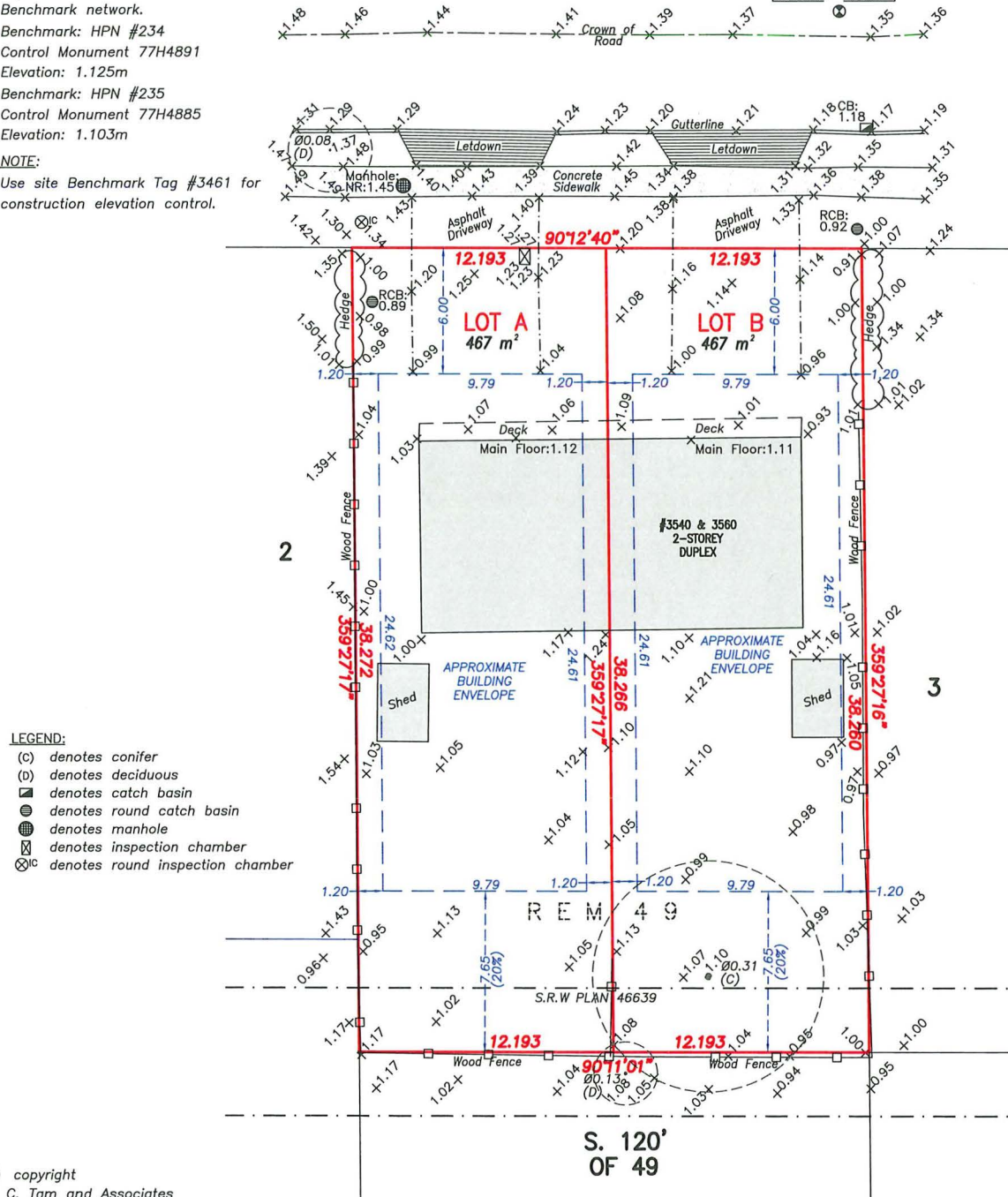
Benchmark: HPN #234
Control Monument 77H4891
Elevation: 1.125m
Benchmark: HPN #235
Control Monument 77H4885
Elevation: 1.103m

NOTE:

Use site Benchmark Tag #3461 for
construction elevation control.

LOCKHART ROAD

Nail in aluminum
Tag #3461
Site Benchmark
Elevation: 1.31m



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J. C. Tam and Associates
Canada and B.C. Land Surveyor
115 - 8833 Odlin Crescent
Richmond, B.C. V6X 3Z7
Telephone: (604) 214-8928
Fax: (604) 214-8929
E-mail: office@jctam.com
Website: www.jctam.com
Job No. 7463
FB-380 P 58 & 59; FB-381 P74
Drawn By: WK

DWG No. 7463-Topo-02

GP-211



RZ 20-898600

Attachment 3

Address: 3540 Lockhart Road

Applicant: Raman Kooner

Planning Area(s): Seafair

	Existing	Proposed
Owner:	1254396 BC Ltd. Firm name: Akkalan Holdings Inc. Director – Amit Robbie Sharda Director – Bhupinder Kooner	To be determined
Site Size (m²):	934 m ² (10,054 ft ²)	Two (2) lots – each approximately 467 m ² (5,027 ft ²)
Land Uses:	One (1) two-family dwelling	Two (2) single-family dwellings
OCP Designation:	Neighbourhood Residential	No change
Area Plan Designation:	N/A	No change
702 Policy Designation:	Lot Size Policy 5447 permits rezoning and subdivision of the subject site to Single Detached (RS1/B or RS2/B)	No change
Zoning:	Single Detached (RS1/E)	Single Detached (RS2/B)
Number of Units:	2	2
Other Designations:	N/A	No change

On Future Subdivided Lots	Bylaw Requirement	Proposed	Variance
Floor Area Ratio:	Max. 0.55 for lot area up to 464.5 m ² plus 0.3 for area in excess of 464.5 m ²	Max. 0.55 for lot area up to 464.5 m ² plus 0.3 for area in excess of 464.5 m ²	none permitted
Lot Coverage (% of lot area):	Building: Max. 45% Non-porous Surfaces: Max. 70% Lot Landscaping with live plant material: Min. 25%	Building: Max. 45% Non-porous Surfaces: Max. 70% Lot Landscaping with live plant material: Min. 25%	none
Lot Size:	360 m ² Min.	467 m ²	none
Lot Dimensions (m):	Width: 12.0 m Depth: 24.0 m	Width: 12.19 m Depth: 38.27 m	none
Setbacks (m):	Front: Min. 6.0 m Rear: Min. 7.65 m Side: Min. 1.2 m	Front: Min. 6.0 m Rear: Min. 7.65 m Side: Min. 1.2 m	none
Height (m):	2.5 storeys or 9.0 m	2.5 storeys or 9.0 m	none

