TOWN OF LADYSMITH

Celebrate our Present. Embrace our Future. Honour our Past.

A REGULAR MEETING OF THE TOWN OF LADYSMITH COUNCIL AGENDA 6:00 P.M.

Tuesday, September 3, 2024
Ladysmith Seniors Centre
630 2nd Avenue

Pages

1. CALL TO ORDER

Call to Order 6:00 p.m. in Open Session, in order to retire immediately into Closed Session.

Members of the public are welcome to attend all Open Meetings of Council, but may not attend Closed Meetings.

2. CLOSED SESSION

Recommendation
That, in accordance with section 90(1) of the *Community Charter,* Council retire into closed session in order to consider items related to the following:

> (k) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public.

3. OPEN MEETING AND ACKNOWLEDGEMENT (7:00 P.M.)

The Town of Ladysmith acknowledges with gratitude that this meeting takes place on the unceded territory of the Stz'uminus First Nation.

Members of the public may attend meetings in person at the Ladysmith Seniors Centre or view the livestream on YouTube: https://www.youtube.com/channel/UCH3qHAExLiW8YrSuJk5R3uA/featured.

4. AGENDA APPROVAL

Recommendation
That Council approve the agenda for this Regular Meeting of Council for September 3, 2024.

5. RISE AND REPORT- Items from Closed Session

6. MINUTES

6.1 Minutes of the Regular Meeting of Council held August 6, 2024. 6

Recommendation
That Council approve the minutes of the Regular Meeting of Council held August 6, 2024.

7. COMMITTEE MINUTES

7.1 Community Planning Advisory Committee - August 7, 2024 12

Recommendation
That Council receive the minutes of the Community Planning Advisory Committee meeting held August 7, 2024.

8. 2025-2029 FINANCIAL PLAN DISCUSSIONS - PARKS, RECREATION AND CULTURE

8.1 Regional Recreation Budget Approval 2025 Discussion – Frank Jameson Community Centre

8.2 Public Input and Questions

8.3 Regional Recreation Budget Approval 2025 Report – Frank Jameson Community Centre 14

Recommendation
That Council direct staff to submit to the Cowichan Valley Regional District the 2025 budget for the Frank Jameson Community Centre as presented in the staff report dated September 3, 2024.

9. REPORTS

9.1 Permissive Tax Exemptions for the Tax Year 2025 23

Recommendation
That Council direct staff to:

1. Prepare a one-year Permissive Tax Exemption Bylaw for all properties currently identified in “Town of Ladysmith 2024 Permissive Tax Exemptions Bylaw 2023, No. 2158”;
2. Reduce the exemption at 314 Buller Street to 70% to reflect the 11 homes charged at or near market rent; and
3. Remove the fully exempt properties from the 2025 water parcel tax roll and the 2025 sewer parcel tax roll.

9.2 Request for Permissive Tax Exemption – Folio 1378.073 32

Recommendation
That Council deny the request from Habitat for Humanity for a Permissive Tax Exemption for folio 1378.073.

9.3 Revitalization Tax Exemption – 32 High Street 37

Recommendation
That Council approve entering into a Revitalization Tax Exemption Agreement with Temperance Group Investments for the property located at 32 High Street, folio 0069.000, provided a letter from a professional structural engineer is received before the bylaw is adopted.

9.4 Dogwood Drive Speed Limit 65

Recommendation
That Council direct staff to change the speed limit along Dogwood Drive from 1st Avenue to Belaire Street to 30 km/hr.

9.5 Stocking Lake Dam Detailed Design Consultant 91

Recommendation
That Council authorize staff to sole source the Stocking Lake dam detailed design work to Ecora Engineering and Environmental Ltd. in the amount of $381,439 plus taxes.

12. NEW BUSINESS

13. QUESTION PERIOD

- A maximum of 15 minutes is allotted for questions.
- Persons wishing to address Council during "Question Period" must be Town of Ladysmith residents, non-resident property owners, or operators of a business.
- Individuals must state their name and address for identification purposes.
- Questions put forth must be related to items on the agenda.
- Questions must be brief and to the point.
- Questions shall be addressed through the Chair and answers given likewise. Debates with or by individual Council members or staff members are not allowed.
- No commitments shall be made by the Chair in replying to a question. Matters which may require action of the Council shall be referred to a future meeting of the Council.

14. MAYOR - VERBAL REPORT

15. ADJOURNMENT

MINUTES OF A REGULAR MEETING OF COUNCIL

Tuesday, August 6, 2024
6:03 P.M.
Ladysmith Seniors Centre
630 2nd Avenue

Council Members Present:

Mayor Aaron Stone
Councillor Ray Gourlay
Councillor Amanda Jacobson
Councillor Tricia McKay
Councillor Duck Paterson *(via Zoom)*
Councillor Marsh Stevens
Councillor Jeff Virtanen

Staff Present:

Allison McCarrick
Erin Anderson
Chris Barfoot
Jake Belobaba
Ryan Bouma *(via Zoom)*
Sue Bouma
Hayley Young
Nick Pescod

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1. CALL TO ORDER

Mayor Stone called this Meeting of Council to order at 6:03 p.m., in order to retire immediately into Closed Session.

2. CLOSED SESSION

CS 2024-172

That, in accordance with section 90(1) of the *Community Charter,* Council retire into closed session in order to consider items related to the following:

(a) personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the municipality or another position appointed by the municipality;

(f) law enforcement, if the council considers that disclosure could reasonably be expected to harm the conduct of an investigation under or enforcement of an enactment; and

(i) the receipt of advice that is subject to solicitor-client privilege, including communications necessary for that purpose.

Motion Carried

3. OPEN MEETING AND ACKNOWLEDGEMENT (7:00 P.M.)

Mayor Stone called this Regular Meeting of Council to order at 7:00 p.m., recognizing with gratitude that it was taking place on the unceded territory of the Stz'uminus First Nation.

Mayor Stone congratulated the Celebrations Society for producing a highly successful and well-attended Ladysmith Days celebration. Councillor Virtanen, the Council liaison for the Celebrations Society, thanked all the organizations who shared in the work, and gave special thanks to all those who attended the event.

4. AGENDA APPROVAL

CS 2024-173
That Council approve the agenda for this Regular Meeting of Council for August 6, 2024.
Motion Carried

5. RISE AND REPORT- Items from Closed Session

Council rose from Closed Session at 6:39 p.m. without report.

6. MINUTES

6.1 Minutes of the Regular Meeting of Council held July 16, 2024

CS 2024-174
That Council approve the minutes of the Regular Meeting of Council held July 16, 2024.
Motion Carried

7. COMMITTEE MINUTES

7.1 Poverty Reduction Task Group - May 15, 2024 and June 19, 2024

CS 2024-175
That Council receive the minutes of the Poverty Reduction Task Group meetings held May 15, 2024 and June 19, 2024.
Motion Carried

8. REPORTS

8.1 2025 Financial Plan (Budget) Discussions

CS 2024-176

That Council approve the following schedule to deliberate the 2025-2029 Financial Plan:

- September 3rd – Parks, Recreation & Culture – operating & capital and direction for Permissive Tax Exemptions;
- November 5th – Water & Sewer – operating & capital;
- November 19th – Introduction of General Operations;
- December 3rd – Introduction of General Capital Projects. Water & Sewer Rate bylaws introduced;
- December 17th - Anticipated adoption of Water & Sewer Rate bylaws and Early budget approvals; and
- February 4th, 2025 – Introduction of the 2025-2029 Financial Plan bylaw.

Motion Carried

8.2 Heart of the Hub Phase 2 – Consultant Update

CS 2024-177

That Council waive Purchasing Policy 5-1790-D to secure the consultants previously engaged in the former Machine Shop project and listed on the existing building permit, for consulting fees of up to $370,000 related to the Heart of the Hub Phase 2 project.

Motion Carried

8.3 UBCM Community to Community (C2C) Forum Program

CS 2024-178

That Council:

1. Authorize staff to apply to the Union of BC Municipalities for up to $5,000 during the September 2024 application intake for the Regional Community to Community Forum Program to support a community forum with the Stz'uminus First Nation Council, to be held prior to September 6, 2025; and
2. Approve the allocation of up to $5,000 as the Town's contribution.

Motion Carried

8.4 Mackie Road Dam Decommissioning - Tendering and Construction Support Services

CS 2024-179

That Council waive Purchasing Policy 5-1790-D and authorize staff to sole source the Mackie Road Dam Decommissioning - Tendering and Construction Support Services to Ecora Engineering and Environmental Ltd. (Ecora) in the amount of $99,270 plus taxes, as outlined in Attachment A of the August 6, 2024, staff report from the Infrastructure Services Department.

Motion Carried

8.5 Short-Term Rental Regulation

CS 2024-180

That Council:

1. Give first, second and third readings to “Short-Term Rental Bylaw, 2024, No. 2188”;
2. Pursuant to Section 59 of the *Community Charter*:
    a. Receive written representations prior to adoption of Bylaw 2188; and
    b. Direct staff to publish notice, no more than 10 and no less than 3 days prior to final consideration of Bylaw 2188:
        i. online; and
        ii. in one issue of the Ladysmith Chronicle; and
3. Direct staff to bring forward amendments to “Official Community Plan Bylaw 2022, No. 2200" for Council consideration that:
    a. Establish a Temporary Use Permit program to allow the conversion of a limited number of dwelling units outside of zones where “tourist accommodation” is a permitted use, to Short-Term Rentals; and
    b. Establish policies for considering applications under recommendation 3(a) that:
        i. prioritize the protection of long-term housing; and
        ii. consider temporary worker housing, tourism offerings, impacts on residential neighbourhoods, impacts on existing and proposed tourism offerings and similar issues.

Motion Carried

9. BYLAWS

9.1 Bylaws for Adoption

9.1.1 "Council Procedure Bylaw 2009, No. 1666, Amendment Bylaw No. 2184"

CS 2024-181
That Council adopt "Council Procedure Bylaw 2009, No. 1666, Amendment Bylaw No. 2184".
Motion Carried
OPPOSED: Councillor Jacobson

9.2 Bylaw Status Sheet

10. INFORMATION TO COUNCIL

10.1 Cowichan Region Workforce Housing Strategy

CS 2024-182
That Council receive the Cowichan Region Workforce Housing Strategy and companion documents presented at the CVRD Committee of the Whole meeting on June 26, 2024 and shared with municipalities as part of the engagement process prior to the strategy's implementation.
Motion Carried

CS 2024-183
That Council invite Barry O'Riordan, CVRD Manager of Economic Development, and/or CitySpaces Consulting to give a presentation on the Cowichan Region Workforce Housing Strategy at the September Committee of the Whole meeting.
Motion Carried

11. CORRESPONDENCE

11.1 Rotary Clubs of Ladysmith and Chemainus 14th Annual Charity Golf Tournament

CS 2024-184
That Council allocate $350 to sponsor a hole at the 14th Annual Rotary Charity Golf Tournament on September 21, 2024, as requested in the correspondence received July 13, 2024.
Motion Carried

12. QUESTION PERIOD

A member of the public asked how the Short-Term Rental bylaws will be enforced.

Another resident asked about the Heart of the Hub space allocation plan and requested clarification on how the allocated funds for the UBCM dinner will be used, as well as the rationale and calculations used for decommissioning the Mackie Road Dam.

13. ADJOURNMENT

CS 2024-185
That this Regular Meeting of Council be adjourned at 8:00 p.m.
Motion Carried

CERTIFIED CORRECT

Mayor (A. Stone)

Corporate Officer (S. Bouma)

MINUTES
Community Planning Advisory Committee
Wednesday, August 7, 2024 at 7:00 p.m.
City Hall Council Chambers, 410 Espanade

PRESENT: Chair – Keona Wiley; Members – Tonya Soules, Jason Robertson, Jennifer Aker, John Scott, Anthony Price, Julika Pape; Council Liaison – Marsh Stevens; Director of Development Services – Jake Belobaba; Planner – Julia Tippett; Recorder – Cassandra Taylor

GUESTS: Applicants - Randy Repass, Sally-Christina Rodgers, Robert Fung, Adrian Wong (file no. 3060-23-21)

Chair Keona Wiley called the meeting to order at 7:01pm.

Keona Wiley acknowledged with gratitude that Ladysmith is located on the unceded territories of the Stz'uminus First Nation.

1. AGENDA APPROVAL

It was moved, seconded, and carried that the Agenda of August 7, 2024, Community Planning Advisory Committee meeting be approved.

2. ADOPTION OF MINUTES

It was moved, seconded, and carried that the Minutes of July 3, 2024, Community Planning Advisory Committee meeting be approved.

3. COUNCIL REFERRALS

a. <u>Development Permit Application 3060-23-21 – 440 1st Avenue</u>

Adrian Wong from WA Architects provided an overview of the application via a PowerPoint presentation, highlighting the building's heritage features on the facade that is to be retained and the proposed redevelopment of the remainder of the building, including 4th and 5th storey additions.

CPAC members asked questions about the status of the current tenants of the building and future tenure, parking, accessibility of the units, and Electric Vehicle (EV) charging for bikes and vehicles.

CPAC discussed the proposal and made positive comments of the application as a whole, noting that the proposal will make a positive impact on the town. Concerns were raised around the loss of affordable rental units in town, but it was noted that this is often a challenge with new development.

It was moved, seconded, and carried that the Community Planning Advisory Committee recommends that Council approve Development Permit application 3060-23-21 for 440 1st Avenue with consideration for the following:

- **Screening of the elevator overrun and mechanical/HVAC units on the roof of the building.**
- **Implementing EV ready charging conduits for all four residential parking stalls.**

4. MONTHLY BRIEFING

- An update was provided on the Small-Scale Multi-Unit Housing Provincial legislation and the status of the associated Bylaws.
- "Short Term Rental Bylaw No. 2188" went to Council on August 6 for introduction.

5. NEXT MEETING – TBD

6. ADJOURNMENT

It was moved, seconded, and carried that the meeting be adjourned at 8:00 PM.

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Chair (Keona Wiley)

RECEIVED:

_____ _

Corporate Officer (S. Bouma)

STAFF REPORT TO COUNCIL

Report Prepared By:	Erin Anderson, Director of Financial Services Chris Barfoot, Director of Parks, Recreation & Culture
Reviewed By:	Allison McCarrick, CAO
Meeting Date:	September 3, 2024
File No:	
Re:	**Regional Recreation Budget Approval 2025 – Frank Jameson Community Centre**

RECOMMENDATION:

That Council direct staff to submit to the Cowichan Valley Regional District the 2025 budget for the Frank Jameson Community Centre as presented in the staff report dated September 3, 2024.

EXECUTIVE SUMMARY:

The Frank Jameson Community Centre (FJCC) is one of the nine regionally significant facilities of the regional recreation funding model. This is the final year of a three-year transition to full regional funding based on usage.

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

Council may recall that there was a change in the funding model for some facilities within the CVRD. The Frank Jameson Community Centre (FJCC) is one of the nine regionally significant facilities within the CVRD where funding has moved from the local government to a user-based model.

In 2024, the taxpayers in Ladysmith contributed $1,682,674 (2023 - $664,767) to the CVRD for the nine facilities and received $1,718,067 (2023 - $695,205) for FJCC from the Region. This was based on a phased-in amount.

Overall, usage of the facility appears to be returning to pre-Covid levels. These additional revenues will reduce the required funding.

Breaking down the Parks & Recreation Department budget, the 2025 Regional Recreation anticipated revenues and expenses are:

Administration:

The leased space at FJCC accounts for the increase in anticipated revenues, which reduces the overall funding from CVRD.

A part time position was added to this area from the recreation area. The previous year's budget has been adjusted to reflect this change and provide an accurate comparator figure.

Regional recreation will fund the $793,963 in administration.

	Proposed 2025 Budget (Regional Rec)	Amended 2024 Budget	%change
Revenue			
Rentals	- 38,200	- 29,600	29.05%
Misc. Revenue	- 14,200	- 11,700	21.37%
Revenue Total	**- 52,400**	**- 41,300**	**26.88%**
Expense			
other	7,900	7,400	6.76%
Supplies	13,850	14,400	-3.82%
Employment Costs	758,855	735,226	3.21%
Utilities	9,285	10,464	-11.27%
Contracts	56,473	50,963	10.81%
Expense Total	**846,363**	**818,453**	**3.41%**
Grand Total	**793,963**	**777,153**	**2.16%**

Aquatics:

There is an expectation that the pool use at FJCC will earn additional revenues, offsetting some of the costs.

Increases in employment costs and equipment supplies are the main components of the expense increase.

Regional Recreation will fund $190,288 for the aquatics area.

	Proposed 2025 Budget (Regional Rec)	Amended 2024 Budget	%change
Revenue			
Admissions	- 50,000	- 40,000	25.00%
Passes	- 55,000	- 48,000	14.58%
Programs	- 111,092	- 109,842	1.14%
Rentals	- 89,432	- 96,813	-7.62%
Revenue Total	**- 305,524**	**- 294,655**	**3.69%**
Expense			
other	3,800	4,500	-15.56%
Supplies	34,114	22,054	54.68%
Employment Costs	454,798	422,275	7.70%
Utilities	600	520	15.38%
Contracts	2,500	600	316.67%
Expense Total	**495,812**	**449,949**	**10.19%**
Grand Total	**190,288**	**155,294**	**22.53%**

Fitness:

Fitness revenues are expected to increase in 2025 resulting in an overall decrease in the net funding.

Regional Recreation will fund $116,257 for the fitness area.

	Proposed 2025 Budget (Regional Rec)	Amended 2024 Budget	%change
Revenue			
Admissions	- 18,000	- 14,400	25.00%
Passes	- 125,000	- 120,000	4.17%
Programs	- 77,790	- 76,449	1.75%
Revenue Total	**- 220,790**	**- 210,849**	**4.71%**
Expense			
other	23,400	22,500	4.00%
Supplies	6,450	5,425	18.89%
Employment Costs	286,478	287,687	-0.42%
Utilities	550	520	5.77%
Contracts	20,169	13,308	51.56%
Expense Total	**337,047**	**329,440**	**2.31%**
Grand Total	**116,257**	**118,591**	**-1.97%**

Recreation:

Breaking down the programs offered at FJCC versus at other offsite, non-regional recreation facilities, the Recreation Department budget is:

	2025 Proposed Budget - Regional Rec	2025 Proposed Budget - Non Regional Rec	2025 Proposed Budget (Total)	2024 Amended Budget	%change (Regional Rec vs 2024 Budget)
Revenue					
Grants	-	- 5,320	- 5,320	- 12,714	-100.00%
Programs	- 93,213	- 18,080	- 111,293	- 123,442	-24.49%
Rentals	- 2,000		- 2,000	- 2,000	0.00%
Revenue Total	- 95,213	- 23,400	- 118,613	- 138,156	**-31.08%**
Expense					
other	1,000		1,000	22,000	-95.45%
Supplies	11,250	800	12,050	17,325	-35.06%
Employment Costs	164,732		164,732	159,926	3.01%
Utilities	540		540	520	3.85%
Contracts	39,701	6,320	46,021	46,757	-1.57%
Expense Total	217,223	7,120	224,343	246,528	**-11.89%**
Grand Total	122,010	- 16,280	105,730	108,372	12.58%

This area has undergone some changes in staffing. The above numbers have been adjusted from previous years for comparison purposes.

In 2024 due to staffing and the complexities of the day camp environment, day camps only ran out of one location (FJCC). This resulted in a reduction of revenues in 2024 and moving forward.

Regional recreation funding will be $122,010.