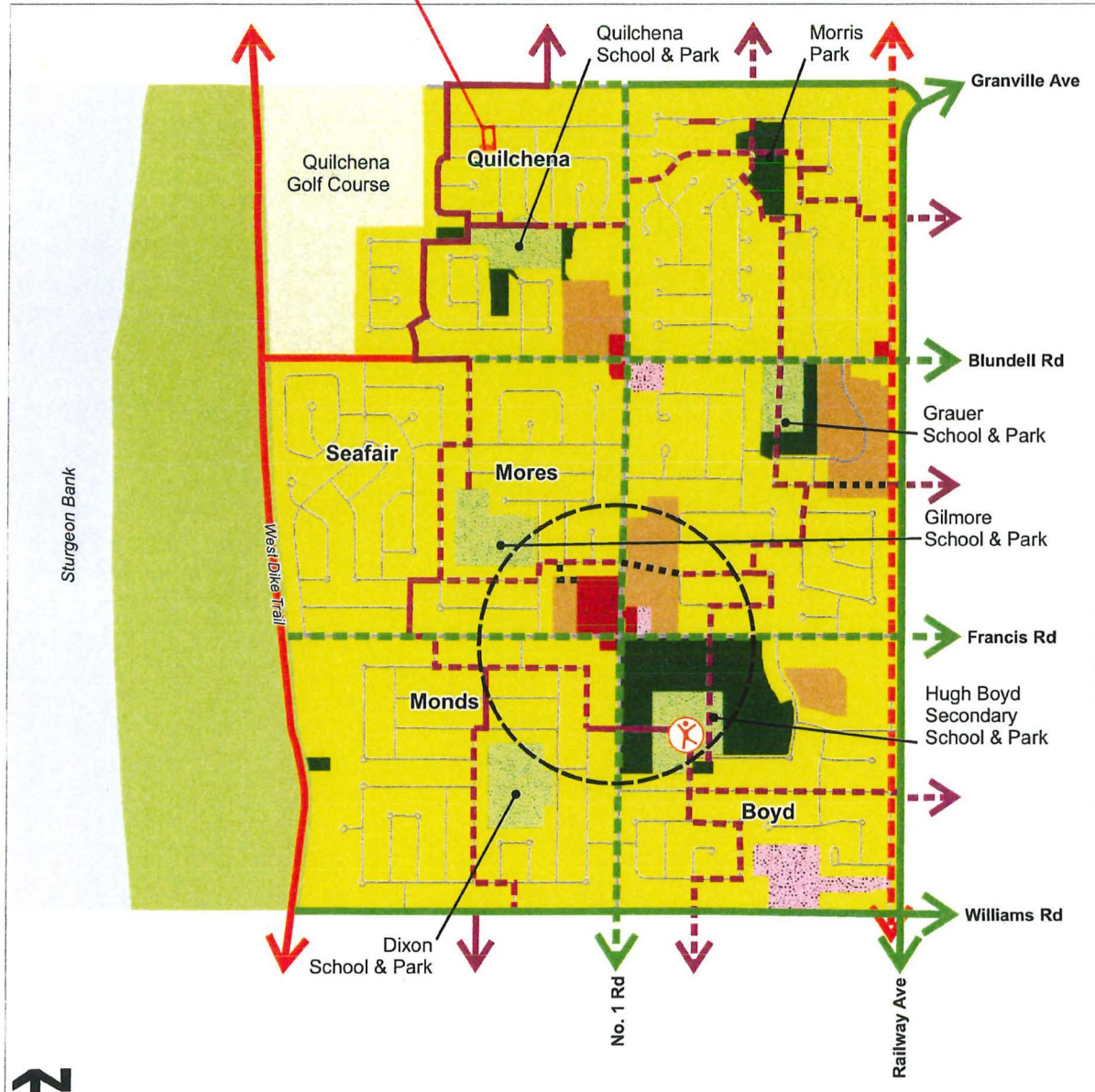
Other:

* Preliminary estimate; not inclusive of garage; exact building size to be determined through zoning bylaw compliance review at Building Permit stage.

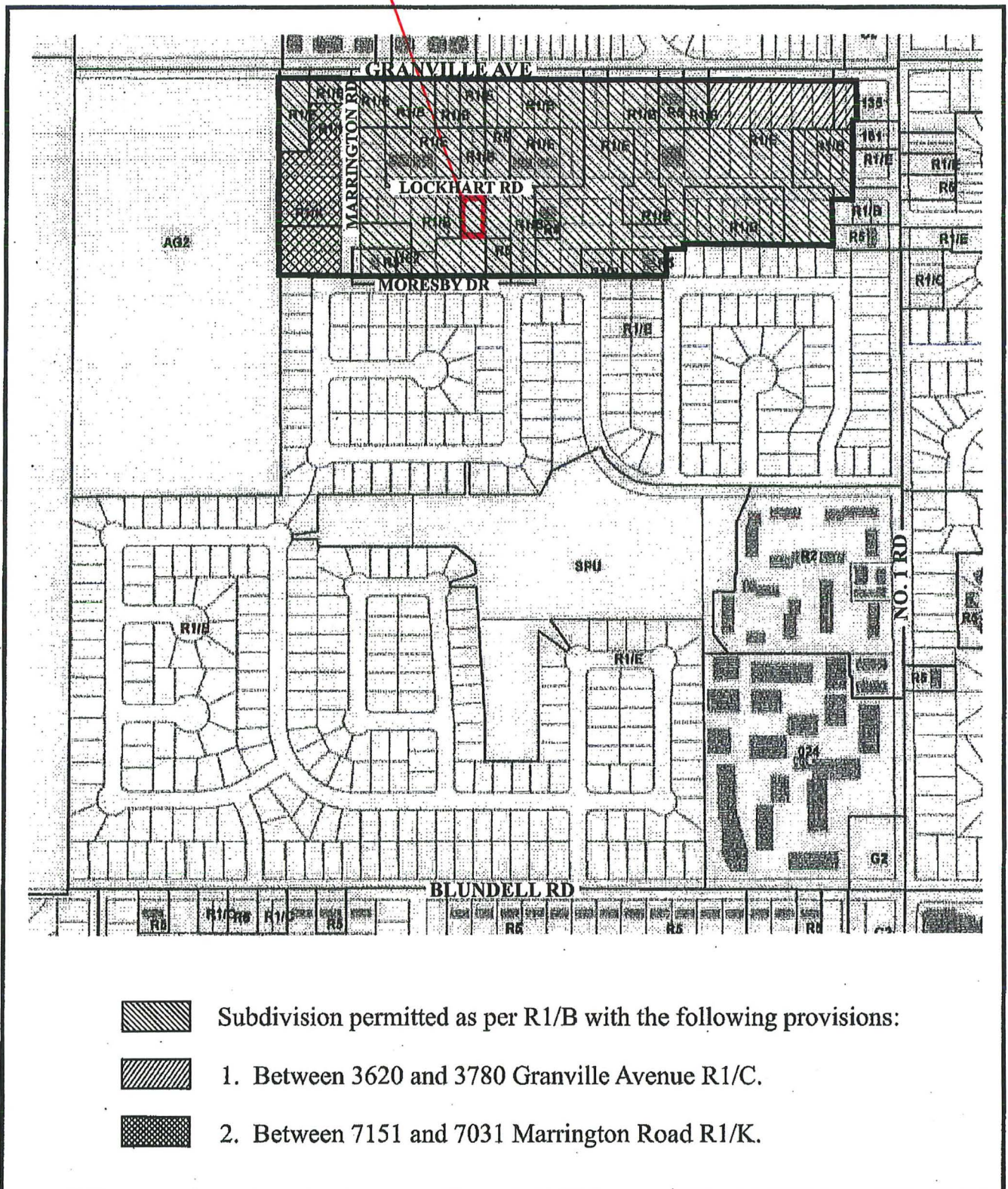


3. Seafair

SUBJECT PROPERTY



	Agricultural		Seafair Neighbourhood Centre (future)
	Apartment Residential		West Richmond Community Centre and Pitch & Putt
	Commercial		Existing Major Street Bike Route
	Community Institutional		Future Major Street Bike Route
	Conservation		Existing Greenway/Trail
	Neighbourhood Residential		Future Greenway/Trail
	Neighbourhood Service Centre		Existing Neighbourhood Link - enhanced
	Park		Future Neighbourhood Link - unenhanced
	School		Future Neighbourhood Link

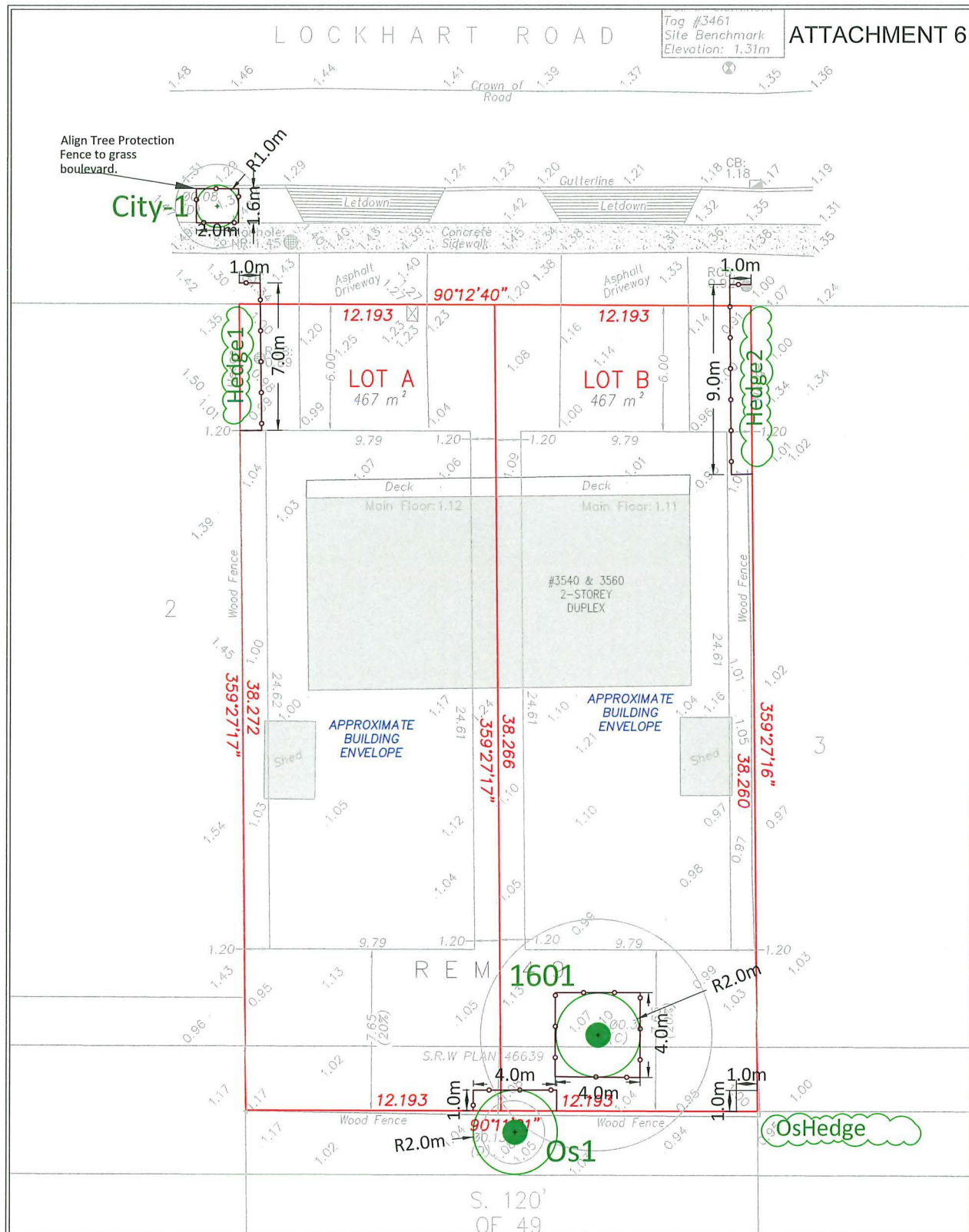


Policy 5447
Section 15-4-7

Adopted Date: 09/16/91

Amended Date: 10/20/03

Note: Dimensions are in METRES



LEGEND

CRITICAL ROOT ZONE

TREE PROTECTION ZONE AND FENCING

TREE TO BE REMOVED

SURVEYED TREE TO BE RETAINED

UN-SURVEYED TREE TO BE RETAINED (MUST BE SURVEYED)

REFERENCE DRAWINGS

1. Base Survey by: by J.C Tom and Associates Canada and B.C. Land Surveyor dated February 14th 2020.

NOTES

1. The location of un-surveyed trees on this plan is approximate. Their location and ownership cannot be confirmed without being surveyed by a Registered BC Land Surveyor.
2. All tree protection fencing must be built to the relevant municipal bylaw specifications. The dimensions shown are from the outer edge of the stem of the tree.
3. The tree protection zone shown is a graphical representation of the critical root zone, measured from the outer edge of the stem of the tree. (If the trees diameter was added to the graphical tree protection circles to accommodate the survey point being in the center of the tree)
4. No work is permitted within the Tree Protection Zone with the exception of swales. Swale construction is only permitted under the direct supervision of an arborist.
5. Drainage works such as lawn basins, associated piping or services are permitted within the No Build Zone under the direct supervision of an arborist.
6. This plan is based on a topographic and tree location survey provided by the owners' Registered British Columbia Land Surveyor (BCLS) and layout drawings provide by the owners' Engineer (P Eng).
7. This plan is provided for context only, and is not certified as to the accuracy of the location of features or dimensions that are shown on this plan. Please refer to the original survey plan and engineering plans.