Facility Maintenance – FJCC only

Maintenance costs continue to experience an increase in expenses. Included in this budget is funding for a maintenance management program to accurately track costs associated with FJCC versus the other facilities that the Town also operates.

Regional Recreation will be funding $898,558.

	Proposed 2025 Budget (Regional Rec)	Amended 2024 Budget	% change
Expense			
equipment use	5,942	6,573	-9.60%
other	3,600	2,600	38.46%
Supplies	95,630	88,280	8.33%
Employment Costs	595,579	578,912	2.88%
Utilities	83,960	81,639	2.84%
Contracts	113,847	103,080	10.45%
Expense Total	**898,558**	**861,084**	**4.35%**
Grand Total	**898,558**	**861,084**	**4.35%**

Capital

In 2024, Regional Recreation funding provided $320,000 for Phase 1 of the FJCC roof replacement. This work also has to be done during the annual maintenance shutdown due to its location to the air intake vents. When the bids came in, the price more than doubled. An additional $381,500 in Regional Recreation funding is needed to complete these 2 roof sections. Further roof replacement phases will take place in 2026/27 estimated at more than $1million.

	Proposed 2025 Budget (Regional Rec)	Amended 2024 Budget	% change
Expense			
other	519,500	409,250	26.94%
Expense Total	**519,500**	**409,250**	**26.94%**
Grand Total	**519,500**	**409,250**	**26.94%**

There are a few plumbing upgrades needed at FJCC to repair a section of leaking pipe affecting the recreation room in the basement. The estimated cost of this portion of the work is $83,000.

The current cardio equipment is at the end of its useful life. A capital request for $55,000 is for 2 steppers, 1 rower, 10 spin bikes, 1 recumbent bike, 2 upright cycles, 2 elliptical machines, and 3 treadmills, using the existing equipment as a trade-in value.

Regional Recreation will be funding $519,500.

Overall, the funding to come from Regional Recreation is $2,640,576, summarized as:

Proposed 2025 Budget (Regional Rec)	Column Labels		
	Regional Funding	TOL funding	Grand Total
Revenue			
Admissions	- 68,000		- 68,000
grants	-	- 5,320	- 5,320
Passes	- 180,000		- 180,000
Programs	- 282,095	- 18,080	- 300,175
Rentals	- 129,632	- 71,582	- 201,214
Misc. Revenue	- 14,200	-	- 14,200
Revenue Total	**- 673,927**	**- 94,982**	**- 768,909**
Expense			
equipment use	5,942	5,942	11,884
other	559,200	-	559,200
Supplies	161,294	87,500	248,794
Employment Costs	2,260,442	236,341	2,496,783
Utilities	94,935	301,377	396,312
Contracts	232,690	329,294	561,984
Expense Total	**3,314,503**	**960,454**	**4,274,957**
Grand Total	**2,640,576**	**865,472**	**3,506,048**

ALTERNATIVES:

Council can direct staff to adjust the proposed budgets, though the CVRD budget deadline may be impacted.

FINANCIAL IMPLICATIONS:

The Cowichan Valley Regional District will compile all the budgets for the regionally significant facilities and determine the requisition amounts from each of the areas within the CVRD.

Council will deliberate the non-FJCC budget amounts later in the fall along with the rest of the Financial Plan discussions.

LEGAL IMPLICATIONS:

N/A

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Citizens can provide input to the Town or through to the newly created Cowichan North Recreation Commission that is comprised of the Fuller Lake Area and FJCC.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

Parks, Recreation & Culture is responsible for preparing their department budget. Finance will provide the information to the CVRD.

ALIGNMENT WITH STRATEGIC PRIORITIES:

☒Infrastructure
☒Community
☐Waterfront
☐ Economy
☐ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENTS:

A. 2025 FJCC Capital Projects details

CAPITAL PROJECT BUDGET REQUEST

YEAR:	2025
Department:	Parks & Rec
Area:	Facility Maintenance
Exempt Manager Lead:	Richard Frost

Title of Project	Addional Funds Required - 2024 FJCC Roof Phase 1 - project
Short Description	Additional funds are required to complete the 2024 FJCC Roof Phase 1 - project
Purpose:	In 2024 the 2024 FJCC Roof Phase 1 project was tendered. Unfortunately. The proposals recieved exceeded the available budget. Staff are requesting the additional funds plus a contigency for escalating prices has been icluded.
Consequence of not funding:	Both Roofs 6 & 8 have a failed rating and need to be replaced. Potential of sever leaks into the building which could create signifcant damage thru out the areas they cover. Possible lengthy unscheduled shut down of the facility could happen
Aligns with Strategic Priority	
Priority Level:	**Immediate**
Risk:	VH = Very High Risk - Immediate C
Are there additional annual operating costs	
Asset Management	**Replacement**

DETAILS

	Project Breakdown
Use own Employees	$ -
Use own Equipment	
Cost of Materials (5930)	
Cost of Contractor (2700)	$ 381,500
Other	
TOTAL COST	$ 381,500

Timeline:		Does this project require Early Budget Approval?
Jan - Mar	☑ Check	Yes
Apr - June	☐ Check	
Jul - Sept	☐ Check	
Oct - Dec	☐ Check	
> one year	☐ Check	

Finance:

Entered - database _____

Entered - vadim _____

GL: _____

CAPITAL PROJECT BUDGET REQUEST

YEAR:	2025
Department:	Parks & Rec
Area:	Facility Maintenance
Exempt Manager Lead:	Richard Frost

Title of Project	Plumbing Upgrades, Repairs, & Replacements at FJCC Phase 1
Short Description	We having some leaking plumbing in the main infrastructure area of FJCC
Purpose:	We currently have plumbing failing in the main part of the facility. It is starting to affect our rec room below. This will be a major expense that can't be avoided due to the repairs incorporate many areas of the facility.
Consequence of not funding:	Continuing leaks and possible larger failures of the plumbing causing extreme damage and down time which would effect our revenue stream. It will be challenging to have this work completed in time to reopen after our shut down (3 weeks)
Aligns with Strategic Priority	
Priority Level:	**Immediate**
Risk:	H = High Risk - Prioritize action rec
Are there additional annual operating costs	
Asset Management	**Replacement**

DETAILS

	Project Breakdown
Use own Employees	$ 3,000
Use own Equipment	
Cost of Materials (5930)	
Cost of Contractor (2700)	$ 80,000
Other	
TOTAL COST	$ 83,000

Timeline:		Does this project require Early Budget Approval?
Jan - Mar	☑ Check	Yes
Apr - June	☐ Check	
Jul - Sept	☐ Check	
Oct - Dec	☐ Check	
> one year	☐ Check	

Finance:

Entered - database _____

Entered - vadim _____

GL: _____

CAPITAL PROJECT BUDGET REQUEST

YEAR:	2025
Department:	Parks & Rec
Area:	Recreation
Exempt Manager Lead:	

Title of Project	Fitness Centre Cardio Equipment Replacement
Short Description	Replacement of 10yr old cardio equipment in the Fitness Centre.
Purpose:	Current cardio equipment in the Fitness Centre is now 10 years old and has passed the equipment's expected lifespan and warranty by 5yrs. Repair and equipment replacement costs are starting to exceed the value of replacement.
Consequence of not funding:	Equipment is used extensively every day at FJCC. Lack of functioning equipment will result in limited use for the community and reduction in revenue.
Aligns with Strategic Priority	Resilient Community
Priority Level:	**Immediate**
Risk:	H = High Risk - Prioritize action rec
Are there additional annual operating costs	Not while under warranty.
Asset Management	**Replacement**

DETAILS

	Project Breakdown
Use own Employees	
Use own Equipment	
Cost of Materials (5930)	
Cost of Contractor (2700)	$ 55,000
Other	
TOTAL COST	$ 55,000

Timeline:	
Jan - Mar	☑ Check
Apr - June	☐ Check
Jul - Sept	☐ Check
Oct - Dec	☐ Check
> one year	☐ Check

Does this project require Early Budget Approval? No

Finance:

Entered - database _____

Entered - vadim _____

GL: _____

STAFF REPORT TO COUNCIL

Report Prepared By: Erin Anderson, Director of Financial Services
Reviewed By: Allison McCarrick, CAO
Meeting Date: September 3, 2024
File No: **1970-04**
Re: **Permissive Tax Exemptions for the tax year 2025**

RECOMMENDATION:

That Council direct staff to:

1. Prepare a one-year Permissive Tax Exemption Bylaw for all properties currently identified in "Town of Ladysmith 2024 Permissive Tax Exemptions Bylaw 2023, No. 2158";
2. Reduce the exemption at 314 Buller Street to 70% to reflect the 11 homes charged at or near market rent; and
3. Remove the fully exempt properties from the 2025 water parcel tax roll and the 2025 sewer parcel tax roll.

EXECUTIVE SUMMARY:

Staff are seeking direction to prepare the annual Permissive Tax Exemption (PTE) bylaws.

PREVIOUS DIRECTION:

CW 2024-018	2024-03-12	That the Committee recommend that Council amend the Permissive Tax Exemption Policy to specify that affordable housing permissive tax exemptions would only apply to the percentage of units below market value. Motion Defeated OPPOSED: Mayor Stone, Chair Stevens, and Councillors Jacobson and Virtanen.
CS 2023-244	2023-10-17	That Council adopt "2024 Permissive Tax Exemptions Bylaw 2023, No. 2158". OPPOSED: Councillor Stevens
CS 2023-228	2023-09-26	That Council give first, second and third readings to "2024 Permissive Tax Exemptions Bylaw 2023, No. 2158". Motion Carried OPPOSED: Councillors Jacobson and Stevens
CS 2023-207	2023-09-05	That Council direct staff to prepare a one-year Permissive Tax Exemption Bylaw for all properties currently identified in the "Town of Ladysmith 2023 Permissive Tax Exemptions Bylaw 2022, No. 2122" with the exception of folio 445-1602.100 and that Council direct staff to remove fully exempt properties

		from the 2024 water parcel tax roll and the 2024 sewer parcel tax roll. Motion Carried OPPOSED: Councillor Stevens
CS 2023-208	2023-09-05	That Council review the Permissive Tax Exemption policy at a future Committee of the Whole Meeting. Motion Carried

INTRODUCTION/BACKGROUND:

Each year, a permissive tax exemption bylaw is presented to Council for consideration. The advertisement and corresponding bylaw must be adopted prior to October 31 in order for the exemption to be in effect for the following taxation year.

Under Sections 224 and 225 of the *Community Charter*, permissive exemptions are permitted to certain properties providing the property or property owner meets specific conditions. These conditions include ownership, such as not for profit organizations or charitable organizations, and specific use, such as care homes and recreational organizations.

The Permissive Tax Exemption policy has been recently reviewed by Council and no changes were made even though there are three properties for which historically the Town has provided an exemption based on their community work, not based on policy. The Legion does not receive a full exemption, just an exemption on the non-commercial areas. The Healthcare Auxiliary (Thrift Store), though operating similar to a commercial business, has historically received an exemption. The LRCA's new "Heart on the Hill" property historically received a full exemption, though only 70% of the units are deep subsidy or rent geared to income while the remaining units are charged at-market rents.

The following properties are proposed to be exempt from taxation based on s.224. (2)(a)" land or improvements that are owned or held by a charitable, philanthropic or other not-for-profit corporation, and which the Council considers are used for a purpose that is directly related to the purposes of the corporation":

Organization	Address	2024 Municipal Taxes Forgone ($)	2024 total taxes forgone ($)	Serv. Agrmt
Canadian Legion Branch #171	621 1st Avenue	491	1,059	-
Ladysmith Health Care Auxiliary	910 1st Avenue	16,332	29,361	-
Ladysmith Resources Centre Association	314 Buller Street	26,177	54,321	*46,520*

The Town owns properties and leases them to other organizations. The following properties can be exempted based on *CC* s.224(2)(b) "land or improvements that are owned or held by the municipality and which the Council considers are used for a purpose that is directly related to the purposes of the corporation":

Organization	Address	2024 Municipal Taxes Forgone ($)	2024 total taxes forgone ($)	GIA/ Serv. Agrmt
Ladysmith & District Historical Society	721 1st Avenue	5,699	9,797	*In negotiations*
Ladysmith & District Historical Society	1115B - 1st Avenue	3,650	6,028	
Ladysmith & District Historical Society	614 Oyster Bay Drive	3,473	6,390	2,000
Ladysmith & District Historical Society	612 Oyster Bay Drive	3,214	5,913	
Ladysmith Festival of Lights	1163 4th Avenue	8,567	15,073	10,000
Ladysmith Golf Club Society	380 Davis Rd	4,281	7,918	*Maintenance agreement*
Ladysmith Maritime Society	616 Oyster Bay Drive	3,473	6,390	0

Many churches are statutorily exempt for the building and footprint; the PTE extends the exemption to the remaining portion of the property. *Community Charter s.*224(2)(f) in relation to property that is exempt under *CC* s.220(1)(h) allows the following properties to be exempt:

Organization	Address	2024 Municipal Taxes Forgone ($)	2024 total taxes forgone ($)
United Church of Canada	232 High Street	1,775	2,882
Ladysmith Fellowship Baptist Church	381 Davis Road	1,838	3,018
St. Mary's Catholic Church	1135 4th Avenue	9,620	17,400
Pentecostal Assemblies of Canada	1149 4th Avenue	3,280	6,292

*Community Charter s.*224(2)(h) in relation to property that is exempt under *CC* s.220(1)(i) allows for specific housing for senior citizens to be exempt:

Organization	Address	2024 Municipal Taxes Forgone ($)	2024 total taxes forgone ($)
Ladysmith Senior Citizens Housing Society	207 Jamison Road	2,037	3,389
Ladysmith Senior Citizens Housing Society	101 1st Avenue	5,128	9,911

The maximum term of a PTE is 10 years. There are other properties that have received a 10 year exemption under other Permissive Tax Exemption bylaws:

- Ladysmith Resources Centre Association/ Ladysmith Seniors Society (630 2nd Ave) – exempt for 2021-2030. The municipal exemption value for 2024 was $10,638
- Boys & Girls Club of Central Vancouver Island (220 High St) – exempt for 2021-2030. The municipal exemption value for 2024 was $8,735.
- St John's Masonic Temple (Partnering Agreement) for the use of the parking lot - exempt for 2019-2028. The municipal exemption value for 2024 was $2,698.
- P Jorjorian (Partnering Agreement) for the use of a parking lot– exempt 2019-2028. The municipal exemption value for the two properties in 2024 was $5,398.

- Island Corridor Foundation properties - exempt for 2023-2032. The municipal exemption value for all of the ICF properties in 2024 was $22,090.

As a reminder, the Grant in Aid policy has been updated to reduce the GIA payment by the Permissive Tax Exemption amount starting in 2024.

SCOPE OF WORK:

If approved, staff will prepare the necessary bylaw(s) for the first three readings at the September 24th Council meeting. Statutory advertising will be published in the Ladysmith Chronicle on October 3rd and on the Town's website for October 10th. The bylaw is proposed to be adopted on October 15th, ahead of the October 31st deadline. The adopted bylaws will be forwarded to BC Assessment to ensure the exemption to the assessments are put in place for the tax year 2025.

ALTERNATIVES:

Council can choose to:

1. Provide a full exemption, similar to previous year. The resolution could be:
   That Council direct staff to prepare a one-year Permissive Tax Exemption Bylaw for all properties currently identified in the "Town of Ladysmith 2024 Permissive Tax Exemptions Bylaw 2023, No. 2158" and direct staff to remove fully exempt properties from the 2025 water parcel tax roll and the 2025 sewer parcel tax roll.
2. Deny the exemptions. There is no requirement for Council to provide PTEs.
3. Provide a multi-year exemption up to a 10-year maximum.

FINANCIAL IMPLICATIONS:

The value of the proposed bylaw based on 2024 figures is $84,571. All other taxpayers in Ladysmith share in providing this exemption. If Council eliminated these exemptions, this amount would reduce all other taxpayers' contribution to the municipal tax levy.

Usually, there is no property tax revenue lost - just a shifting of the taxation dollars from each exempt property to all the other taxable properties. In the case of new construction, the non-market change is used to reduce the overall taxation.

LEGAL IMPLICATIONS:

PTEs must also be considered as part of the Financial Plan.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Statutory notification will be published once in the local newspaper and also posted on the Town's website. The exemption notification will be forwarded to BC Assessment.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

Corporate Services and the Financial Services Department will work together to complete the bylaw and meet the statutory requirements.

ALIGNMENT WITH STRATEGIC PRIORITIES:

☐ Core Infrastructure
☐ Economy
☐ Official Community Plan Implementation
☐ Leadership
☐ Waterfront Area Plan
☒ Not Applicable

I approve the report and recommendations.

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:
Attachment A –05 1970 B Permissive Tax Exemption Policy

TOWN OF LADYSMITH

POLICY

TOPIC:	**Permissive Tax Exemption Policy**		
POLICY No.:	**05 1970 B**		
APPROVED BY:	**Council**	RESOLUTION No.:	**2019-289**
ORIGINAL DATE:	**2012.08.07**	AMENDMENT DATE:	
AMENDED:	2012-274		

PREAMBLE

The Town of Ladysmith recognizes the significant value of volunteers, volunteer groups and agencies to the spiritual, educational, social, cultural, and physical well-being of the community. A permissive tax exemption is a means for Council to support organizations within the community that further Council's objective to enhance the quality of life while delivering services economically to the citizens of Ladysmith.

The Permissive Tax Exemption Policy is intended to provide clarity, consistency and certainty to the municipality, the public and prospective applicants.

EXTENT, CONDITIONS, AND PENALTIES

Council may designate only a portion of land/improvements as exempted where the following circumstances exist:

1. A portion of the land/improvements is used by private sector and/or organization not meeting Council's exemption criteria.
2. The applicant already receives grant in aid from the municipality, provincial or federal government.
3. The applicant meets all eligibility criteria, however Council may at its discretion grant a partial exemption.

Council may impose conditions on the exempted land/improvements with the applicant organization, including but not limited to:

1. Registration of a covenant restricting use of the property.
2. An agreement committing the organization to continue a specific service/program.
3. An agreement committing the organization to have field/facilities open for public use for specific times or a total amount of time.
4. An agreement committing the organization to offer use of the field/facility to certain groups free of charge or at reduced rates.
5. An agreement committing the organization to immediately disclose any substantial increase in the organization's revenue or anticipated revenue (i.e. receives large operating grant from senior government).

Council may impose penalties on an exempted organization for knowingly breaching conditions of exemption, including but not limited to:

1. Revoking exemption with notice
2. Disqualifying any future application for exemption for specific time period
3. Requiring repayment of monies equal to the foregone tax revenue.

PROCESS

Council will consider permissive tax exemption applications for 4 years. Organizations will be required to complete a Comprehensive Application. If the application is approved for the next tax year, the organization will be required to submit a short renewal application every year for the next 3 years. The renewal application is confirmation that ownership and use of property has not changed and will be reviewed and approved before a permissive tax exemption is granted.

Comprehensive Non-Profit applications must have the following information attached before consideration of a four-year permissive tax exemption:

1. Copy of last Registered Charity Information Return or Non-Profit Organization Information Return submitted to the CRA.
2. Copy of most current Audited Financial Statements or Financial Statements prepared by an Accountant.
3. Financial Budget (pro-forma Balance Sheet and Income Statement) for the current 12 months
4. Scale Drawing of Property, that includes buildings, parking lots, landscaping, playgrounds, fields, etc.
5. Copy of Lease Agreement if applicable

Applications with required supporting information must be submitted prior to July 31st of each year to be considered for the next permissive tax exemption year or cycle.