Address: 3540 Lockhart Road

File No.: RZ 20-898600

Prior to final adoption of Richmond Zoning Bylaw 8500, Amendment Bylaw 10211, the developer is required to complete the following:

1. Submission of a Landscape Security in the amount of \$3,000.00 (\$750/tree) to ensure four new trees are planted and maintained (two trees on Lot A and two trees on Lot B); minimum 6 cm deciduous caliper or 3.5 m high conifers.
NOTE: minimum size to be as per Tree Protection Bylaw No. 8057
2. Submission of a Contract entered into between the applicant and a Certified Arborist for supervision of any on-site works conducted within the tree protection zone of the trees to be retained. The Contract should include the scope of work to be undertaken, including: the proposed number of site monitoring inspections, and a provision for the Arborist to submit a post-construction assessment report to the City for review.
3. Submission of a Tree Survival Security to the City in the amount of \$20,000.00 for the three (3) trees to be retained (tag# 1601, Os1, City-1).
4. Registration of a flood indemnity covenant on title.
5. Registration of a legal agreement on Title to ensure that no final Building Permit inspection is granted until a minimum one-bedroom secondary suite of approximately 36 m² (388 ft²) in size is constructed on both future lots, to the satisfaction of the City in accordance with the BC Building Code and the City's Zoning Bylaw.

Prior to Demolition Permit Issuance, the developer must complete the following requirements:

1. Installation of appropriate tree protection fencing around all trees to be retained as part of the development prior to any construction activities, including building demolition, occurring on-site.

At Subdivision* stage, the developer must complete the following requirements:

1. Pay a voluntary \$31,097.00 cash-in-lieu contribution for the road widening, concrete sidewalk, concrete curb, treed boulevard, and driveway crossings installed by the City capital project along Lockhart Road.
2. Payment of property taxes up to the current year, Development Cost Charges (City and GVSS & DD & Translink), School Site Acquisition Charge, Address Assignment Fees, and any other costs or fees identified at the time of Subdivision application, including servicing costs associated with the following works done via a City Work Order at the developer's sole cost:

Water Works:

- a) Using the OCP Model, there is 272 L/s of water available at a 20 psi residual at the Lockhart Road frontage. Based on your proposed development, your site requires a minimum fire flow of 95 L/s.
- b) The Developer is required to:
 - i) Submit Fire Underwriter Survey (FUS) or International Organization for Standardization (ISO) fire flow calculations to confirm development has adequate fire flow for onsite fire protection. Calculations must be signed and sealed by a Professional Engineer and be based on Building Permit Stage Building designs.
 - ii) Pay a voluntary \$4,793 cash-in-lieu contribution for the water connection and meter installed by the City capital water main replacement project along Lockhart Road. Payment should be made to the Water Reserve account (7600-90176). Please note that this does not include any disconnect/reconnect fees required at building permit stage.

- c) At Developer's cost, the City is to:
 - i) Install one new water service connections, complete with meter and meter box, to serve the proposed eastern lot.
 - ii) Retain the existing water connection to serve the proposed western lot.
 - iii) Replace the 20 mm water meter on the existing water connection with a 25 mm water meter, to suit the proposed onsite service size.

Storm Sewer Works:

- d) At Developer's cost, the City is to:
 - i) Inspect and confirm the capacity and condition of the existing storm connections. If the existing storm connections are adequate to be reused, they may be retained. If not, a single service connection and inspection chamber with dual service leads shall be installed at the common property of the proposed lots, and the existing service connections capped at the inspection chambers.

Sanitary Sewer Works:

- e) The Developer is required to:
 - i) Not start onsite excavation or foundation construction until completion of rear-yard sanitary works.
- f) At Developer's cost, the City is to:
 - i) Cap the existing sanitary connection at the inspection chamber.
 - ii) Install a new sanitary connection complete with inspection chamber and dual service leads at the common property line of the proposed lots.

Frontage Improvements:

- g) The Developer is required to:
 - i) Pay a voluntary \$31,097.00 cash-in-lieu contribution for the road widening, concrete sidewalk, concrete curb, treed boulevard, and driveway crossings installed by the City capital project along Lockhart Road. Payment should be made to the Roads Ext Contributions account (7500-90363). This item is highlighted at the beginning of the "At Subdivision Stage" requirements.
 - ii) Coordinate with BC Hydro, Telus and other private communication service providers:
 - (1) Before relocating/modifying any of the existing power poles and/or guy wires within the property frontages.
 - (2) To locate all above ground utility cabinets and kiosks required to service the proposed development within the development site.

General Items:

- h) The Developer is required to:
 - i) Not encroach into the proposed right of ways with trees, non-removable fencing, or other non-removable structures.
 - ii) Enter into, if required, additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering, including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.

Prior to Building Permit Issuance, the developer must complete the following requirements:

1. Submission of a Construction Parking and Traffic Management Plan to the Transportation Department. Management Plan shall include location for parking for services, deliveries, workers, loading, application for any lane closures, and

proper construction traffic controls as per Traffic Control Manual for works on Roadways (by Ministry of Transportation) and MMCD Traffic Regulation Section 01570.

2. Obtain a Building Permit (BP) for any construction hoarding. If construction hoarding is required to temporarily occupy a public street, the air space above a public street, or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. For additional information, contact the Building Approvals Department at 604-276-4285.

Note:

- * This requires a separate application.
- Where the Director of Development deems appropriate, the preceding agreements are to be drawn not only as personal covenants of the property owner but also as covenants pursuant to Section 219 of the Land Title Act.

All agreements to be registered in the Land Title Office shall have priority over all such liens, charges and encumbrances as is considered advisable by the Director of Development. All agreements to be registered in the Land Title Office shall, unless the Director of Development determines otherwise, be fully registered in the Land Title Office prior to enactment of the appropriate bylaw.

The preceding agreements shall provide security to the City including indemnities, warranties, equitable/rent charges, letters of credit and withholding permits, as deemed necessary or advisable by the Director of Development. All agreements shall be in a form and content satisfactory to the Director of Development.

- Additional legal agreements, as determined via the subject development's Servicing Agreement(s) and/or Development Permit(s), and/or Building Permit(s) to the satisfaction of the Director of Engineering may be required including, but not limited to, site investigation, testing, monitoring, site preparation, de-watering, drilling, underpinning, anchoring, shoring, piling, pre-loading, ground densification or other activities that may result in settlement, displacement, subsidence, damage or nuisance to City and private utility infrastructure.
- Applicants for all City Permits are required to comply at all times with the conditions of the Provincial *Wildlife Act* and Federal *Migratory Birds Convention Act*, which contain prohibitions on the removal or disturbance of both birds and their nests. Issuance of Municipal permits does not give an individual authority to contravene these legislations. The City of Richmond recommends that where significant trees or vegetation exists on site, the services of a Qualified Environmental Professional (QEP) be secured to perform a survey and ensure that development activities are in compliance with all relevant legislation.

Signed _____

Date _____



**Richmond Zoning Bylaw 8500
Amendment Bylaw 10211 (RZ 20-898600)
3540 Lockhart Road**

The Council of the City of Richmond, in open meeting assembled, enacts as follows:

1. The Zoning Map of the City of Richmond, which accompanies and forms part of Richmond Zoning Bylaw 8500, is amended by repealing the existing zoning designation of the following area and by designating it **“SINGLE DETACHED (RS2/B)”**.

P.I.D. 003-502-899

Lot 49 Except the South 120 Feet Section 15 Block 4 North Range 7 West New Westminster District Plan 15447

2. This Bylaw may be cited as **“Richmond Zoning Bylaw 8500, Amendment Bylaw 10211”**.

FIRST READING

A PUBLIC HEARING WAS HELD ON

SECOND READING

THIRD READING

OTHER CONDITIONS SATISFIED

ADOPTED

CITY OF RICHMOND
APPROVED by 
APPROVED by Director or Solicitor 

MAYOR

CORPORATE OFFICER



Monday, November 16, 2020 – 7 pm

**Council Chambers, 1st Floor, Richmond City Hall
6911 No. 3 Road, Richmond, BC V6Y 2C1**

Richmond Zoning Bylaw 8500, Amendment Bylaw 10211 (RZ 20-898600)

Location/s: 3540 Lockhart Road

Applicant/s: Raman Kooner

Purpose: To rezone the subject property from “Single Detached (RS1/E)” to “Single Detached (RS2/B)”, to permit development of two single-family lots with vehicle access from Lockhart Road.

City Contact: Nathan Andrews, 604-247-4911, Planning and Development Division

How to obtain further information:

- **By Phone:** If you have questions or concerns, please call the CITY CONTACT shown above.
 - **On the City Website:** Public Hearing Agendas, including staff reports and the proposed bylaws, are available on the City Website at <http://www.richmond.ca/cityhall/council/agendas/hearings/2020.htm>
 - **At City Hall:** Copies of the proposed bylaw, supporting staff and Committee reports and other background material, are also available for inspection at the Planning and Development Division at City Hall, between the hours of 8:15 am and 5 pm, Monday through Friday, except statutory holidays, commencing November 6, 2020 and ending November 16, 2020, or upon the conclusion of the hearing.
 - **By FAX or Mail:** Staff reports and the proposed bylaws may also be obtained by FAX or by standard mail, by calling 604-276-4007 between the hours of 8:15 am and 5 pm, Monday through Friday, except statutory holidays, commencing November 6, 2020 and ending November 16, 2020.
-

Participating in the Public Hearing process:

- The health and wellness of our residents, staff and Council remain our priority. Please be advised that measures will be taken at the meeting to respect physical distancing requirements and adhere to recommended preventative measures to limit the spread of COVID-19.
- During the COVID-19 Pandemic, the Public Hearing is open to members of the public who may be affected by the proposed bylaw and wish to make a presentation.
- Due to the public health concerns and social distancing requirements, the public is encouraged to submit written comments in advance of the Public Hearing, or register to participate remotely via telephone, instead of attending the meeting in person if possible.
- Registration to participate remotely via telephone is available starting on the Friday prior to the Public Hearing until 1:00 pm on the date of the Hearing. Information on how to register is available on the City website: <https://www.richmond.ca/cityhall/council/phone-participation.htm>
- Written comments may be submitted to the City Clerk's Office by 4:00 pm on the date of the Public Hearing as follows:
 - **By E-mail:** using the on-line form at <http://www.richmond.ca/cityhall/council/hearings/about.htm>
 - **By Standard Mail:** 6911 No.3 Road, Richmond, BC, V6Y 2C1, Attention: Director, City Clerk's Office
 - **By Fax:** 604-278-5139, Attention: Director, City Clerk's Office

- **Public Hearing Rules:** For information on public hearing rules and procedures, please consult the City website at <http://www.richmond.ca/cityhall/council/hearings/about.htm> or call the City Clerk's Office at 604-276-4007.
- All submissions will form part of the record of the hearing. **Once the Public Hearing has concluded, no further information or submissions can be considered by Council.** It should be noted that the rezoned property may be used for any or all of the uses permitted in the "new" zone.

Claudia Jesson
Director, City Clerk's Office



City of Richmond

Report to Committee

To: General Purposes Committee
From: Serena Lusk
General Manager, Community Services
Re: **Mask Wearing in City Buildings**

Date: September 27, 2020
File: 09-5125-01/2020-Vol
01

Staff Recommendation

That the wearing of masks in City buildings be required as described in Option 3 in the staff report titled, "Mask Wearing in City Buildings," dated September 27, 2020 from the General Manager, Community Services.

Serena Lusk
General Manager, Community Services
(604-233-3344)

Att. 2

REPORT CONCURRENCE
APPROVED BY CAO

Staff Report

Origin

At the General Purposes Committee on September 8, 2020, Committee made the following referral:

That staff review the development of a mask policy for all City buildings, and report back.

The purpose of this report is to respond to the above referral.

This report supports Council's Strategic Plan 2018-2022 Strategy #1 A Safe and Resilient City:

Enhance and protect the safety and well-being of Richmond.

1.4 Foster a safe, caring and resilient environment.

This report supports Council's Strategic Plan 2018-2022 Strategy #3 One Community Together:

3.1 Foster community resiliency, neighbourhood identity, sense of belonging, and intercultural harmony.

Analysis

In response to the COVID-19 Pandemic, Richmond implemented a number of measures to keep the community safe, including closing City buildings and introducing various safety measures. Up until now, the wearing of masks has been optional. The following report provides information in support of Council's interest in adopting a formal mask wearing policy for city buildings during the Pandemic.