Additional Information

1. Council may request a presentation from applying organization.
2. The Town of Ladysmith may request additional information.
3. The Town of Ladysmith reserves the right to review records and/or property to verify information provided in support of application.
4. Successful applicants may be asked to publicly acknowledge the exemption.
5. Council may, at its discretion, reject any or all applicants in any given year.
6. This policy does not apply to permissive tax exemptions for revitalization, riparian, and other special exemption authority.

Eligibility Criteria

To be eligible for a permissive tax exemption an organization must comply with all of the eligibility criteria outlined below. The application forms and supporting documentation are an integral part of this policy. There is no obligation on the part of Council to grant permissive tax exemptions in any given year.

The applicant(s):

1. qualifies for an exemption under the provisions of the *Community Charter*, general authority for permissive exemptions. (Part 7, Division 7, Section 224).

2. and/or the property owner is in compliance with municipal policies, plans, bylaws, and regulations (i.e. business licensing, zoning).

3. is a Non-Profit Organization.

   Tax exemptions will only be granted to organizations that are a Registered Charity or Non-Profit Organization. The intent of this requirement is to ensure that municipal support is not used to further activities of an organization or individual that, if not for its not-for-profit status would otherwise be considered business, i.e. an organization that is operating as a Non-Profit; although it charges market value for services available, and would be comparable in operations and perception to public as a For Profit Business.

   Non-profit organizations conducting retail and/or commercial activity and charging rates or fees at market value are considered to be in competition with for-profit businesses and will not be eligible for tax exemption.

4. provides services or programs that are compatible or complementary to those offered by the Town of Ladysmith. When a service or program is offered by a non-profit group or club, the Community may benefit from a more cost-effective provision of services.

   Services provided by an organization should fulfill some basic need, or otherwise improve the quality of life for residents of Ladysmith.

5. principal use of property meets Council's objectives. The "principal use of the property" refers to the use related directly to the principal purpose of the organization owning the property.

   Permissive tax exemptions will be based on the principal use of the property, not on the non-profit or charitable services of the organization.

6. will provide benefits and accessibility to the residents for Ladysmith. Specifically, members of the public, within the appropriate age range, are able to join a club or organization and participate in its activities for a nominal rate or fee.

   Ladysmith residents must be the primary beneficiaries of the organization's services. The services provided on the property must be accessible to the public. Council may at its discretion provide partial exemptions.

7. that provide liquor and/or meal services as their primary function and/or source of revenue will not be eligible for permissive tax exemption.

Administration

The Financial Services Department will review all applications for completeness and contact the applicant if additional information is necessary.

The Financial Services Department will prepare a summary report of applications and bylaw for presentation to Council the first week of October for approval and adoption prior to October 31st of each year.

A public notice will be placed in the local newspaper of proposed bylaw. The notice will include:

1. Property subject to bylaw
2. Description of the proposed exemption
3. Number of years the exemption will be provided
4. Estimate of the amount of taxes that would be imposed on the property if it were not exempt for the year of exemption and following 2 years.

Public notice will be in accordance with Section 94 of the *Community Charter*.
Organizations that have been approved for permissive tax exemption will be exempt for up to 4 years.

Late Application

Applications received after the deadline for submission will be held until the next scheduled October presentation to Council that meets the application due date. Applicants may, at that time, request Council to consider a refund of the Municipal portion of taxes paid for the property to be exempted the following year.

*Council shall consider the granting of a Permissive Tax Exemption in relation to other funding requests by the same organization.

STAFF REPORT TO COUNCIL

Report Prepared By: Erin Anderson, Director of Financial Services
Reviewed By: Allison McCarrick, CAO
Meeting Date: September 3, 2024
File No:
Re: **Request for Permissive Tax Exemption – Folio 1378.073**

RECOMMENDATION:

That Council deny the request from Habitat for Humanity for a Permissive Tax Exemption for folio 1378.073.

EXECUTIVE SUMMARY:

Habitat for Humanity has requested a permissive tax exemption on their Hunter Way property. Staff do not feel the property meets the requirements to be exempt. Additionally, previous Habitat for Humanity projects in Ladysmith have not received a permissive tax exemption.

PREVIOUS COUNCIL DIRECTION:

CS 2012-360	2012-12-03	It was moved, seconded and carried that subject to any additional matters raised at the public hearing, the application by Landeca Services Inc. to amend the Official Community Plan 2003, No. 1488 and the Town of Ladysmith Zoning Bylaw 1995, No. 1160 to permit a residential development of single family, two-family, and multi-family development, be approved in principle, subject to the following conditions: […] • Provision of one serviced residential lot to 'Habitat for Humanity' prior to any subdivision of the land; […]
CS 2011-229	2011-05-16	It was moved, seconded and carried that the request from Habitat for Humanity for the donation of land for construction of a new home be referred to staff to review possible properties and report back to Council.
CS 2008-531	2008-10-06	It was moved, seconded and carried that the building permit fees totalling $925 for the Habitat for Humanity project be waived.
CS 2008-101	2008-03-03	It was moved, seconded and carried that the process of disposition of a lot from a yet to be sub-divided piece of land on Strathcona Avenue be approved;

		AND THAT subject to public consultation, the lot is to be disposed of to Habitat for Humanity for the price of $1; AND THAT the land is to be used for the purposes of providing affordable housing

INTRODUCTION/BACKGROUND:

A permissive tax exemption request from Habitat for Humanity was received by staff. This property has not previously been granted a permissive tax exemption.

When Habitat for Humanity owned property previously, full taxes were levied and paid, even when it was just vacant land. The Town did waive (pay for) some of the fees associated with the building permitting process.

The Permissive Tax Exemption Policy states that the property must be offering a program or service to "otherwise improve the quality of life for residents of Ladysmith". In speaking with a Habitat for Humanity representative, anyone within the Ladysmith catchment area who has lived in the area for at least one year would be eligible for the housing. Their intent is to pursue a building permit within the next two years. Once the property is complete and occupancy is granted, the property is then sold to the individual(s) who would be responsible for paying the property taxes.

There are other properties within Ladysmith that are held by non-profit organizations, though they are fully taxable. The Policy reiterates this point as it is not the non-profit status that qualifies for the exemption but rather the *use* of the property.

ALTERNATIVES:

Council can choose to:

1. Approve the request, though other not for profits offering rentals in Town would be eligible too. The resolution would be:
   That Council direct staff to include folio 1378.073 in the 2025 Permissive Tax Exemption bylaw and remove the property from the water and sewer parcel tax rolls.
2. Approve the tax request though charge the water and sewer parcel taxes. The resolution would be:
   That Council direct staff to include folio 1378.073 in the 2025 Permissive Tax Exemption bylaw.
3. Direct staff to amend the Permissive Tax Exemption Policy to allow all not for profit landlords to be eligible for a permissive tax exemption.

FINANCIAL IMPLICATIONS:

In 2024, the property was assessed ~$2,597 in property taxes. Should Council approve the exemption, there will be an ~$843 budget increase for 2025.

LEGAL IMPLICATIONS:
Permissive tax exemptions are eligible based on specific criteria in the *Community Charter* s224.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:
Other taxable property owners in Ladysmith pay for any exemption provided.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:
n/a

ALIGNMENT WITH STRATEGIC PRIORITIES:

☐ Core Infrastructure	☐ Economy
☐ Official Community Plan Implementation	☐ Leadership
☐ Waterfront Area Plan	☒ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

A. Habitat for Humanity Permissive Tax Exemption Application

APPLICATION FOR PERMISSIVE TAX EXEMPTION

Details of Organization			
Name of Organization:	Habitat for Humanity Mid-Vancouver Island Society		
Mailing Address:	1 - 4128 Mostar Rd, Nanaimo, BC V9T 6C9		
Application Contact:	Redacted - S. 22		
Phone:	250 758-8078 X 105	Email:	accounting@habitatmvi.org
President/Chairperson:	Jeff Krafta - Executive Director		
Mailing Address:	1 - 4128 Mostar Rd, Nanaimo, BC V9T 6C9		
Phone:	250 758-8078 X107	Email:	ExecutiveDirector@HabitatMVI.org
Folio Number:	Redacted - S. 22	Society Incorporation #:	S0032950

Overview of your organization's programs and services in the community:
Habitat for Humanity Mid-Vancouver Island brings communities together to help families build strength, stability and independence through affordable housing.
We operate the popular "ReStores", engage community volunteers and reduce waste through our recycling programs

Principal use of property:
To be developed to construct affordable housing. This property is currently bare land.

Redacted - S. 22

Please provide a copy of the following:	Attached
Most recent Registered Charity Information Return or Non-Profit Organization Return submitted to CCRA	☑
Most current Audited Financial Statements or Financial Statements prepared by an Accountant	☑
Financial Budget (pro-forma Balance Sheet and Income Statement) for the current year	☑
Scale Drawing of Property, that includes buildings, parking lots, landscaping, playgrounds, fields, etc.	☐

On behalf of, Habitat for Humanity Mid-Vancouver Island Society I/we hereby declare that all the information presented and provided with this application is true and correct. Should a permissive tax exemption be Granted on the above listed property, I am agreeable to the following terms:

1. If the property is sold prior to the exemption expiration, the organization will remit to the Town an amount equal to the taxes that would have otherwise been payable to the Town by a non-exempt owner.
2. The property use will be in compliance with the applicable municipal policies and bylaws.
3. The organization will publicly acknowledge the permissive tax exemption granted by the Town.

DATED THIS 15th DAY OF May , 2022.

Authorized Signature: Jeff Krafta, Executive Director

The personal information on this form is collected under the general authority of the ***Community Charter*** and ***Freedom of Information & Protection of Privacy Act (FOIPPA)*** and is protected in accordance with ***FOIPPA***. Personal information will only be used by authorized staff to fulfill the purpose for which it was originally collected or for a use consistent with that purpose. If you have any questions about the use and collection of this information, contact the Corporate Officer at 250.245.6417 or foi@ladysmith.ca.

STAFF REPORT TO COUNCIL

Report Prepared By: Erin Anderson, Director of Financial Services
Reviewed By: Allison McCarrick, CAO
Meeting Date: September 3, 2024
File No: **1970-04-24-01**
Re: **Revitalization Tax Exemption – 32 High Street**

RECOMMENDATION:

That Council approve entering into a Revitalization Tax Exemption Agreement with Temperance Group Investments for the property located at 32 High Street, folio 0069.000, provided a letter from a professional structural engineer is received before the bylaw is adopted.

EXECUTIVE SUMMARY:

The Town has received an application for the Revitalization Tax Exemption for the heritage program from the Temperance Group for 32 High Street.

PREVIOUS COUNCIL DIRECTION:

N/A

INTRODUCTION/BACKGROUND:

Tax Revitalization Programs are permitted under section 226 of the *Community Charter.* This section requires the municipality to establish a revitalization program bylaw that sets out goals and objectives of the program and the kinds of activities or properties that will be eligible for tax exemptions, as well as the amount, term and extent of the exemptions.

In 2007, the Town established the "Town of Ladysmith Revitalization Tax Exemption Bylaw 2007, No.1625". The purpose of this program is to maintain the Town's heritage theme and encourage investment within the Downtown Core without triggering increased taxation for commercial properties. Since that time, various owners have taken advantage of the program, such as:

- 341 First Avenue (for the tax years 2014-2025)
- 524 First Avenue (for the tax years 2008-2013)
- 18 High Street (for the tax years 2008-2017)
- 411 First Ave (for the tax years 2008-2017)
- 12 Roberts Street (for the tax years 2014-2023)

The Town originally received an application for a revitalization tax exemption for 32 High Street in July of 2023. Not all of the requirements were met at the time of the application which resulted

in the application being put on-hold. As all exemptions must be in place by bylaw or agreement before October 30th, this application originally missed the deadline for the tax year 2024. There is only one outstanding issue at this time – a letter from a professional structural engineer certifying the seismic upgrade costs.

The maximum term of the exemption is 10 years; it is only applicable for assessment based on the general assessment roll.

Should Council approve entering into an agreement with the owners of 32 High Street, staff will prepare the necessary bylaw and advertising and will execute the Tax Exemption certificate all before October 30th, per legislation.

ALTERNATIVES:

Council can choose to:

1. Not approve the revitalization as the application has been made after the work has been completed.
2. Cancel the heritage revitalization tax exemption program after the final exemption period lapses.
3. Direct staff to create more of an incentive program to encourage more heritage preservation.

FINANCIAL IMPLICATIONS:

The property assessment from BC Assessment lists the property at 32 High Street as:

	2022	2023	2024
Class1-Residential	287,900	338,800	632,000
Class6-Business/Other	203,300	221,500	219,500
	491,200	560,300	851,500

The building permit for the renovations that qualify for the exemption was issued in 2023, meaning that the baseline assessment is 2022.

Normally, the exemption is put in place at the same time as the building permit is issued and there is no impact to the Town financially. As this application is after the fact, there will be a small financial impact (roughly $976) as the Town has received the tax payment on the increased assessment in 2024 that will be reset to the baseline assessment.

LEGAL IMPLICATIONS:

The Revitalization Agreement template is set by bylaw. If approved, staff will ensure the agreement is prepared for execution and create the accompanying bylaw and advertisement.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

n/a

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

The Planning and Building Departments have already been involved with this project. If approved, the Finance Department will lead the next steps in the Revitalization Tax Exemption process.

ALIGNMENT WITH STRATEGIC PRIORITIES:

☐ Core Infrastructure
☐ Economy
☐ Official Community Plan Implementation
☐ Leadership
☐ Waterfront Area Plan
☒ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

A. Application from Temperance Group
B. Revitalization Tax Exemption bylaw 1625 with sample agreement

ATTACHMENT A

TOWN OF LADYSMITH

Celebrate our Present. Embrace our Future. Honour our Past.

RECEIVED
JUL 18 2023
TOWN OF LADYSMITH
FINANCE DEPT.

REVITALIZATION TAX EXEMPTION PROGRAM APPLICATION

APPLICANT INFORMATION:	
Name: Denise Bergquist	Phone: Redacted - S. 22
Address: 32 High Street	Cell:
Postal Code: V9G 1A9	Fax:
Email: Redacted - S. 22	
OWNER INFORMATION:	
Name: Denise Bergquist/Stefan Queitsch	Phone: Redacted - S. 22
Address: Redacted - S. 22	Cell:
Postal Co Redacted - S. 22	Fax:
Email: Redacted - S. 22	
PROPERTY INFORMATION:	
Civic Address: 32 High Street, Ladysmith	
Legal Description: PID: 007-807-741	
CONSULTANT INFORMATION:	
Name of Architect: Redacted - S. 22	Redacted - S. 22
Address: Redacted - S. 22	Cell:
Postal Code: Redacted - S. 22	Fax:
Name of Engineer: Redacted - S. 22	Phone: Redacted - S. 22
Address: Redacted - S. 22	Cell:
Postal Code: Redacted - S. 22	Fax:
Name of Contractor: Redacted - S. 22	Phone: Redacted - S. 22
Redacted - S. 22	Cell:
Postal Co Redacted - S. 22	Fax:

250.245.6400 / info@ladysmith.ca / www.ladysmith.ca
410 Esplanade MAIL PO Box 220, Ladysmith, BC V9G 1A2

PROJECT INFORMATION:	
Present Use of Building:	C2 Mixed use residential/Commercial
Project Timeframe:	2021-2023
PROJECT COST:	
Estimated Total Construction Cost:	930,000
Estimated Seismic/Building Code/Sprinkler/Facade Upgrade Cost:	350,000

APPLICATION REQUIREMENTS:

Please attach the following:

- [x] Certificate of Title
- [x] Cover letter outlining scope of work
- [x] Scaled drawing(s) of proposed work (four sets).
- [x] A total construction cost estimate - itemized (preference is to be completed by an architect, engineer or building contractor). Receipts will be required at project completion to verify estimate accuracy.
- [ ] Letter from professional structural engineer certifying seismic upgrading costs if applicable. The cost estimate should be based on the NRC-CNRC Guidelines for Seismic Evaluation of Existing Buildings.
- [x] Colour photographs of building exterior (where external building alterations proposed).
- [x] Colour sketch (where external building alterations proposed).
- [x] Material and colour samples (where external building alterations proposed).
- [ ] Application fee of $250.00 to be paid upon approval in principle of the project (Bylaw # 1752).

The Town of Ladysmith reserves the right to decline approval of applications not in keeping with the Revitalization Tax Exemption Program guidelines.

I, being the registered owner [x] or authorized agent [ ] make this application.

(If applicant is not the registered owner, a letter of authorization from the owner is required before the application can be processed).

Signature of Applicant: Redacted - S. 22 Date: March 20, 2023


Tyvek
HomeWrap

LADYSMITH

TOWN OF LADYSMITH
DEVELOPMENT PERMIT

(Section 489 *Local Government Act*)

FILE NO: 3060-21-13

DATE: August 13, 2021

Name of Owner(s) of Land (Permittee): Temperance Group Investments Ltd., Inc.No. BC1259037

Applicant: Stefan Queitsch and Denise Bergquist

Subject Property (Civic Address): 32 High Street

---

1. This Development Permit is subject to compliance with all of the bylaws of the Town of Ladysmith applicable thereto, except as specifically varied by this Permit.

2. This Permit applies to and only to those lands within the Town of Ladysmith described below, and any and all buildings structures and other development thereon:

   That part of Lot A (DD 65840N), Block 8, District Lot 56, Oyster District, Plan 703 lying to the south east of a boundary parallel to and perpendicularly distant 64 feet from the south easterly boundary of said lot
   PID# 007-807-741

   (referred to as the "Land")

3. This Permit has the effect of authorizing:
   (a) the alteration of a building on land designated in the Official Community plan under section 488 of the *Local Government Act*.

   Subject to the conditions, requirements and standards imposed and agreed to in section 5 of this Permit.

4. This Permit does not have the effect of varying the use or density of the Land specified in Town of Ladysmith Zoning Bylaw 2014, No. 1860.

5. The Permittee, as a condition of the issuance of this Permit, agrees to:

(a) complete the exterior design and finish of the building in accordance with **Schedule A – Exterior Building Materials & Colours**; and

(b) **Restore the "Temperance Hotel" sign which is identified as a character-defining element of the building in the Town of Ladysmith's Community Heritage Register.** The wording may be painted directly onto the wood siding of the building or may be made up of individual wood letters.

Note: Placement of awnings or any additional signage (including window signage) will require a separate Permit.

6. Notice of this Permit shall be filed in the Land Title Office at Victoria under s.503 of the *Local Government Act,* and upon such filing, the terms of this Permit or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.

7. If the Permittee does not substantially start any construction permitted by this Permit within **six months** of the date of this Permit as established by the approval date, this Permit shall lapse.

8. The plans and specifications attached to this Permit are an integral part of this Permit.

9. This Permit prevails over the provisions of the Bylaw in the event of conflict.

10. **Despite issuance of this permit, construction may not start without a Building Permit or other necessary permits.**

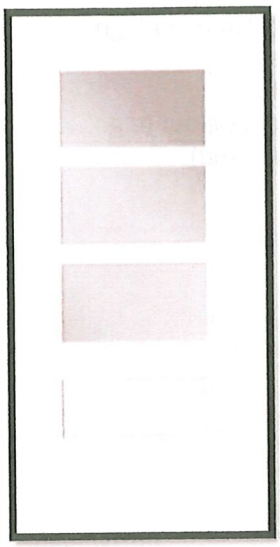
APPROVED PURSUANT TO "LADYSMITH OFFICERS AND DELEGATION OF AUTHORITY BYLAW 2016, NO. 1905" ON THE 13th DAY OF AUGUST 2021.