Expert Advice

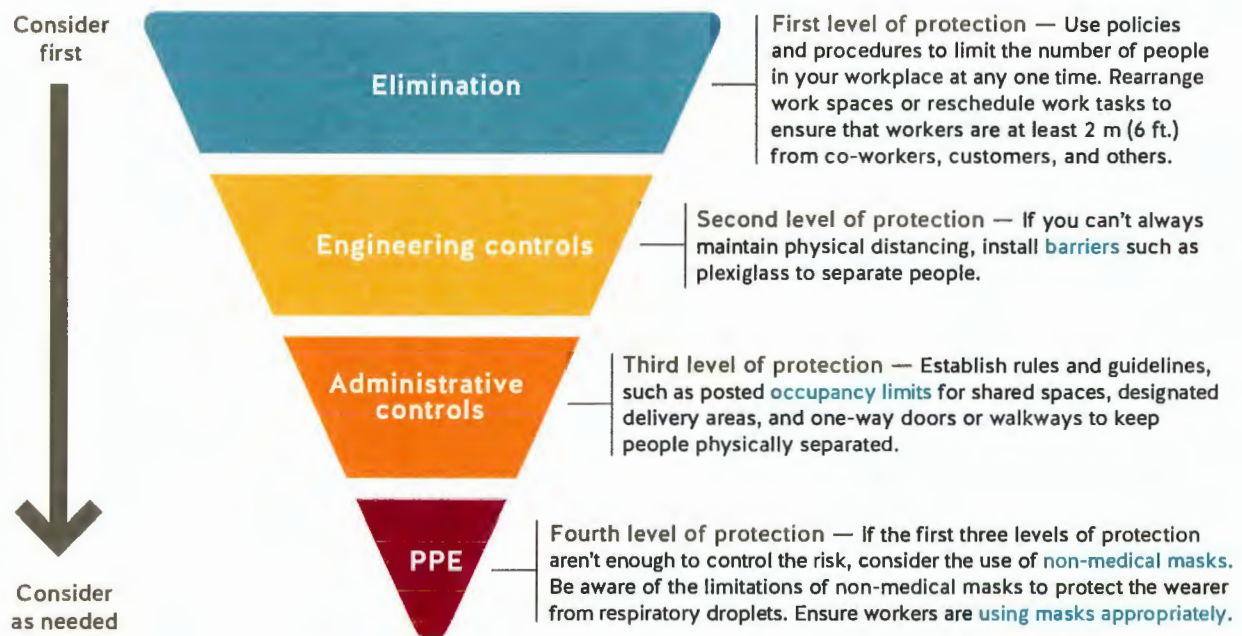
Guidance from the World Health Organization, BC Centre for Disease Control (BC CDC) and Vancouver Coastal Health is consistent in identifying the most effective ways to prevent the spread of COVID-19: frequent handwashing; maintaining physical distancing; and staying home when sick. Each of these authorities recommend that masks should be used as part of a comprehensive strategy to suppress transmission of COVID-19.

Specifically, masks should be used as an additional control measure if:

- A person is sick;
- A person is caring for someone who is or may be sick;
- Physical distancing is not possible; or
- Individuals are in close, prolonged contact with others.

The Medical Health Officer for Richmond, Dr. Meena Dawar, has also provided her advice in a letter included as Attachment 2 to this report.

The Occupational Health and Safety Regulation (WorkSafeBC) requires the City to implement infectious disease controls in the following order of preference (Hierarchy of Controls):



When the first three levels of protection are not enough to mitigate the risk, the need for Personal Protective Equipment (PPE), including non-medical masks as appropriate, will be assessed and assigned as required. Some staff may not be able to avoid contact with the public from time to time, or individually elect to take extra measures for their personal comfort. PPE, including non-medical masks, will be supplied by the City.

Current practice – Employee Mask Use

To date, the City of Richmond has taken a permissive approach to mask wearing in City buildings. Staff providing customer service to the public are given the option to wear a non-medical mask where engineering controls are in place and physical distancing can easily be maintained. A mask is required for staff and in limited situations, members of the public, only if other controls are not in place. Examples illustrating the City's current mask requirements are included in Table 1 below.

Table 1: Mask use in City Buildings – Current Practice

City of Richmond facilities	Situations requiring staff to wear masks and rationale	Situations requiring the public to wear masks
Fitness centres at Minoru Centre for Active Living and community centres	Fitness attendants are required to wear masks	If distancing cannot be maintained, the use of non-medical face masks must be used by both patrons and staff.
Transportation in City vehicles e.g. parking enforcement, animal control, community ambassadors	Limit to one person per vehicle wherever operationally possible. When not operationally possible, follow: <ul style="list-style-type: none"> • PPE: Wear a disposable non-medical or cloth mask when there is more than one person in the vehicle 	n/a
Inspectors – Building Approvals, Bylaws	Inspectors are required to wear PPE (including masks) at all times when doing a site visit to a home/building	Home owners/permit holders are advised during appointment booking that they must wear a mask during an inspection. An inspector may cancel/reject the on-site inspection if appropriate controls (distancing, masks) are not followed.
First Aid response	Attendants to follow OFAA protocols, including wearing appropriate PPE (including appropriate style of mask) if providing direct patient care or within 2m (6 ft) of patient	

The Administration is currently implementing a more restrictive approach to mask wearing for City employees including the requirement that they be worn in all cases where there will or may be interaction with another employee or member of the public in areas such as hallways, washrooms, elevators, and shared workspaces. Staff will be issued re-useable masks and provided appropriate training.

It should be noted that this increased requirement for mask wearing by City staff will not replace the need to follow the hierarchy of controls including maintaining physical distance. For the City's approach, this includes staff working remotely where possible and effective and carefully considering the need to re-open any City buildings including Richmond City Hall.

Practices in other Jurisdictions

Many jurisdictions across Canada, and a number of agencies serving the public in British Columbia such as TransLink and BC Ferries, and many local businesses, have implemented mandatory face mask requirements for the public in indoor public spaces.

A scan of Lower Mainland municipalities suggests that a number of other municipalities are also considering the development of a mask requirement for visitors to municipal facilities. Delta has recently announced the requirement for mandatory facemasks to be worn by anyone entering, exiting or moving around City of Delta facilities

Increasing numbers of Canadian municipalities outside of BC have developed policies or implemented bylaws requiring the use of masks including Calgary, Edmonton and Toronto.

It appears that there are a range of factors that have led others to consider and implement more restrictive mask policies. These factors can be summarized as follows:

- Desire for enhanced protection from an anticipated second wave of COVID-19;
- Re-opening access to City buildings for additional staff and the public;
- Perception that the ability to maintain 6 ft physical distancing in indoor public spaces is inconsistent and unpredictable;
- An increase in regional COVID-19 cases; and
- Guidance from Provincial Health Office.

A review of other mask use policies highlights a spectrum of potential policy approaches to the use of masks in City buildings. Within each of those approaches, a range of tools have been utilized to identify and communicate when, where and how masks should/must be used and if/how these requirements are enforced. These are illustrated in the graphic below. Attachment 1 offers an enlarged version of this graphic.

Illustration 1: Spectrum of Mask Use Requirements in City Buildings**SPECTRUM OF MASK USE REQUIREMENTS IN CITY BUILDINGS**Considerations for a more restrictive mask policy in City buildings*Cost implications and supply of masks*

The City of Richmond's current practice is for employees whose job function requires the use of a mask according to the Hierarchy of Controls identified in the Pandemic Exposure Control Plan to be provided with an appropriate style of mask at the City's cost.