Director of Development Services
J.Belobaba, RPP, MCIP

Schedule A – Exterior Building Materials & Colours
DP 3060-21-13
32 High Street

Doors

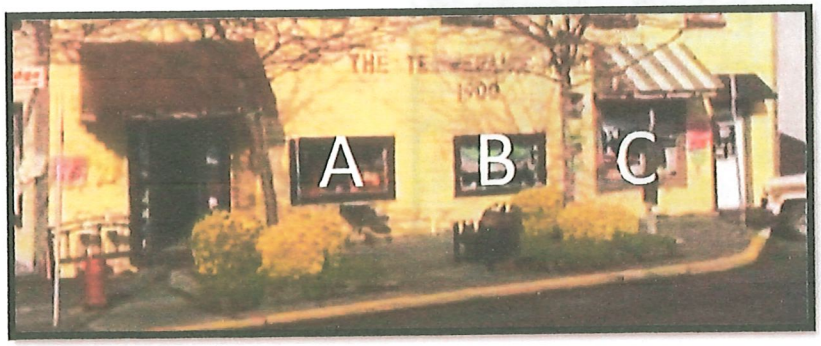
Residential Doors: Use of "heritage style" door hardware is required. A "transom" window may be placed above each door. Privacy glass to be used for door lites.



Commercial Doors: For (two) commercial units facing High Street. Use of clear glass for the door lites and "heritage style" door hardware is required.

Windows

Commercial Windows: Window A to be replaced/expanded to match C. Window B to be resized/replaced to match residential windows. Window C to be replaced as existing.



Windows for all upper storey and 1st Avenue windows and for commercial Window B

DP 3060-21-13
Approved Schedule

Schedule A – Exterior Building Materials & Colours
DP 3060-21-13
32 High Street

Colour Palette

Roof: Black
Stairs and Patio Railings: Black
Siding: Light Green or Light Blue or Teal
Trim: Off-white
Doors: Accent Colour (e.g. yellow or dark red)

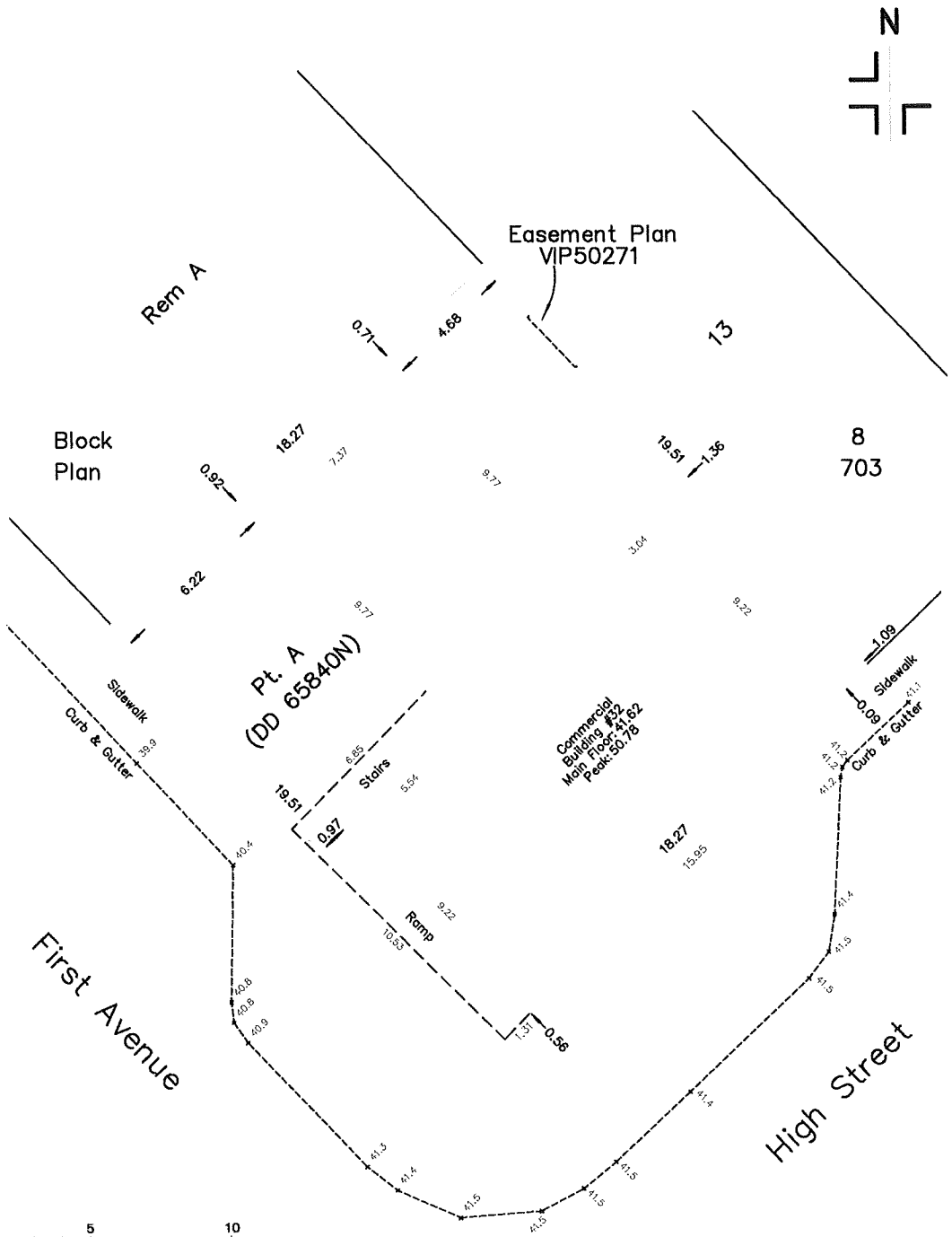
Scope of work for the Temperance Hotel

- Full foundation on High Street/1st Ave main building / none existing
- Seismic upgrades: Shear walls, hold downs, strapping as per structural engineer
- Replacing all windows and doors
- New Plumbing
- New Electrical
- Fully insulate entire building
- New Stairs front and back of the building
- New lighting interior and exterior
- New kitchens
- Bathroom upgrades
- New Heating systems / Natural gas boiler / HVAC units for some suites / Natural Gas and Electric fireplaces / in floor heating
- Landscaping
- New Signage
- Soffits/Gutters
- New colour!

ATTACHMENT A

SITE PLAN SHOWING:
THAT PART OF LOT A (DD 65840N), BLOCK 8, DISTRICT LOT 56, OYSTER DISTRICT, PLAN 703, LYING TO THE SOUTHEAST OF A BOUNDARY PARALLEL TO AND PERPENDICULARLY DISTANT 64 FEET FROM THE SOUTH EASTERLY BOUNDARY OF SAID LOT

Client: TEMPERANCE GROUP INVESTMENTS LTD.			
Civic Address: 32 HIGH STREET, LADYSMITH			
File: 21-124	Scale: 1:150	Drawn by: BEP	Property Zoning: C2



DISTANCES AND ELEVATIONS ARE IN METRES.

GEODETIC ELEVATIONS ARE DERIVED FROM CONTROL MONUMENT 87H3560 (CGVD28BC DATUM).

NOTE:
THE REGISTERED TITLE OF THIS PROPERTY IS AFFECTED BY THE FOLLOWING LEGAL NOTATIONS AND REGISTERED CHARGES, LIENS AND INTERESTS:
M76300, ED44739.
THIS SITE PLAN DOES NOT VERIFY COMPLIANCE WITH THE ABOVE NOTED DOCUMENTS.

THIS SITE PLAN SHOWS THE RELATIVE LOCATION OF THE EXISTING AND PROPOSED STRUCTURES/IMPROVEMENTS WITH RESPECT TO THE BOUNDARIES OF THE DESCRIBED PARCEL ONLY.

THIS SITE PLAN SHALL NOT BE USED TO DEFINE PROPERTY LINES OR PROPERTY CORNERS.

THE SIGNATORY ACCEPTS NO RESPONSIBILITY FOR AND HEREBY DISCLAIM ALL OBLIGATIONS AND LIABILITIES FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY DIRECT OR INDIRECT USE OR RELIANCE UPON THE SITE PLAN BEYOND ITS INTENDED USE.

Turner & Associates
land surveying
250.753.9778
435 Terminal Avenue North
Nanaimo, BC V9S 4J8
www.turnersurveys.ca

Certified correct this 13th day of August, 2021.

Digitally signed by Brody Phillips 954A28
Date: 2022.10.24 10:24:07 -07'00'

B.C.L.S.

(This document is not valid unless originally signed and sealed.)

TOWN OF LADYSMITH

"Revitalization Tax Exemption Bylaw 2007, No. 1625"

Consolidated Version as on October 13, 2015
(This consolidation is authorized by "Bylaw Revision Bylaw 2022, No. 2090")

October 15, 2007
Includes Amendment Bylaw Nos.: 1664, 1838, 1892

TOWN OF LADYSMITH

BYLAW NO. 1625

A Bylaw to establish a revitalization tax exemption program.

WHEREAS the Council of the Town of Ladysmith may, for the purposes of maintaining our heritage theme and encouraging investment within the Downtown Core without triggering increased taxation, adopt a Bylaw pursuant to Section 226 of the *Community Charter* partially exempting eligible revitalized properties from taxation;

AND WHEREAS Council wishes to support the revitalization of the commercial and primarily commercial buildings in the Downtown Core and Downtown Mixed Use areas as defined in the Official Community Plan, as outlined in Schedule "A",

AND WHEREAS Council wishes to support the revitalization of the properties listed in the attached Schedule "B" by exempting such land and buildings from municipal property taxes calculated on the increase in assessed value, from the base year, due to the revitalization,

AND WHEREAS the properties indicated in the attached Schedule "B" are subject to a Covenant under Section 219 of the *Land Title Act* that relates to the conservation of heritage property;

AND WHEREAS pursuant to Section 226(5)(a)(iii) of the *Community Charter*, the Bylaw under Section 226 may provide that in certain circumstances the owner of the land must repay the taxes exempted under the Bylaw and the owner of the eligible property to which this Bylaw applies has consented to the inclusion of such a provision in the exemption agreement;

AND WHEREAS Section 227 of the *Community Charter* requires that notice be provided of the creation of such a revitalization tax exemption, and such notice has been provided;

NOW THEREFORE, in open meeting assembled, Council of the Town of Ladysmith **ENACTS AS FOLLOWS:**

1. This bylaw may be cited for all purposes as *"Town of Ladysmith Revitalization Tax Exemption Bylaw 2007, No. 1625".*

2. In this bylaw:

"Agreement" means a revitalization tax exemption agreement between the owner of a Parcel and the Town, in a format similar to the attached Schedule "C";

"Commercial" means commercial use as defined in the Town of Ladysmith Zoning Bylaw 1995, No. 1160 as amended, consolidated or replaced from time to time;

"Council" means the council of the Town of Ladysmith;

"Parcel" means a legal parcel within the Revitalization Area upon which an owner proposes a Project;

"Primarily Commercial" means a commercial activity occupies main floor, alternate use of remainder of building may be considered at Council's discretion;

"Project" means a revitalization project on a Parcel involving the construction of an alteration of an existing improvement;

"Revitalization Area" means the properties included in the Downtown Core and Downtown Mixed Use as defined in the Official Community Plan, as amended, consolidated or replaced from time to time, as shown on Schedule "A", which is attached to and forms part of this Bylaw;

"Tax Exemption" means a municipal revitalization tax exemption pursuant to a Tax Exemption Certificate;

"Tax Exemption Certificate" means a revitalization tax exemption certificate issued by the Town pursuant to this Bylaw and pursuant to the provisions of Section 226 of the *Community Charter*, in the form attached as Schedule "D", which is attached to and forms part of this Bylaw.

3. There is hereby established a revitalization tax exemption program under section 226 of the *Community Charter* for the issuance of Tax Exemption Certificates for the Parcels.

4. The terms and conditions upon which a Tax Exemption Certificate may be issued are as set out in this Bylaw, in the Agreement and in the Tax Exemption Certificate.

5. The amount of the annual Tax Exemption shall be equal to the municipal taxes payable on the increase in the assessed value of improvements on the Property, due to the revitalization between:

(a) the year before the commencement of construction of the Project, and

(b) the year following the year in which the tax exemption certificate is issued,

subject to the maximum aggregate exemption prescribed by the formula in section 226 (5) (b) of the *Community Charter*.

6. In order for a Project to be considered by Council for an Agreement the Project must, at a minimum, have a construction value of at least $15,000 and the land use into which the Project is intended to fit must be one of the uses permitted in the Town of Ladysmith Zoning Bylaw 1995, No. 1160 as amended, consolidated or replaced from time to time.

7. Subject to early cancellation of the Certificate as per section 9:

(a) If the Certificate is issued before October 30th of the current year, then the Tax Exemption will be available for the following calendar year;

(b) The maximum term of the exemption shall be 10 years and shall be calculated as follows:

Term of exemption = $\frac{\text{Cost of seismic/building code/sprinkler/façade upgrade}}{\text{Estimated increase in municipal taxes due to revitalization}}$ (# of years)

8. If an owner wishes Council to consider entering into an Agreement with the owner, the owner must apply to the Director of Financial Services in writing and must submit the following with the application:

(a) a certificate that all taxes assessed and rates, charges and fees imposed on the Parcel have been paid, and, where taxes, rates or assessments are payable by instalments, that all instalments owing at the date of application have been paid;

(b) a completed written application in a form prescribed by the Town and available in the office of the Director of Financial Services or Manager of Development Services;

(c) a description of the Project;

(d) a certificate from the owner's design professional in a form satisfactory to the Town's Director of Financial Services certifying that the construction value of the Project will exceed $15,000.00; and

(e) a fee in the amount prescribed by the Town of Ladysmith "Fees and Charges Bylaw 2007, #1626", payable upon approval in principle of the Project.

9. If, pursuant to the terms and conditions specified in the Agreement or the Certificate, the Certificate is cancelled, the owner of the property for which the certificate was issued will remit to the Town an amount equal to the value of the exemption received after the date of the cancellation of the certificate.

10. The Director of Financial Services for the Town or her designate is the designated municipal officer for the purpose of Section 226 (12) in the *Community Charter.*

READ A FIRST TIME	on the	17th	day of	September,	2007
READ A SECOND TIME	on the	17th	day of	September,	2007
READ A THIRD TIME	on the	17th	day of	September,	2007
ADOPTED	on the	15th	day of	October,	2007

_____
Mayor (R. Hutchins)

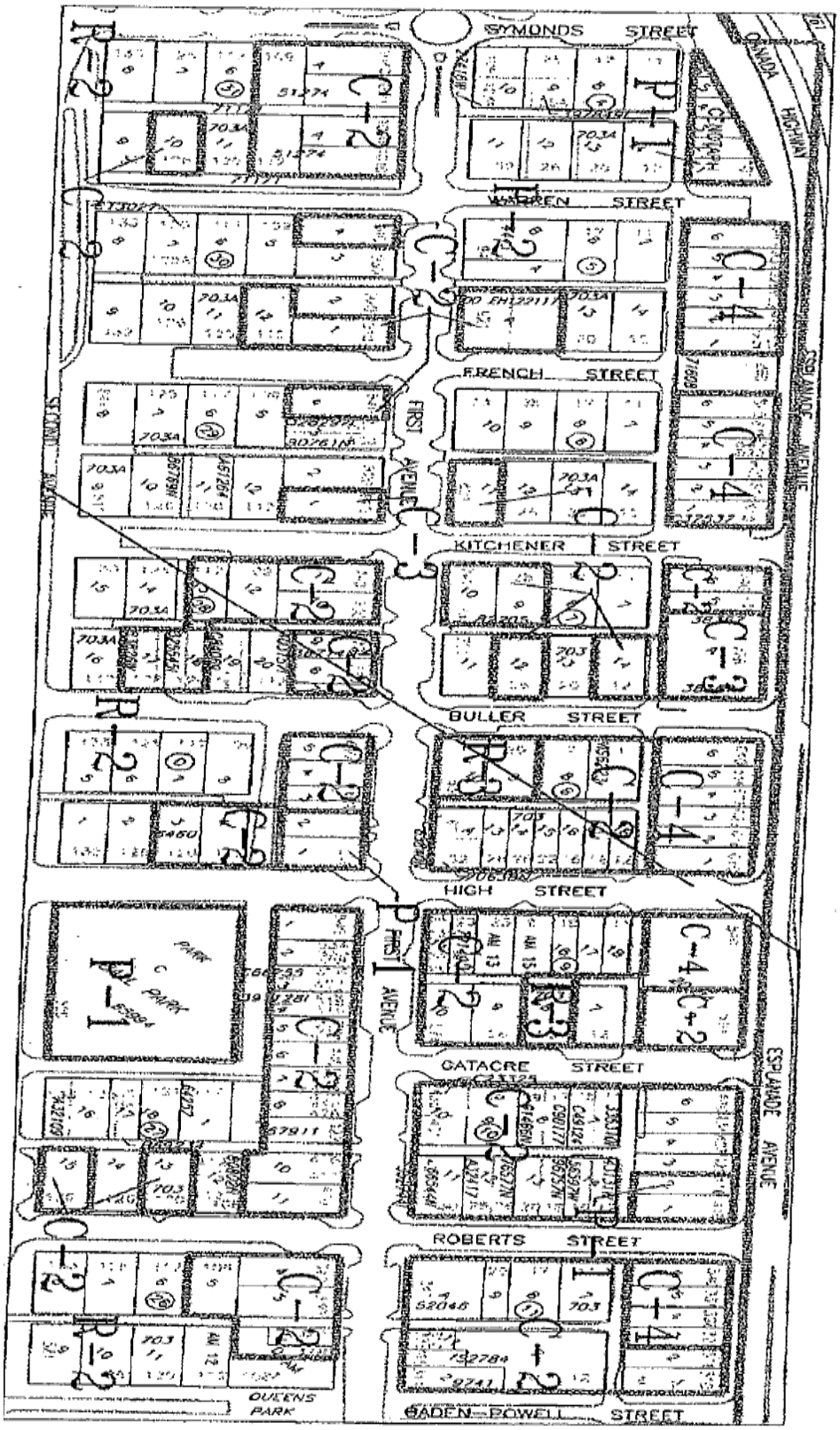
_____
Acting Manager of Corporate Services (T. Kaul)

I hereby certify this to be a true and
correct copy of "Town of Ladysmith
Revitalization Tax Exemption Bylaw 2007, No. 1625".

_____
Acting Manager of Corporate Services

Schedule "A"

REVITALIZATION AREA



Schedule "B"

REVITALIZATION TAX EXEMPTION PROGRAM

SCHEDULE OF ELIGIBLE PROPERTIES

Bylaw 1892
Bylaw 1838
Bylaw 1664

Town of Ladysmith Bylaw No. 1625

Schedule "B"

PROPERTY DESCRIPTION	
Beantime Restaurant Owner of Property: Nordic Holdings Ltd	18 High St Lot 16, Blk 8, Plan VIP703 Folio 74.000
Futureworks Consulting Inc	411 1st Ave & 30 Roberts St Lot 11, Blk 10, Plan VIP703 Folio 107.000
Antique Addict Owner of Property: Paul Joy/Catherine Goldie	12 Roberts St Lot 14, Blk 27, Plan VIP703 Folio 113.000
1639555 Alberta Ltd	341 1st Ave Lot A, Plan VIP52046 Folio 126.000

Schedule "C"

REVITALIZATION TAX EXEMPTION AGREEMENT

THIS AGREEMENT dated for reference the__day of_____, 2007 is

BETWEEN:

(the "Property Owner")

AND:

TOWN OF LADYSMITH

410 Esplanade, PO Box
220 Ladysmith, BC

V9G 1A2

(the "Town")

GIVEN THAT:

A. The Property Owner is the registered owner in fee simple of lands in the Town of Ladysmith at *[civic address]* legally described as *[legal description]* (the "Property");

B. Council has established a revitalization tax exemption program in the downtown area as defined as the properties within the boundary of the downtown core. The boundary of the revitalization area is described as the area between Esplanade Avenue and Second Avenue from Symonds Street to Baden-Powell Street;

C. Council's objective in providing the commercial properties within the boundary of the downtown core as a revitalization area is to maintain our heritage theme and encourage investment within the Downtown Core without triggering increased taxation; and

D. The Property Owner proposes to alter an existing improvement on the Property as described in Schedule "A" to this Agreement (the "Project") and has applied to the Town to partake in the revitalization tax exemption program in respect of this Project and the Town has agreed to accept the Project under the program;

THIS AGREEMENT is evidence that in consideration of the promises exchanged below, the Property Owner and the Town covenant and agree each with the other as follows:

1. **The Project –** The Property Owner will use its best efforts to ensure that the Project is constructed, maintained, operated and used in a fashion that will be consistent with and will foster the objectives of the revitalization tax exemption program, and, without limiting the generality of the foregoing, the Property Owner covenants to use its best efforts to ensure that the Project will:

(a)

(b)

(c)

2. **Operation and Maintenance of Project** – Throughout the term of the Tax Exemption the Property Owner must operate, repair and maintain the Project and will keep the Project in a state of good repair as a prudent owner would do.

3. **Revitalization Tax Exemption** – Subject to fulfillment of the conditions set out in this Agreement and in the Bylaw, the Town will issue a revitalization tax exemption certificate (the "Certificate") to the Property Owner entitling the Property Owner to a property tax exemption in respect of the Property (the "Tax Exemption") in an amount and for the calendar years set out in this Agreement. The Certificate will be in the form attached to this Agreement as Schedule "B".

4. **Conditions** – The following conditions must be fulfilled before the Town will issue a Certificate to the Property Owner:

a) The Property Owner must provide the Town with a certificate from the Property Owner's design professional (if applicable), in form and content satisfactory to the Town's Director of Financial Services, certifying the actual cost to construct the completed Project.

b) All property taxes, business licenses, and user fees must be paid in full before approval in principle is given and throughout the term of the agreement.

c) The Property Owner must obtain a building permit from the Town for the Project and begin construction within one year of approval in principle;

d) The Property Owner must complete or cause to be completed construction of the Project in a good and workmanlike fashion and in strict accordance with the building permit and the plans and specifications attached hereto as Schedule "A" and the Project must be inspected by the Town building inspector and certified complete, by no later than two years following approval in principle;

e) The building alteration must be substantially underway within one year of the tax exemption approval in principle and completed within two years;

f) The completed Project must substantially satisfy the performance criteria set out in
Schedule "C" hereto, as determined by the Town's Manager of Development Services and Building Inspector;

g) Variations from the original construction plan, bylaw infractions or poor quality work may result in rescinding of the tax exemption approval;

h) In order to protect the interests of the community, a Heritage Conservation Covenant will be requested to be placed on the property to ensure the building's long term protection and use. (Include if applicable) Although not required, Heritage designation will also be encouraged. An example of a Heritage Conservation Covenant is attached as Schedule "D";

i) Any changes or upgrades made to the structure of the building due to the improvements must comply with the BC Building Code and the Town's Sign and Canopy Bylaw. A complete guide to construction requirements for downtown development is available upon request;

j) Upon completion of the work, final inspection and confirmation of adherence to all bylaws and receipt of all final invoices, *registration of a heritage conservation covenant* (include if applicable) and completion of an exemption agreement, the tax exemption bylaw shall be adopted by Council. An exemption certificate will then be issued and forwarded to the BC Assessment Authority.

5. **Calculation of Revitalization Tax Exemption** – The amount of the tax exemption shall be equal to the Municipal taxes payable on the amount of any increase in the assessed value of improvements on the Property, due to the revitalization, between:

(a) the year before commencement of construction of the Project, and

(b) the year following the year in which the tax exemption certificate is issued.

6. **Maximum Revitalization Tax Exemption** - The maximum municipal tax exemption shall not exceed the total cost of the improvements or the increase in municipal taxes payable due to the revitalization.

7. **Term of Revitalization Tax Exemption** – Subject to early cancellation of the Certificate under section 10:

(a) If the Certificate is issued before October 30th of the current year, then the Tax Exemption will be available for the following calendar year;

(b) The maximum term of the exemption shall be 10 years and shall be calculated as follows:

Term of exemption = Cost of seismic/building code/sprinkler/façade upgrade (# of years) Estimated Increase in Municipal Taxes Due to Revitalization

8. **Compliance with Laws** – The Property Owner will construct the Project and, at all times during the term of the Tax Exemption, use and occupy the Property and the Project in compliance with all statutes, laws, regulations and orders of any authority having jurisdiction and, without limiting the generality of the foregoing, all federal, provincial, or municipal laws or statutes or bylaws, including all the rules, regulations, policies, guidelines, criteria or the like made under or pursuant to any such laws.

9. **Effect of Stratification –** If the Property Owner stratifies the Property under the *Strata Property Act* the Tax Exemption shall be prorated among the strata lots in accordance with the unit entitlement of each strata lot for:

a) The current and each subsequent tax year during the currency of this Agreement if the strata plan is accepted for registration at the Land Title Office before May 1; or

b) For the next calendar year and each subsequent tax year during the currency of this Agreement if the strata plan is accepted for registration at the Land Title Office after May 1.

10. **Cancellation** – The Town may in its discretion cancel the Certificate at any time:

a) On the written request of the Property Owner; or

b) Effective immediately upon delivery of a notice of cancellation to the Property Owner if at any time any of the conditions in the Exemption Certificate or the Exemption Agreement are not met.

11. **Repayment of Exempt Taxes** - During the term of the tax exemption bylaw, the tax exemption amount received by the owner must be repaid to the Town if the building is destroyed or altered without proper authorization from the Town (other than by a natural disaster), *or if the Heritage Conservation Covenant is rescinded by Council at the request of the owner* (include if applicable). In either of these circumstances, the exemption certificate will be cancelled. If such cancellation occurs, the owner of the property for which the certificate was issued will remit to the Town an amount equal to the total value of the exemption received.

12. **No Refund –** For greater certainty, under no circumstances will the Property Owner be entitled under or pursuant to this Agreement or under or pursuant to the revitalization tax exemption program to any cash credit, any carry forward tax exemption credit or any refund for any property taxes paid.

13. **Notices**. Any notice or other writing required or permitted to be given hereunder or for the purposes hereof to any party shall be sufficiently given if delivered by hand or posted on the Property, or if sent by prepaid registered mail (Express Post) or if transmitted by facsimile to such party:

14. **in the case of a notice to the Town**, at:

THE TOWN OF LADYSMITH
410 Esplanade, PO
Box 220 Ladysmith,
BC V9G 1A2

Attention:

Facsimile:

15. **in the case of a notice to the Property Owner**, at:

Attention:
Facsimile:

or at such other address or addresses as the party to whom such notice or other writing is to be given shall have last notified the party giving the same in the manner provided in this section.

Any notice or other writing sent in compliance with this section shall be deemed to have been given and received on the day it is given unless that day is not a Business Day, in which case the notice shall be deemed to have been given and received on the next day that is a Business Day. In this section, "Business Day" means any day other than Saturday, Sunday, any statutory holiday in the Province of British Columbia or any day on which banks generally are not open for business in Ladysmith, British Columbia.

16. **No Assignment** – The Property Owner may not assign its interest in this Agreement except to a subsequent owner in fee simple of the Property.

17. **Severance** - If any portion of this Agreement is held invalid by a court of competent jurisdiction, the invalid portion shall be severed and the decision that it is invalid shall not affect the validity of the remainder of this Agreement.

18. **Interpretation** - Wherever the singular or masculine is used in this Agreement, the same shall be construed as meaning the plural, the feminine or body corporate where the context or the parties thereto so required.

19. **Further Assurances** - The parties hereto shall execute and do all such further deeds, acts, things and assurances that may be reasonably required to carry out the intent of this Agreement.

20. **Waiver** - Waiver by the Town of a default by the Property Owner shall be in writing and shall not be deemed to be a waiver of any subsequent or other default.

21. **Powers Preserved -** This Agreement does not

(a) affect or limit the discretion, rights or powers of the Town under any enactment (as defined in the *Interpretation Act*, R.S.B.C. 1979, c.206, on the reference date of this Agreement) or at common law, including in relation to the use or subdivision of the Land;

(b) affect or limit any enactment relating to the use or subdivision of the Property, or

(c) relieve the Property Owner from complying with any enactment, including in relation to the use or subdivision of the Property, and without limitation shall not confer directly or indirectly any exemption or right of set-off from development cost charges, connection charges application fees, user fees or other rates, levies and charges payable under any bylaw of the Town.

22. **References** - Every reference to each party is deemed to include the heirs, executors, administrators, personal representatives, successors, assigns, servants, employees, agents, contractors, officers, licensees and invitees of such party, wherever the context so requires or allows.

23. **Enurement** - This Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective successors and permitted assigns.

IN WITNESS WHEREOF the parties hereto have executed this Agreement as of the day and year first above written.

Signed, Sealed and Delivered by
the TOWN OF LADYSMITH by its
authorized signatories:

_____
Mayor:

_____
Manager of Corporate Services:

Signed, Sealed and Delivered
by its authorized signatories:

_____
Name:

_____
Name:

Schedule "D"

REVITALIZATION TAX EXEMPTION CERTIFICATE

REVITALIZATION TAX EXEMPTION CERTIFICATE

Section 226 of the *Community Charter*, SBC 2003, c. 26

In accordance with the Town of Ladysmith Revitalization Tax Exemption Bylaw No. 1625 and in accordance with the Revitalization Tax Exemption Agreement dated for reference the_ day of_, 20 (the "Agreement") entered into between the Town of Ladysmith (the "Town") and (the "Owner"), the registered owner(s) of the property described below, this certificate certifies that the Property (as defined below) is subject to a revitalization tax exemption in an amount equal to the amount of any increase in municipal property taxes which would otherwise be payable as a result of any increase in the assessed value of improvements on the Property, due to the revitalization, (as hereinafter defined) between *[the calendar year before the commencement of construction of the project]* and *[the calendar year following the calendar year in which this Certificate is issued]* (the "Tax Exemption"), subject to the maximum aggregate exemption prescribed by the formula in Section 226 (5) (b) of the *Community Charter*.

The Property to which the Tax Exemption applies is in the Town of Ladysmith and is legally described as: PID_, Lot_, Block_, District Lot_, Plan (the "Property").

The Tax Exemption is for the _ calendar years commencing with the year__ and ending with the year_.

The Tax Exemption is provided on the following conditions:

A. the Owner does not breach any covenant or condition in the Agreement and performs all obligations to be performed by the Owner set out in the Agreement;

B. the Owner has not sold all or any portion of his or her equitable or legal fee simple interest in the Property without the transferee taking an assignment of the Agreement, and agreeing to be bound by it;

C. the Owner, or a successor in title to the Owner, has not allowed the property taxes for the Property to go into arrears or to become delinquent;

D. the Owner, or a successor in title to the Owner, does not apply to amend the Ladysmith Zoning Bylaw 1160, as amended, consolidated or replaced from time to time, to rezone the Property from its zoning to any other zone;

E. the Property is not put to any use that is not permitted in the Downtown Core.

If any of these conditions are not met then the Council of the Town of Ladysmith may cancel this Revitalization Tax Exemption Certificate. If such cancellation occurs, the owner of the property for which the certificate was issued will remit to the Town an amount equal to the value of the exemption received after the date of the cancellation of the certificate.

STAFF REPORT TO COUNCIL

Report Prepared By: Ryan Bouma, P. Eng.
Reviewed By: Tim Tanton, Director of Infrastructure Services
Meeting Date: September 3, 2024
File No: **5460-06**
Re: **Dogwood Drive Speed Limit**

RECOMMENDATION:

That Council direct staff to change the speed limit along Dogwood Drive from 1st Avenue to Belaire Street to 30 km/hr.

EXECUTIVE SUMMARY:

As part of an active transportation planning grant, an engineering study was completed in January 2023 for the purpose of improving active transportation along Dogwood Drive between Bayview Avenue and 1st Avenue. The report included a recommendation to reduce the speed limit in this area to 30 km/hour to match the downtown rate.

PREVIOUS COUNCIL DIRECTION:

Resolution	Meeting Date	Resolution Details
CS 2023-094	2023-04-18	That Council: 1. Receive the report prepared by Watt Consulting Group regarding the Dogwood Drive Active Transportation Plan, as well as the engineering plans by Herold Engineering Ltd.; and 2. Direct staff to monitor grant opportunities that may apply to this project and report back when a suitable opportunity is identified.
CS 2022-055	2022-03-01	That Council direct staff to: 1. Include in the 2022-2026 Financial Plan the Dogwood Drive Bike Lanes Design Project at a cost of $35,000; 2. Engage the services of a consultant to conduct a study and provide design for bicycle improvements on Dogwood Drive from Bayview Avenue to Methuen Street; and 3. Submit an application for full funding of the consulting fees through the Active Transportation Grant program.

INTRODUCTION/BACKGROUND:

In the January 27, 2023 active transportation report prepared by Watt Consulting Group (Watt), three road configurations were evaluated for improved active transportation along Dogwood Drive between Bayview Avenue and 1st Avenue. The selected configuration was presented at the April 18, 2024 Council meeting and included traffic calming, improved sidewalk connectivity, and reduced speeds.

The report included a summary of recommendations; a portion of the report is shown below:

6.0 PREFERRED ALTERNATIVE

After discussions with Town of Ladysmith staff, it was decided to pursue Option 3 (Traffic Calming) for functional level design. Functional-level plans for the proposed design are provided in **Appendix A**. Key features of the design include:

- Reduced (3.5m wide) travel lanes for vehicles
- Reduced posted speed limit to 30 km/h
- Extension of the medians at the Dogwood Drive / Bayview Avenue intersection up to the Methuen Street intersection
- Reconstruction of the existing bus bay
- Reconstruction of the western curb frontage to replace the existing mountable curb with barrier curb
- Reconstruction and widening (to 2.0 metres) of sidewalk on west side of Dogwood Drive
- Extension of sidewalk on east side of Dogwood Drive from Forward Road to Bayview Avenue
- Sharrow pavement markings on Dogwood Drive between Bayview Avenue and Methuen Street
- Construction of a curb extension on the northeast corner of the Dogwood Drive / Methuen Street intersection to shorten crossing distance and improve pedestrian connectivity to adjacent sidewalks
- Restriped crosswalk on north leg and new crosswalk on west leg of Dogwood Drive / Methuen street intersection
- Bike route signage
- Replacement of existing substandard CRB (detailed design to be done by others)

Most of the recommendations include extensive construction activity and high costs. At the time of the report preparation, Herold Engineering Ltd. estimated the project costs to be over $1 million dollars.

As part of the 2024 capital plan, a contractor recently installed a sidewalk between Forward Road and Bayview Avenue that completes the 7th recommendation bullet from the list above.

Following this work, staff discussed recommendation bullet 2 and determined that reducing the speed limit to 30 km/hour could be completed inexpensively. Staff observed a pseudo trial run of the reduced speed during construction of the condominium at Dogwood Drive and Forward Road through 2023 and some of 2024. The reduced speed limit seemed to be effective and safe, which aligns with Watt's recommendation.

If Council passes the recommended resolution, staff will erect the required signage for an expense of around $1,000.

ALTERNATIVES:

Council can choose to:

1. Leave the speed limit as is, which is 50 km/hour. The reduced speed limit would be implemented at a later date when other recommendations are able to be completed; or
2. Direct staff to reduce the speed limit along Dogwood Drive between Bayview Ave and 1st Avenue. This was the area included in the scope of Watt's assessment.

FINANCIAL IMPLICATIONS:

The cost to complete the work is relatively low at around $1,000. This would be completed with operational funds.

LEGAL IMPLICATIONS:

All unposted municipal speed limits in BC are 50 km/hour unless the municipality signs the road with the required speed limit. The municipality is free to change the speed limit provided it is safe and adequately signed so that drivers are aware of the change.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

Generally, a reduced speed limit in this area makes sense for public use of the area. Dogwood Drive is slowly becoming an extension of the downtown with increased density of businesses. Matching the driving speeds with downtown should make pedestrian and bicycle transportation interactions safer.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

N/A

ALIGNMENT WITH STRATEGIC PRIORITIES:

☒ Core Infrastructure	☐ Economy
☐ Official Community Plan Implementation	☐ Leadership
☐ Waterfront Area Plan	☐ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

A. Watt Report – Dogwood Drive Active Transportation Improvements

WATT VICTORIA
302 - 740 Hillside Ave
Victoria, BC V8T 1Z4
250-388-9877

MEMORANDUM

Date: January 27, 2023
To: Ryan Bouma, P.Eng., Town of Ladysmith
Cc: Ira Adams, Town of Ladysmith
From: Kristen Machina, P.Eng., WATT Consulting Group
Our File No: 3392.B01
Subject: Dogwood Drive Active Transportation Improvements

1.0 INTRODUCTION

WATT Consulting Group is retained by the Town of Ladysmith to provide active transportation improvement design drawings for a segment of Dogwood Drive, between Methuen Street and Bayview Avenue, in the Town of Ladysmith.

This segment of Dogwood Drive has been identified as a designated bike route in the 2009 Ladysmith Bicycle Plan. Both Bayview Avenue and Methuen Street (west of Dogwood Drive) are also designated bike routes.

This memorandum provides:

- An outline of the existing road geometry, including key features and constraints
- An outline of the existing traffic volume characteristics and speed profile
- A summary of the selected design parameters for the roadway and active transportation improvements
- A brief description of the recommended alternatives

2.0 EXISTING GEOMETRY

Dogwood Drive

Dogwood Drive is a north-south urban collector road. The segment in the study area has wide vehicular travel lanes (generally a minimum of 4.5 metres wide), with a landscaped median in the vicinity of Bayview Avenue. On-street parking is not permitted on either side of the road.

There are no dedicated cycling facilities on this segment of Dogwood Drive. A concrete sidewalk (approximately 1.5 metres wide) runs along the west side of the road, separated by a landscaped boulevard. North of Methuen Street, there is also a sidewalk on the east side of the road. There is a noticeable grade difference between street level and sidewalk level. As part of the redevelopment of the 201 Dogwood Drive property, construction of a sidewalk on the south side of the road is planned along the site frontage only.

Signed and marked crosswalks are provided at the Methuen Street and Bayview Avenue intersections, though the accessibility of the crossing at Methuen Street is poor, with the crosswalk only partially aligning to the adjacent sidewalk on the west side, and ties in partially to the road, and partially to a sodded boulevard on the east side.

While the roadway in the study area is generally flat, a horizontal curve runs through the study area, with an approximate arc length of 75 metres, and a centreline radius of 75 metres. A concrete roadside barrier (CRB) runs along the length of the curve, separating the roadway from 1st Avenue, several metres below.