Should Council provide the direction to implement a more restrictive mask requirement for members of the public using City buildings, it is best practice to request they provide their own mask but supply a disposable mask if needed.

The City currently has a stock of disposable masks that can accommodate this approach at this stage of the Restoring Richmond Plan. Should further facilities open or participation increase, the cost and supply availability may need to be further considered.

Education and training

Should Council provide the direction to implement a more restrictive mask requirement for members of the public using City buildings, a communication plan will be developed, with additional signage produced at all City facilities, outlining requirements for mask use and guidelines for proper use and disposal of a facemask.

Exemptions

A common feature of even the most restrictive mask policies or bylaws implemented by other public serving agencies or jurisdictions, includes exemptions where mask use is not feasible or recommended. Many of these exemptions involve considerations for people with disabilities, considerations around age, activity level of participants, and considerations relative to indoor and outdoor spaces.

Considerations for people with disabilities

- A common practice is to consider an exemption for anyone with an underlying medical condition or disability which inhibits the ability to wear a mask or face covering; this would include:
 - Individuals with disabilities for whom it is difficult or impossible to wear a mask, such as:
 - Individuals with sensory disabilities (e.g. persons living on the autism spectrum);
 - Individuals with chronic health conditions that are respiratory in nature (COPD, asthma);
 - Individuals with cognitive disabilities (e.g. dementia); and
 - Individuals with physical disabilities who are not able to put on / take off a mask.
 - Individuals who are deaf or hard of hearing who may face increased communication challenges including:
 - Putting the elastic around their ears affects the volume or causes the hearing aids to come out;
 - Individuals who rely on lip reading are unable to communicate in this manner; and
 - Individuals with auditory processing challenges find it can be more challenging to hear/understand.
- There has also been challenges within the disability community where individuals with disabilities who are unable to wear masks have been excluded from certain spaces/ businesses as there have been no accommodations in place to support them, and even with accommodations in place members of the community have been stigmatized for not wearing one. Considerations would need to be made to address this issue.

Age

A common practice in more restrictive mask use policies is the inclusion of an exemption related to age, and particularly related to children. It appears that there is a range of perspectives regarding the appropriate age for children to be required to wear a mask. The BC Centre for Disease Control recommends not putting a face mask or any covering including visors and eye protection on infants under two (2) years of age. A facemask or covering will make it difficult for a baby to breathe because their airways are still small. There is also a risk that parts of the facemask, visor or eye protection can come off and become a choking hazard. The World Health Organization suggests that children over five (5) years should be required to wear masks, considering childhood developmental milestones, compliance challenges and the autonomy required to use a mask properly. The BC Ministry of Education has mandated masks for all staff,

middle and secondary students in common areas where physical distancing cannot be maintained.

Any more restrictive mask use requirements for City buildings will need to consider exceptions based on age.

Activity levels

Any more restrictive mask use requirements will need to consider exceptions for individuals participating in physical activity. Examples include water activities (e.g. swimming, aquatic fitness activities) and physical activities that cause significant sweating. According to the World Health Organization, people should not wear masks when exercising as masks may reduce the ability to breathe comfortably. Sweat can also make a mask become wet more quickly, making it more difficult to breathe, reducing the masks effectiveness and promoting the growth of microorganisms.

However, it is common practice in more restrictive mask use policies to require any person entering, exiting or moving around a building while not actively participating in strenuous or vigorous activity to wear a mask.

Indoor/Outdoor

According to health authorities, transmission of COVID-19 is much more likely when in close contact in an indoor setting. Transmission is less likely in an outdoor setting where there is more space for people to keep physically distanced. As such, many of the mask policies reviewed to date apply to indoor and enclosed spaces only.

However, evolving guidance from health authorities across Canada, including the Public Health Agency of Canada, recommend wearing a non-medical mask in closed spaces and close contact situations when distancing is difficult, whether indoor or outdoor.

A more restrictive mask policy for City buildings could include masking requirements in adjacent outdoor spaces where physical distancing is inconsistent or unpredictable.

Enforcement

One of the key differentiators along the spectrum of mask use requirements is the method of enforcement undertaken for non-compliance. On the permissive end of the spectrum, enforcement is focused on targeted education and communication with staff and only those members of the public who are directly impacted by the requirement.

Moving further along the spectrum into more restrictive requirements for mask use, the need for more broad education and communication increases. Public facing education and communication tools to educate the public on mask use requirements could include: signage at entrances to City buildings; public corporate statements on the required use of masks; updates on the City website, social media channels and other digital communication tools; and the availability of disposable masks to members of the public on request in all City buildings to reduce barriers to compliance.

Considering more extreme enforcement options, such as refusal of service and implementing a process for issuing monetary penalties and/or fines would need to be considered carefully and include input from a range of stakeholders.

Support for a mask policy for City buildings

There appears to be a significant level of support, both in the Richmond community, and with City staff, for the consideration of a more restrictive mask use requirement for City buildings.

Trends in public sentiment

Anecdotal comments from patrons at community facilities where services are being restored suggest that there is some apprehension about the risks of transmission of COVID-19 in indoor spaces.

A scan of social media comments responding to local announcements of actions taken to mitigate COVID-19 in Richmond and surrounding communities have been predominantly in favour or increased use of masks in public spaces. An example of this is the overwhelmingly supportive comments on Delta's FaceBook posts announcing their decision to require masks.

While the Richmond Chamber of Commerce has not surveyed local businesses specifically regarding mask use, there is a perception that there is a prevalence of mask use by both staff and patrons of businesses in Richmond.

Nationally, a recent online survey by Leger and the Association for Canadian Studies found that 83 per cent of respondents feel governments should order people to wear a mask in all indoor public spaces.

Options for Consideration

The implementation of any of the options below will not change the need for continued vigilance in other areas including the elimination of risk through modified work schedules and physical distancing, engineering controls and administrative controls. The requirement for masks is meant as an additional layer of protection rather than an alternative to those protections already in place.

Further, senior staff, under the direction of the Chief Administrative Officer, continue to monitor trends in health outcomes in the city and regionally in implementing the Restoring Richmond Plan. The addition of a requirement for mask use in city buildings will not impact the potential that services may need to be reduced or facilities closed in response to increasing negative health outcomes related to the Pandemic.

Option 1 – Permissive Mask Use Requirements

Next steps: None.

Option 2 – Specific Recommendation on Mask Use

Next steps: Should Council recommend this option, staff would implement and communicate a mask use requirement that encourages an expanded use of masks for staff and the public in City buildings, with a focus on education and communication.

Option 3 – Semi-Restrictive Mask Use Requirements (RECOMMENDED)

Next steps: Should Council recommend this option, staff would implement and communicate requirements for mask wearing that mandates required use indoors in City buildings, with a focus on education and communication. Exceptions will be identified for those with disabilities, those under five (5) years of age, and those engaged in vigorous physical activity. Refusal of service for non-compliance is recommended for those who do not fall into these categories.