Dogwood Drive is a bus route, and a southbound bus stop is located within the study area, south of the Forward Road intersection. There are no passenger facilities at this bus stop, and there is no accessible route from the bus stop to the adjacent sidewalk.

Methuen Street

Methuen Street is an east-west local road. The pavement width is approximately 12 metres, and on-street parking is permitted on both sides of the road.

There are no dedicated cycling facilities on Methuen Street. A concrete sidewalk (approximately 1.5 metres wide) runs along the north side of the road, separated by a landscaped boulevard. There is a noticeable grade difference between street level and sidewalk level.

Methuen Street is stop-controlled at Dogwood Drive. The pedestrian crossing on the west leg of the Dogwood Drive / Methuen Street intersection is not marked, though there are letdowns from the adjacent sidewalks.

Methuen Street is generally straight, though there is a substantial grade increase from east to west.

Bayview Avenue

Bayview Avenue is a north-south local road. The pavement width is approximately 8 metres, and on-street parking is permitted within a paved shoulder on the west side of the road, and a gravel shoulder on the east side of the road.

There are no dedicated cycling facilities on Bayview Avenue. A concrete sidewalk (approximately 1.5 metres wide) runs along the west side of the road, separated by a landscaped boulevard. The sidewalk is generally at street level.

Bayview Avenue is stop-controlled at Dogwood Drive. The pedestrian crossing on the south leg of the Dogwood Drive / Bayview Avenue intersection is not marked, though there are letdowns from the adjacent sidewalks.

Bayview Avenue is generally straight in the study area, though there is a horizontal curve adjacent to the Dogwood Drive intersection such that the two roads meet at a 90 degree angle. There is a gradual grade increase from south to north.

Forward Road

Forward road is a north-south local road. The pavement width is approximately 7.5 metres, and on-street is generally permitted on both sides of the road.

Forward Road is short, terminating approximately 100 metres south of the intersection with Dogwood Drive. There are no dedicated cycling or pedestrian facilities on Forward Road. The roadway is generally straight and level.

Forward Road is stop-controlled at Dogwood Drive, intersecting at an angle of approximately 55 degrees. There is not currently a pedestrian crossing at the intersection, given that there are no existing sidewalks on any of the adjacent frontages.

3.0 EXISTING TRAFFIC VOLUMES AND SPEED PROFILE

3.1 Turning Movement Counts

WATT conducted turning movement counts at the Dogwood Drive / Methuen Street, Dogwood Drive / Forward Road, and Dogwood Drive / Bayview Avenue intersections on Wednesday September 21st, 2022. Morning (8:00 – 9:00 AM) and afternoon (4:00 – 5:00 PM) peak hour counts were collected. Heavy vehicle percentages, pedestrian, and cycling volumes were also collected.

The turning movement counts indicate that northbound is the prevailing movement along the Dogwood Drive corridor in the morning (approximately 65% of vehicles heading northbound and 35% of vehicles heading southbound), while in the afternoon, corridor traffic is more balanced (approximately 55% of vehicles heading southbound and 45% of vehicles heading northbound).

Vehicle, pedestrian, and cycling volumes were all heavier during the afternoon peak period than the morning.

Side street volumes are relatively low in comparison to volumes along the Dogwood corridor; two-way volumes on Methuen Street number 40 vehicles or less during the AM and PM peak hours, 10 vehicles or less on Forward Road, and 80 vehicles or less on Bayview Avenue. Two-way volumes on Dogwood Drive were over 200 vehicles during the AM peak hour, and over 300 vehicles during the PM peak hour.

Cyclist volumes are low during the weekday morning and afternoon peak hours, with a maximum of four (4) cyclists observed at any of the study area intersections. This indicates relatively low uptake for non-recreational cycling.

Pedestrian volumes were higher than cycling volumes during the weekday morning and afternoon peak hours, with approximately 10-15 pedestrians crossing the Methuen Street and Bayview Avenue intersections in the AM peak hour, and 20-25 pedestrians in the PM peak hour.

3.2 MetroCount Volume Data

The Town of Ladysmith provided 24 hour vehicle counts along Dogwood Drive within the study area, collected between March 1 and May 10, 2022.

The average daily traffic is estimated to be approximately 3,000 vehicles. The hourly volume data indicated that vehicle traffic did not have a bimodal distribution (characterized by two distinct peak periods), but rather a single midday peak between approximately 11:00 AM and 4:00 PM, peaking at around 2:00 PM.

3.3 MetroCount Speed Data

The Town of Ladysmith also provided speed statistics on Dogwood Drive within the study area, collected between March 1 and May 10, 2022.

The posted speed limit on Dogwood Drive is 50 km/h. The 85th percentile speed during the study period was 47 km/h, the 95th percentile speed was approximately 52 km/h, and the median speed was 41 km/h. This indicates generally good compliance with the posted speed limit in the study area, however it should be noted that the counter was located adjacent to 200 Dogwood Drive, which is at the end of the horizontal curve, where drivers are more inclined to drive slowly than they would on a straightaway.

4.0 DESIGN CRITERIA

4.1 Design Speed

The current posted speed limit on Dogwood Drive is 50 km/h. After discussions with Town of Ladysmith staff, a design speed of 30 km/h was selected for the corridor, as an extension of the Ladysmith downtown core's reduced posted speed limit.

4.2 Sight Distance

Stopping sight distance for a design speed of 30 km/h on a level roadway is 35 metres.[1] Intersection sight distance for vehicles turning off the side streets onto Dogwood Drive is 65 metres for a design speed of 30 km/h.[2]

4.3 Design Vehicle

A TAC Medium Single Unit truck (MSU) was selected as the primary design vehicle for the corridor. Dogwood Drive and Bayview Avenue are both designated truck routes, and the MSU is representative of the size of vehicles that makes deliveries in urban and suburban areas.

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[1] TAC Geometric Design Guide for Canadian Roads, Table 2.5.2
[2] TAC Geometric Design Guide for Canadian Roads, Table 9.9.4

The New Flyer Hybrid bus was used as the design vehicle for the BC Transit bus stop, per the BC Transit Infrastructure Design Guidelines (November 2010). While the Town of Ladysmith currently uses minibuses, use of the full-size bus as a design vehicle accommodates future expansion of the transit system.

4.4 Travel Lane Design Criteria

A travel lane width of 3.5 metres (measured from face of curb to centreline) has been selected, based on the lane widths indicated in the Town of Ladysmith Engineering Drawing R-2 (20m ROW Urban Collector). A minimum width of 3.3 metres is required to accommodate BC Transit vehicles.

4.5 Pedestrian Facility Design Criteria

The BC Active Transportation Design Guide (BCATDG) provides guidance for selecting an appropriate type of pedestrian facility based on motor vehicle speeds and roadway context.

Based on the matrix provided in section C.1 of the BCATDG (and illustrated in

Figure 1), both separated and non-separated sidewalks are an appropriate facility for Dogwood Drive, given the design speed reduction and collector classification.

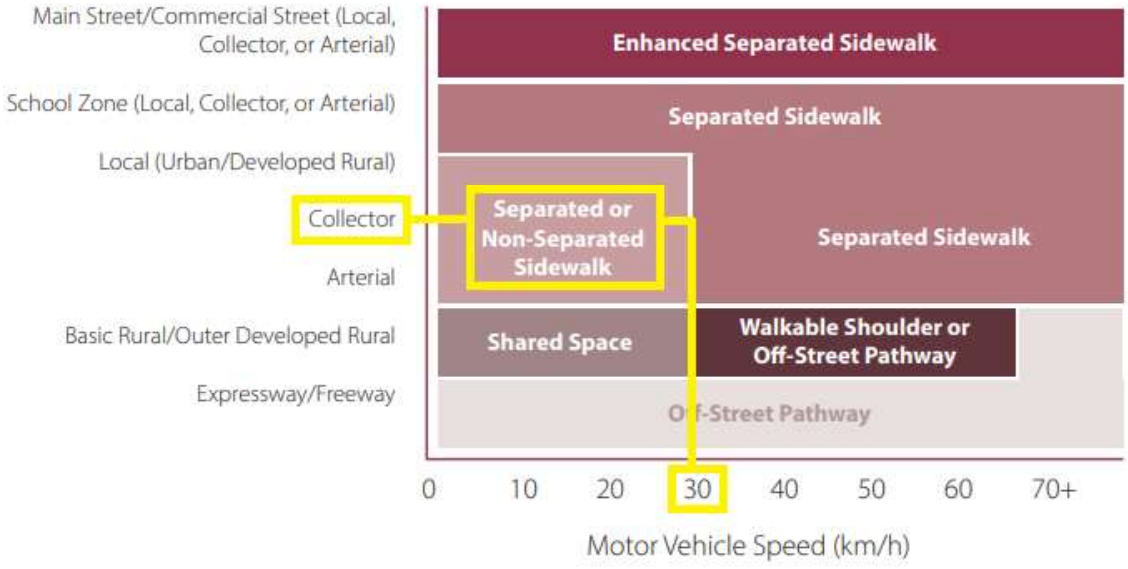

Figure 1 – Pedestrian Facility Selection Decision Support Tool

Ideally, sidewalks should be provided on both sides of the road to enhance connectivity and limit unnecessary road crossings. Currently, a sidewalk is only provided on the west side of the road. The existing road geometry creates challenges with extending a sidewalk on the east side of Dogwood Drive from Bayview Avenue to Methuen Street, particularly the horizontal curve and adjacent concrete roadside barrier.

Section C.2 of the BCATDG provides design guidance for sidewalk widths. For a collector road in a single-family residential neighbourhood, both the desirable width and constrained limit is 1.8 metres, which allows two people using mobility devices to pass one another. The absolute minimum width of 1.5 metres should only be used under constrained conditions for distances under 100 metres.

Section C.3 of the BCATDG provides design guidance for the furnishing zone (i.e. the boulevard space between the street and the sidewalk). For a basic separated sidewalk, the desirable width of the furnishing zone is 2.0 metres, with a constrained limit of 0.6 metres. A furnishing width of 0.9 metres is the absolute minimum for streetlights and utility poles, and 1.2 – 1.5 metres is the minimum required for tree pits.

Section C.3 of the BCATDG also provides design guidance for the frontage zone (i.e. the boulevard space between the sidewalk and the right-of-way line). A minimum frontage zone width of 0.3 metres is recommended to provide an offset between pedestrians and fences or buildings, and to accommodate construction.

4.6 Cycling Facility Design Criteria

The BCATDG provides guidance for selecting an appropriate type of cycling facility based on motor vehicle speeds and volumes.

Based on the matrix provided in section D.1 of the BCATDG (and illustrated in **Figure 2**), a bicycle lane or buffered bicycle lane would be an appropriate facility for the study area.

Based on the existing posted speed limit of 50 km/h, the study area is on the cusp of where a bicycle lane or buffered bicycle lane would be appropriate on the lower end of the speed / volume matrix, and where a protected bicycle lane or multi-use pathway would be appropriate on the higher end.

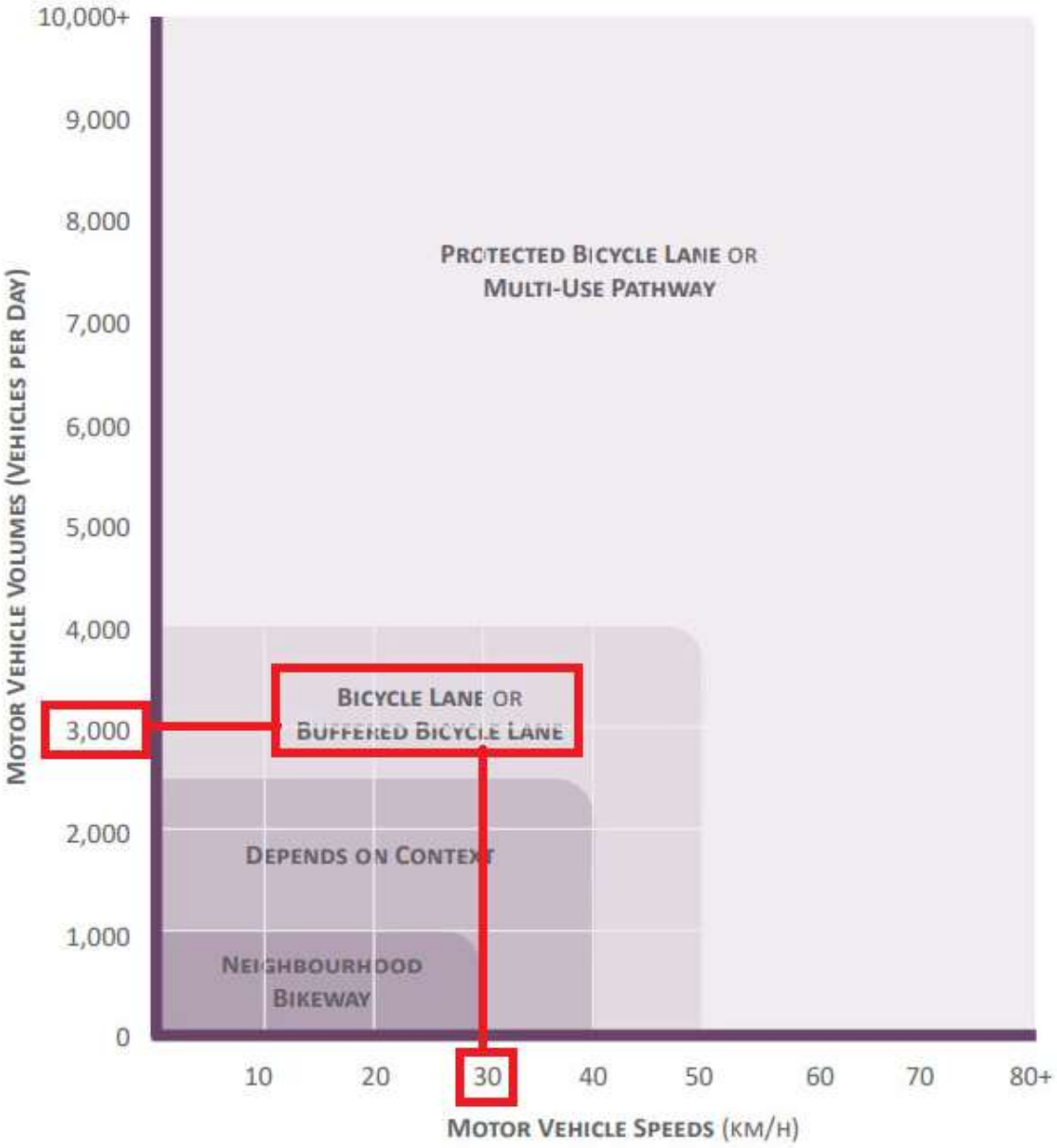

Figure 2 – Bicycle Facility Selection Decision Support Tool

Table 1 outlines the design guidance from the BCATDG for the widths of the various types of cycling facilities.

Table 1 – Bicycle Facility Width Guidance

Facility	Desirable Width (m)	Constrained Limit (m)
Painted / Buffered Bicycle Lane		
Curbside Bicycle Lane	1.8	1.5
Buffer	0.6	0.3
Protected Bicycle Lane		
Bicycle Through Zone (Uni-Directional)	2.5	1.8
Bicycle Through Zone (Bi-Directional)	4.0	3.0
Street Buffer Zone	0.9	0.6
Furnishing Zone	2.0	0.25
Multi-Use Pathway		
Multi-use Pathway	4.0	3.0
Street Buffer Zone	≥ 2.0	0.6

4.7 Bus Stop Design Criteria

The bus bay will be designed in accordance with the BC Transit Infrastructure Design Summary (March 2018).

Bus bays are appropriate where the roadway has a single travel lane in each direction where passing sight distance is not available for vehicles approaching a stopped bus. Given the existing bus stop's location on the far side of a horizontal curve with limited sight distance, the provision of a bus bay is appropriate here.

The bus bay will be designed to be 3 metres wide and 15 metres long, with an 18 metre taper on the inbound end, and a 10 metre taper on the outbound end.

The bus stop will be designed with amenities appropriate to local transit, including a transit shelter and bench, solid and level wheelchair landing pad and curb letdown, customer landing pad, and lighting. The landing pad will be a minimum of 9 metres in length to cover the front and rear door.

4.8 Concrete Roadside Barrier Design Criteria

Detailed design of the concrete roadside barrier on the east side of Dogwood Drive is not within the scope of this study.

The existing barrier appears to be in deteriorating condition, and may warrant replacement as part of the construction of the recommended improvements. Additionally, preliminary assessment of the BC MoTI Barrier Warrant Index indicates that the existing low barrier is likely sub-standard based on the in-situ geometry, and a full-height barrier may be warranted.

Section 660.01 of the BC MoTI Supplement to TAC Geometric Design Guide (April 2019) provides guidelines for fencing adjacent to a sidewalk or bikeway.

Situation B of the hazard warrant describes the need for fencing when a constructed fill slope has a grade steeper than 1.5:1, when the hazard is close to a sidewalk, bikeway, or trail that is known to be frequently used by pedestrians or cyclists, and when the height of the hazard meets the warrant.

If an on-street bikeway is recommended, a bicycle-height fence installed on top of the barrier is warranted given the substantial height of the drop (estimated to be greater than 3.0 metres) and distance from the top of the bank to the bikeway (effectively 0 metres).

5.0 PRELIMINARY ALTERNATIVES

WATT developed three preliminary alternatives for active transportation improvements along this segment of Dogwood Drive. Each option is described in the sections below, with a summary and comparison provided in **Section 5.4**.

5.1 Option 1 –Buffered Bikeway

Option 1 explored the feasibility of installing a buffered bikeway in the study area. The travel lanes would be reduced to a width of 3.5 metres, and an on-street bike lane 1.5 to 1.8 metres in width would be installed. The existing sidewalk on the west side of Dogwood Drive would be widened to 1.8 metres.

This option, while accomplishing the goal of improving conditions for cyclists, presents geometric challenges with maintaining an acceptable buffer between the travel lane and the bike lane within the existing right-of-way, particularly at the pinch point on the horizontal curve.

5.2 Option 2 – Multi-use Pathway

Option 2 explored the feasibility of converting the sidewalk on the west side of Dogwood Drive to a multi-use pathway. The travel lanes would be reduced to a width of 3.5 metres, and a 3.0 to 4.0 metre multi-use pathway would replace the existing sidewalk. Separation of bicycle and pedestrian traffic would not be warranted based on the low pedestrian volumes (less than 1,000 per day).

This option also accomplished the goal of improving conditions for cyclists, however the network connectivity is not intuitive, and a short segment of trail would do little to encourage cyclists to divert away from the roadway.

5.3 Option 3 – Traffic Calming

Option 3 explored the feasibility of extending the medians at the Dogwood Drive / Bayview Avenue intersection up to Methuen Street. The travel lanes would be reduced to a width of 3.5 metres, and the existing sidewalk on the west side of Dogwood Drive would be widened to 1.8 metres.

This option, while providing narrower travel lanes to reduce vehicle speeds, does not provide dedicated, separate infrastructure for cyclists.

5.4 Option Summary

A comparison of the key features of the three options is provided in **Table 2**.

Table 2 – Summary of Alternatives

Design Feature	Option 1 Bikeway	Option 2 Multi-use Pathway	Option 3 Traffic Calming
Travel Lanes	3.5m	3.5m	3.5m
Bike Facility	1.5 – 1.8m Bike Lane 0.3 – 0.6m Buffer	3.0 – 4.0 m Multi-use Pathway 0.6 – 2.0m Buffer	Shared Roadway
Pedestrian Facility	1.5 – 1.8m Sidewalk		1.5 – 1.8m Sidewalk

6.0 PREFERRED ALTERNATIVE

After discussions with Town of Ladysmith staff, it was decided to pursue Option 3 (Traffic Calming) for functional level design. Functional-level plans for the proposed design are provided in **Appendix A**. Key features of the design include:

- Reduced (3.5m wide) travel lanes for vehicles
- Reduced posted speed limit to 30 km/h
- Extension of the medians at the Dogwood Drive / Bayview Avenue intersection up to the Methuen Street intersection
- Reconstruction of the existing bus bay
- Reconstruction of the western curb frontage to replace the existing mountable curb with barrier curb
- Reconstruction and widening (to 2.0 metres) of sidewalk on west side of Dogwood Drive
- Extension of sidewalk on east side of Dogwood Drive from Forward Road to Bayview Avenue
- Sharrow pavement markings on Dogwood Drive between Bayview Avenue and Methuen Street
- Construction of a curb extension on the northeast corner of the Dogwood Drive / Methuen Street intersection to shorten crossing distance and improve pedestrian connectivity to adjacent sidewalks
- Restriped crosswalk on north leg and new crosswalk on west leg of Dogwood Drive / Methuen street intersection
- Bike route signage
- Replacement of existing substandard CRB (detailed design to be done by others)

A 2.0 metre sidewalk is able to be maintained along the entire western frontage of Dogwood Drive, however there is a pinch point where a buffer was not able to be maintained between the sidewalk and the road. An alternative was explored that provides a minimum 1.5m wide sidewalk buffer throughout the entire corridor, that would require a dedication of 1.1 m^2 from the 200 Dogwood Drive property.

6.1 Preliminary Phasing

The preferred alternative can be split into multiple phases for the purposes of construction:

- Construction of the eastern sidewalk extension on Dogwood Drive (Forward Road to Bayview Avenue)
- Reconstruction of the Dogwood Drive western frontage (sidewalk, bus bay, boulevard improvements)
- Construction of the median extensions and replacement of the CRB on Dogwood Drive, curb extensions at the Dogwood Drive / Methuen Street intersection, and installation of associated signage (including speed reduction)
- Painting of bikeway sharrows and installation of associated signage
    - Bikeway sharrows and signage can also be completed in the same phase as the median works, however it is recommended that it be completed after these works in the event that equipment and materials need to occupy the road, during median construction, risking damage to the pavement markings

Please feel free to reach out if you have any questions or comments related to the above.

Sincerely,
WATT Consulting Group

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
K. A. MACHINA
54513
2023-01-27

Kristen Machina, *P.Eng.*
Senior Transportation Engineer

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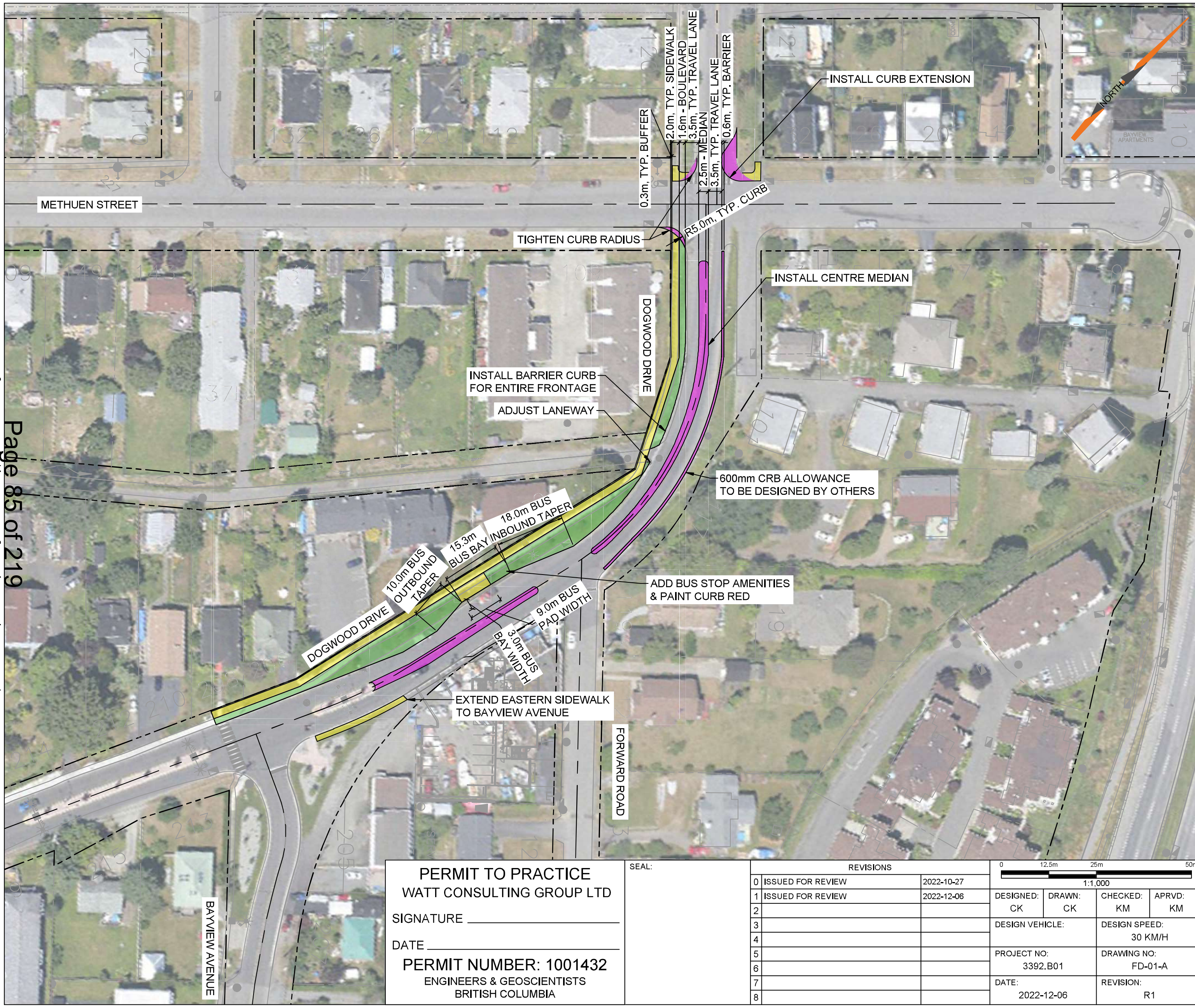
T 250-388-9877 ext. 427
E kmachina@wattconsultinggroup.com

PERMIT TO PRACTICE
WATT CONSULTING GROUP LTD.
SIGNATURE
DATE 2023-01-27
PERMIT NUMBER 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

APPENDIX A – FUNCTIONAL ROAD PLANS



NEW CONSTRUCTION LEGEND

- SIDEWALK
- BOULEVARD
- BARRIER / MEDIAN /CURB EXTENSION
- ACQUIRE ROW

TITLE: DOGWOOD DRIVE, LADYSMITH
ACTIVE TRANSPORTATION IMPROVEMENTS
NEW CONSTRUCTION - EXISTING ROW

WATT Consulting Group
Calgary, Edmonton, Lloydminster, Okanagan, Vancouver, Victoria
WATTCONSULTINGGROUP.COM

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SIGNATURE ____________
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PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

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DATE: 2022-12-06	REVISION: R1

These Design Documents are prepared solely for the use by the party with whom the Design Professional has entered into a contract, and there are no representations of any kind made by the Design Professional to any party with whom the Design Professional has not entered into contract.

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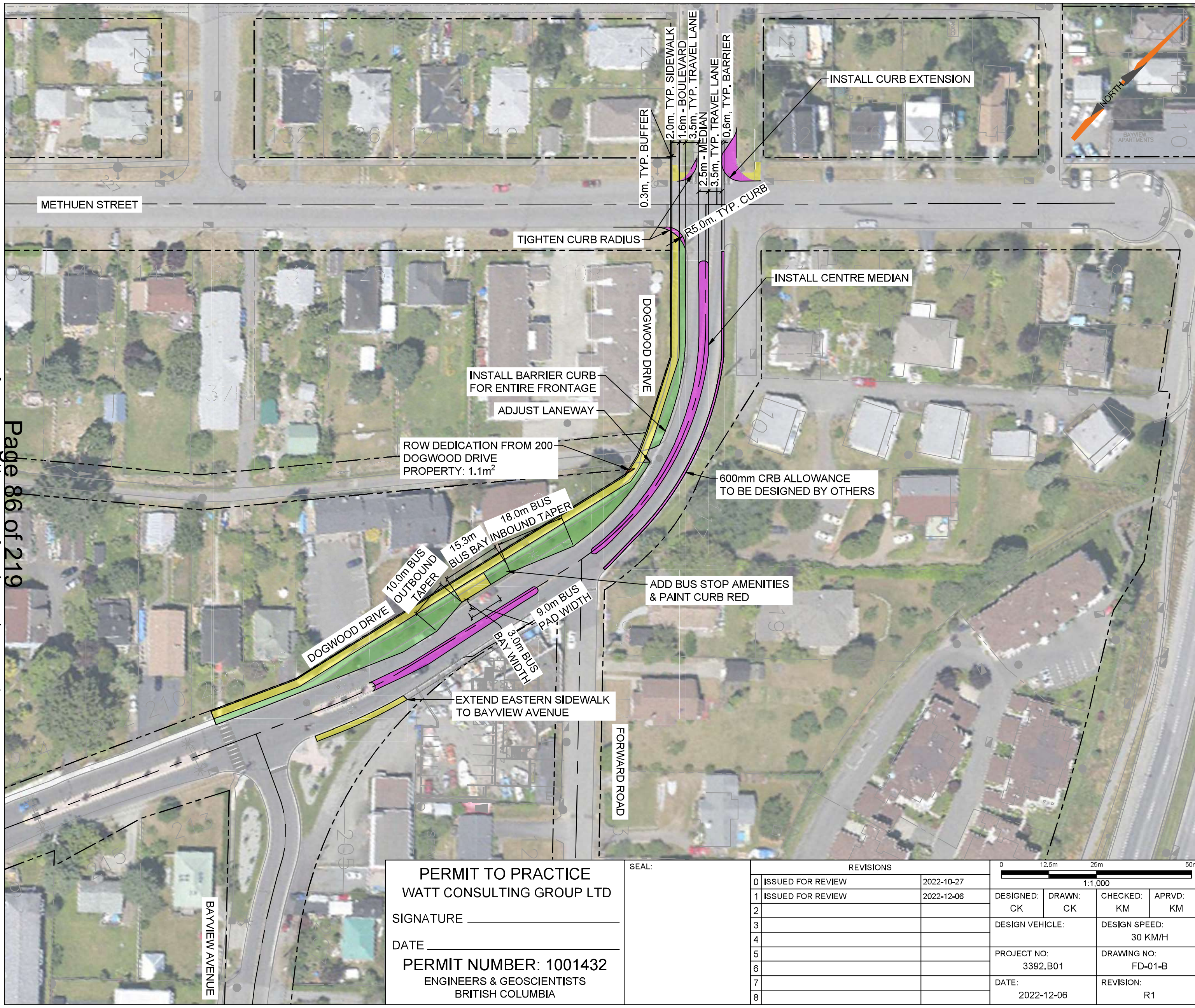

NEW CONSTRUCTION LEGEND

- SIDEWALK
- BOULEVARD
- BARRIER / MEDIAN /CURB EXTENSION
- ACQUIRE ROW

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PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

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DATE: 2022-12-06	REVISION: R1

TITLE:
DOGWOOD DRIVE, LADYSMITH
ACTIVE TRANSPORTATION IMPROVEMENTS
NEW CONSTRUCTION - ROW DEDICATION

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Calgary, Edmonton, Lloydminster, Okanagan, Vancouver, Victoria
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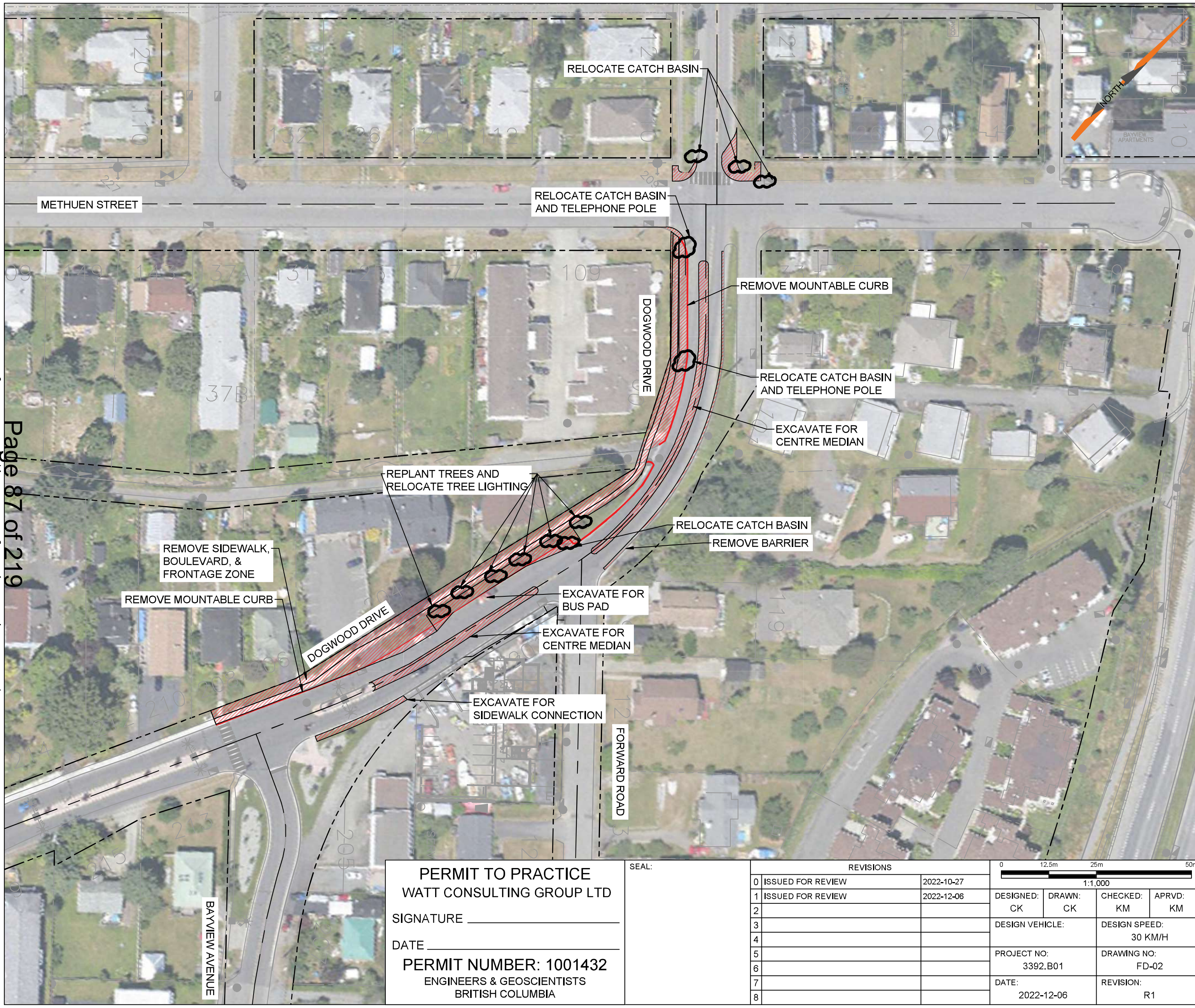

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WATT CONSULTING GROUP LTD

SIGNATURE ____________

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PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

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DRAWING NO: FD-02

DATE: 2022-12-06

REVISION: R1

TITLE: DOGWOOD DRIVE, LADYSMITH ACTIVE TRANSPORTATION IMPROVEMENTS REMOVALS

WATT Consulting Group

Calgary, Edmonton, Lloydminster, Okanagan, Vancouver, Victoria
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PROJECT: V:\Project Files\3392 - Dogwood Drive AT Improvements - Ladysmith\5 - Design\fr-2022-11-XX\WATT-Dogwood Drive AT-R1-2022-12-06.dwg
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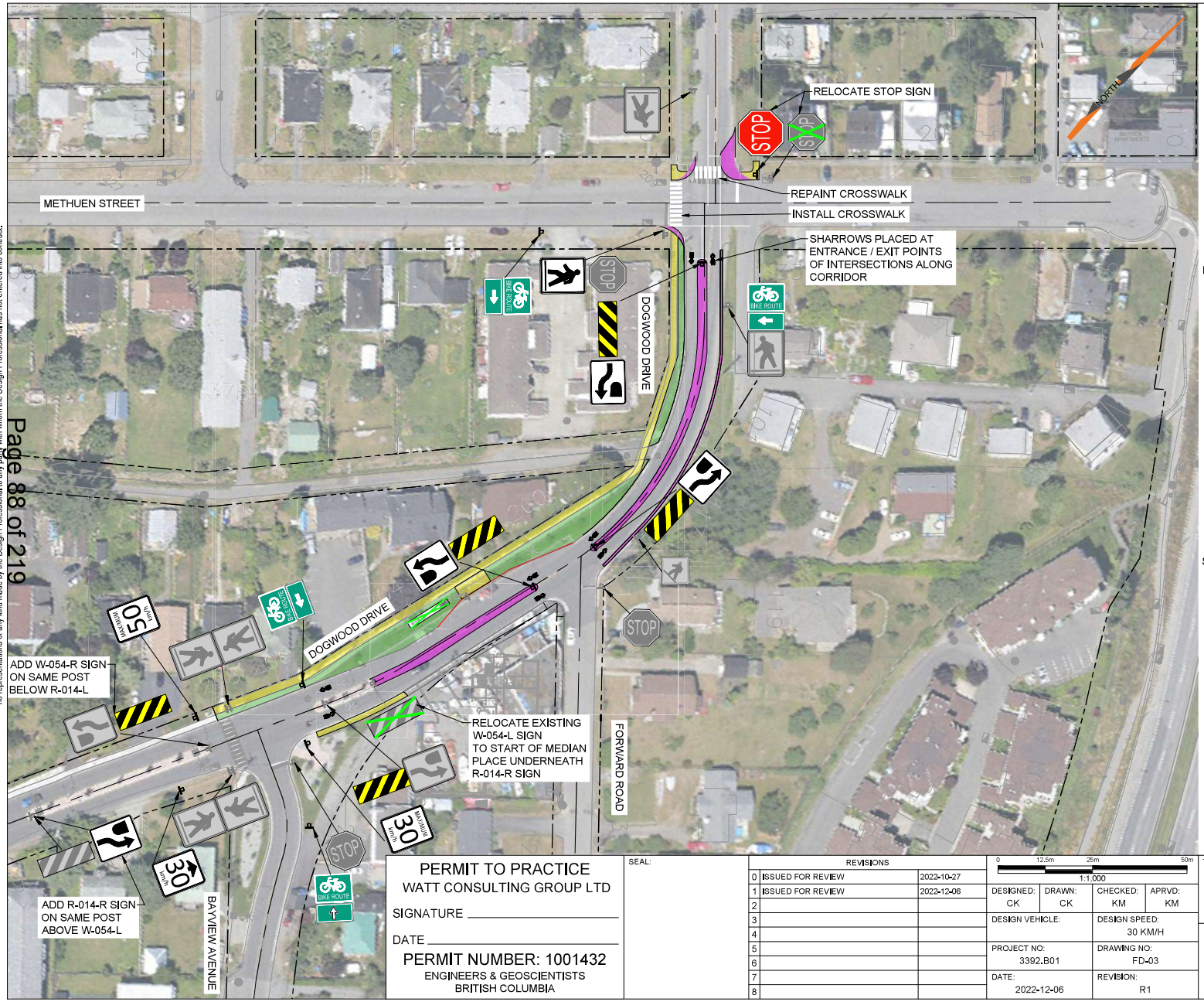