Option 4 – Restrictive Mask Use Requirement

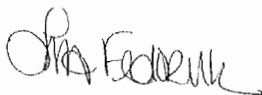
Action required: As jurisdiction in BC for health matters lies with the Province, should Council direct staff to investigate implementation of a bylaw requiring mask use in all public spaces, staff would advocate to the Province for direction on implementing a bylaw requiring mask use in all public spaces.

Financial Impact

None. Cost implications of the recommended option can be accommodated within existing budgets.

Conclusion

While the implementation of a mandatory mask policy is not formally recommended by agencies such as the World Health Organization, WorkSafe BC or Vancouver Coastal Health, a clearly communicated guideline on the City's position on mask use in facilities will ensure that expectations for staff and members of the public entering City buildings is clear and well-understood. A review of other jurisdictions, public sentiment and an increase in COVID-19 cases regionally support a recommendation to draft and communicate a more restrictive mask use requirement in City buildings.



Lisa Fedoruk
Program Manager 1
(604-276-4320)



Mandeep Bains
Manager, Continuous Improvement
(604-247-4682)

Att. 1: Spectrum of Mask Use Requirements in City Buildings

Att. 2: Letter from Vancouver Coastal Health

SPECTRUM OF MASK USE REQUIREMENTS IN CITY BUILDINGS



PERMISSIVE

- Required whenever physical distance of 6ft cannot be maintained from another person
- Optional where barriers or other forms of control allow for distancing

ENFORCEMENT

- Education and communication

TOOLS

- Exposure Control Plan
- Site Specific Safety Plans
- Employee Mask Use Guidelines
- Targeted Messaging to Impacted Patrons

SPECIFIC RECOMMENDATION

- Required whenever physical distance of 6ft cannot be maintained from another person
- Encouraged even where barriers or other forms of controls allow for distancing

ENFORCEMENT

- Education and communication

TOOLS

- Exposure Control Plans
- Site Specific Safety Plans
- Employee Mask Use Requirements
- Public Mask Use Requirement Communications/Signage

SEMI-RESTRICTIVE

- Mandatory in all civic facilities

ENFORCEMENT

- Education and communication
- Refusal of Service

TOOLS

- Exposure Control Plans
- Site Specific Safety Plans
- Employee Mask Use Requirements
- Public Mask Use Requirement Communications/Signage

RESTRICTIVE

- Mandatory in all indoor/enclosed public spaces and outdoor gathering spaces

ENFORCEMENT

- Ticket: Monetary penalty/fine
- Education and communication

TOOLS

- Exposure Control Plans
- Site Specific Safety Plans
- Employee Mask Use Requirements
- Public Mask Use Bylaw

FACTORS FOR CONSIDERATION: Cost, Training, Staff Resources, Scope (Indoor/Outdoor), Best Practices, Age, People with Disabilities, and Activity Level

Factors leading to RESTRICTIVE APPROACH: protection from a second wave, reopening access to public, 6ft distancing in indoor spaces is inconsistent and unpredictable, increasing regional COVID cases, PHO guidance

2 October 2020

Ms. Serena Lusk
General Manager, Community Services
City of Richmond
6911 No. 3 Road
Richmond, B.C.
V6Y 2C1

Dear Ms. Lusk,

Re: Mask Policy for City of Richmond Buildings

Thank you for seeking my input as you explore options to enhance safety of City of Richmond (the City) staff and Richmond residents who attend City buildings. First, I want to acknowledge and thank the administration's attention to COVID-19 safety as demonstrated in the thoughtful [Restoring Richmond](#) plan and detailed scrutiny to [COVID-19 safety](#) for all City operated premises. These plans have already implemented the most effective COVID-19 precautions: screening of staff and clients, physical distancing with limitations to numbers of visitors so distancing can be maintained, engineering controls where applicable, enhanced cleaning, and attention to hand hygiene. I want to assure you that these protocols already assure maximum safety of your staff and clients.

Non-medical masks do enjoy a broad level of support in public polls and are used by many City residents. The question you are facing is whether there is justification to require all healthy staff and clients to wear a non-medical face mask while on City premises. The policy direction of Canadian public health jurisdictions has remained consistent: medical masks should be reserved for health care settings, with non-medical face masks are recommended to be worn by people who are symptomatic and those caring for them.

Nationally, Canadians have also been *advised* to wear face coverings when in the community and it is not possible to maintain a 2-meter distance from others, particularly in a crowded setting, and *when local epidemiology and rate of community transmission warrant it*.¹ Non-medical masks have been described to perform the same function as covering of face with a tissue or sleeve when coughing or sneezing. The BC Centre for Disease Control and Provincial Health Officer encourage mask use "as a matter of personal

¹Regulatory considerations on the classification of non-medical masks or face coverings: Notice to industry, Health Canada, accessed at <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/medical-masks-respirators/face-covering-classifications-notice.html>

choice” and in situations where safe distance cannot be maintained.^{2 3} There is no interest in BC to pursue a mandatory mask policy; nor is there any compelling reason to do so.

In Vancouver Coastal Health, there is no public health order requiring people to wear masks in public spaces. Despite the recent increase in cases of COVID-19, the overall rates in the population are low, including in Richmond, when compared to other jurisdictions in Canada and abroad, and thus our local situation does not warrant such an order. The City is likely aware of a few local governments in Ontario that have recently implemented mask requirements; these were brought in at the recommendation of local public health and in context of their local COVID-19 transmission risks.

In the hierarchy of measures public health has recommended to prevent transmission since the beginning of the pandemic, non-medical mask wearing is one of the lowest, and should never replace more effective measures i.e. staying home, particularly if feeling unwell, limiting social interaction, especially outside your own family or immediate social contacts, and keeping physically distanced when interacting with strangers, etc. These are actions that all people in Richmond can and should take that do not require buying masks or other face coverings which may create additional financial costs for already stretched households. In addition, masks cannot be tolerated by people with certain medical conditions. As such, a mandatory masking requirement risks creating potential barriers and risks for vulnerable people in communities, such as a lack of access to essential services and the experience of further stigmatization and marginalization, if they are unable to afford such items or unable to wear them.

Given the excellent safety plans in place for all City premises, there is little justification for a mandatory mask policy and I recommend that it not be pursued. The city should continue to implement its COVID-19 safety plans with full assurance that it is serving its citizens well within the context of national, provincial and local public health guidance.

Sincerely,



Dr. Meena Dawar

Medical Health Officer- Richmond

² <http://www.bccdc.ca/health-info/diseases-conditions/covid-19/prevention-risks/masks>

³ Non-medical cloth masks are your choice during COVID-19, Dr. Bonnie Henry, Ministry of Health
<https://news.gov.bc.ca/factsheets/non-medical-cloth-masks-are-your-choice-during-covid-19>