SIGN LEGEND

- SIGN MOUNT (EXISTING)
- SIGN MOUNT (PROPOSED)

R-1 (EX) 60x60cm
R-14R (EX) 60x75cm
W-54-L (EX) 30x90cm
BC TRANSIT STRIP (EX) 11x76cm
PS-002 (EX) 60x60cm
PS-003-L (EX) 60x75cm
PS-003-R (EX) 60x75cm
R-4 (30)
R-4 (50)
R-3 (30)
R-14R 60x75cm
R-14L 60x75cm
B-G-1 & B-G-1 TAB-L
W-54-R 30x90cm
W-54-L 30x90cm
R-1

PAVEMENT MARKING LEGEND

SHARROW
BUS STOP CURB PAINT
STOP BAR
ZEBRA CROSSWALK (3.0m, 0.6m, 0.6m, 0.6m)

PERMIT TO PRACTICE
WATT CONSULTING GROUP LTD
SIGNATURE _____
DATE _____
PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA

SEAL:

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PROJECT NO: 3392.B01
DRAWING NO: FD-03
DATE: 2022-12-06
REVISION: R1

TITLE: DOGWOOD DRIVE, LADYSMITH
ACTIVE TRANSPORTATION IMPROVEMENTS
PAVEMENT MARKINGS / SIGNAGE

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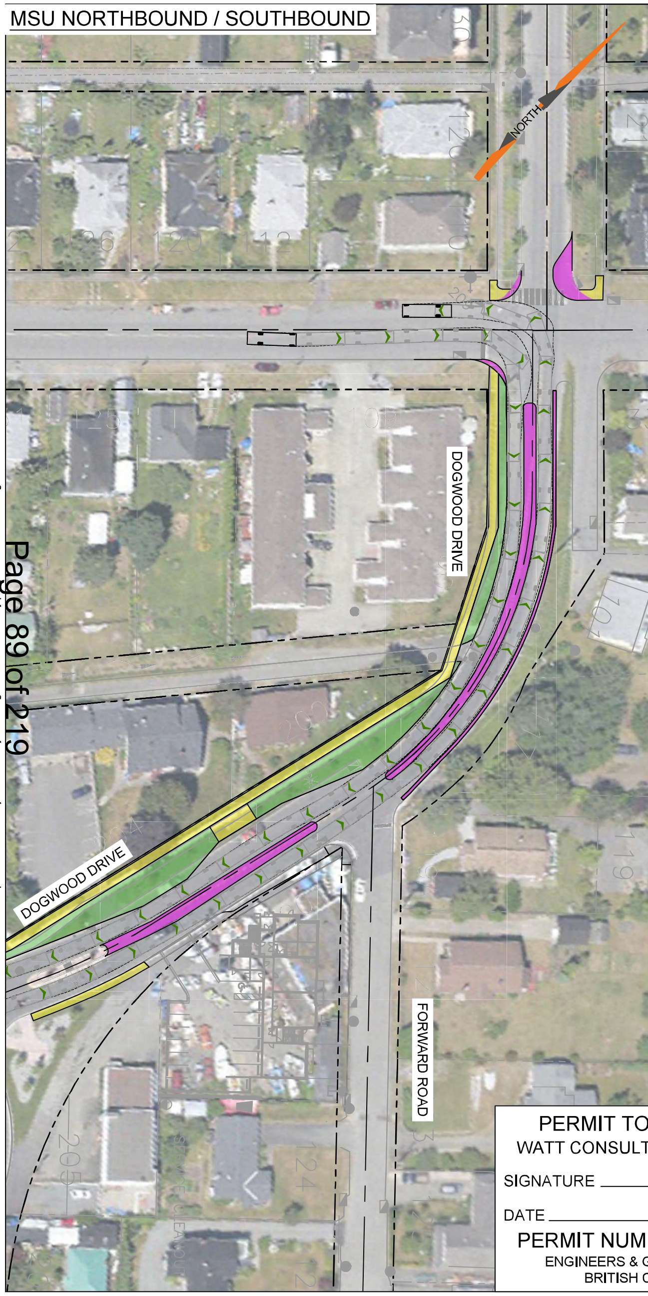
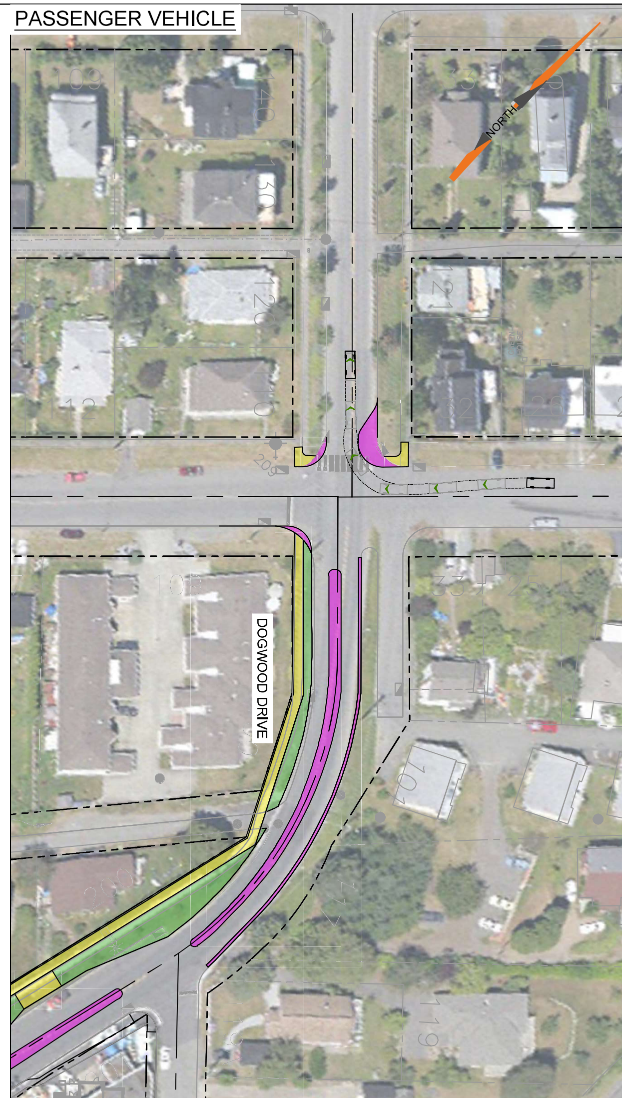
MSU NORTHBOUND / SOUTHBOUND



PASSENGER VEHICLE



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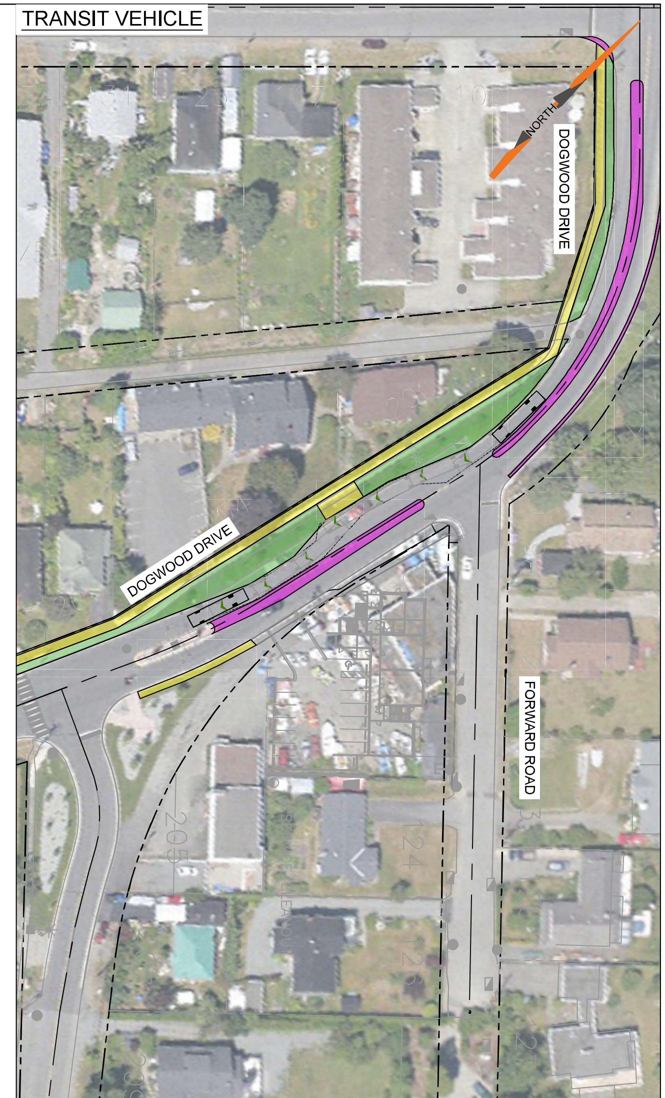

PERMIT TO PRACTICE
WATT CONSULTING GROUP LTD

SIGNATURE ____________________

DATE ____________________

PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

SEAL:

REVISIONS		
0	ISSUED FOR REVIEW	2022-10-27
1	ISSUED FOR REVIEW	2022-12-06
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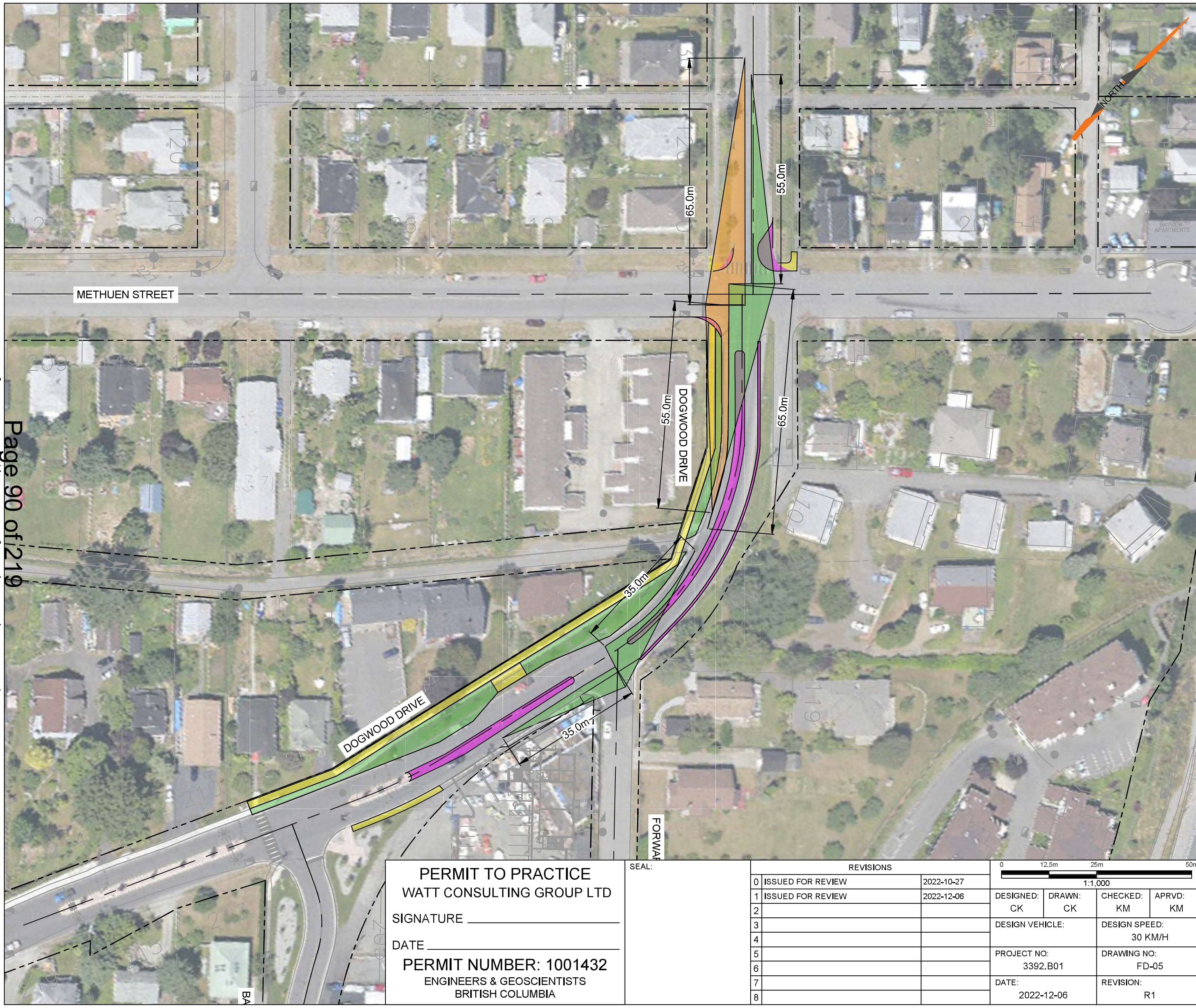
DESIGNED: CK	DRAWN: CK	CHECKED: KM	APRVD: KM
DESIGN VEHICLE:		DESIGN SPEED: 30 KM/H	
PROJECT NO: 3392.B01		DRAWING NO: FD-04	
DATE: 2022-12-06		REVISION: R1	

TITLE:
DOGWOOD DRIVE, LADYSMITH
ACTIVE TRANSPORTATION IMPROVEMENTS
SWEPT PATH

WATT Consulting Group
Calgary, Edmonton, Lloydminster, Okanagan, Vancouver, Victoria
WATTCONSULTINGGROUP.COM

PROJECT: V:\Project Files\3392 - Dogwood Drive AT Improvements - Ladysmith\5 - Design\R1-2022-11-XX\WATT-Dogwood Drive AT-R1-2022-12-06.dwg
PLOT DATE: 12/6/2022 2:54 PM
PLOTTED BY: Kirsten Machina



SIGHT DISTANCE LEGEND

- MEETING SIGHT DISTANCE
- MEETING SIGHT DISTANCE (IF NO VERTICAL OBSTRUCTIONS
- NOT MEETING SIGHT DISTANCE

These Design Documents are prepared solely for the use by the party with whom the Design Professional has entered into a contract, and there are no representations of any kind made by the Design Professional to any party with whom the Design Professional has not entered into contract.

PERMIT TO PRACTICE
WATT CONSULTING GROUP LTD

SIGNATURE ____________

DATE ____________

PERMIT NUMBER: 1001432
ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

SEAL:

REVISIONS		
0	ISSUED FOR REVIEW	2022-10-27
1	ISSUED FOR REVIEW	2022-12-06
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DESIGNED: CK	DRAWN: CK	CHECKED: KM	APRVD: KM
DESIGN VEHICLE:		DESIGN SPEED: 30 KM/H	
PROJECT NO: 3392.B01		DRAWING NO: FD-05	
DATE: 2022-12-06		REVISION: R1	

TITLE:
DOGWOOD DRIVE, LADYSMITH ACTIVE TRANSPORTATION IMPROVEMENTS SIGHTLINE ASSESSMENT

WATT Consulting Group
Calgary, Edmonton, Lloydminster, Okanagan, Vancouver, Victoria
WATTCONSULTINGGROUP.COM

PROJECT: V:\Project Files\3392 - Dogwood Drive AT Improvements - Ladysmith\5 - Design\R-2022-11-XX\WATT-Dogwood Drive AT-R-2022-12-06.dwg
PLOT DATE: 12/6/2022 2:54 PM
PLOTTED BY: Kristen Machina

STAFF REPORT TO COUNCIL

Report Prepared By: Ryan Bouma, Director of Infrastructure Services
Reviewed By: Allison McCarrick, CAO
Meeting Date: September 3, 2024
File No:
Re: **Stocking Lake Dam Detailed Design Consultant**

RECOMMENDATION:

That Council authorize staff to sole source the Stocking Lake dam detailed design work to Ecora Engineering and Environmental Ltd. in the amount of $381,439 plus taxes.

EXECUTIVE SUMMARY:

In 2020, staff carried out a competitive Request for Proposal to procure an engineering consultant for preliminary design of the Stocking Lake dam replacement. Ecora Engineering and Environmental Ltd. (Ecora) was successful and delivered a preliminary design in 2021. It is time to move forward with detailed design, so staff requested a proposal from Ecora as they have the project background and knowledge to continue the design process.

PREVIOUS COUNCIL DIRECTION:

CS 2023-075	2023-04-04	That Council approve the agenda for this Regular Meeting of Council for April 4, 2023, as amended to include the following item under New Business, received after publication of the agenda: · Item 11.1 "Appeal to the Province for Financial Assistance for Costs Associated with the Replacement of the Stocking Lake Reservoir Dam"
CS 2023-083	2023-04-04	That Council direct staff to draft a letter for the Mayor's signature to Minister Ralston and Premier Eby to appeal for financial assistance for the costs associated with the replacement of the Stocking Lake reservoir dam.
CS 2022-173	2022-07-05	That Council direct the Mayor, on behalf of Council, to provide a letter of support endorsing the Cowichan Valley Regional District as the lead applicant for grant funding through the SPF Federal/Provincial Community Building Fund - Capital Infrastructure for the Stocking Lake Dam which is jointly owned by the Town of Ladysmith and the CVRD.

INTRODUCTION/BACKGROUND:

The Stocking Lake dam is the Town's highest priority project due to its risk factor and previous investigation findings, which noted the dam's inadequate factor of safety and lack of safety

features. Following a review of options for dam remediation or replacement, a preliminary design was completed for a total replacement of the dam including an increase to the lake water level. The project is a joint project with the CVRD. Responsibilities and costs are shared equally.

The next step to replacing the dam is to advance the preliminary design to a detailed design that can be used for Class A estimating and contractor tendering. As Ecora completed the preliminary design and has extensive knowledge of the project, staff requested a proposal for design and construction services (attached) without competition. The proposal provides a cost estimate of $381,439 (excluding GST) for detailed design and construction services. If Council were to approve the recommendation, the costs would be shared with the CVRD. The Town's total responsibility for this work would be approximately $191,000.

In accordance with the Town's Purchasing Policy, which states "all sole source purchases over $75,000 require approval of the Council, following a staff report to Council from the originating department", staff are requesting Council approve the sole source award to Ecora for the following reasons:

1. Ecora completed the dam assessment, options analysis, and preliminary design for replacement of the dam. They have extensive background knowledge that would need to be repeated with another consultant;
2. Ecora has been awarded the work on the Holland Lake dams following a competitive RFP. Ecora's proposal indicates that work on both dams can supplement each other, such as inundation mapping;
3. CVRD staff have reviewed the proposal and concur with the recommendation;
4. Past experience with Ecora has been positive; and
5. The proposal provided is in line with staff expectations.

Through discussions with CVRD staff on July 18, 2024, staff understand that the CVRD has approved the design and replacement of the Stocking Lake dam. The CVRD awaits the Town to move forward with this work.

ALTERNATIVES:

Council can choose to:

1. Direct staff to carry out a competitive RFP;
2. Direct staff to wait to proceed with detailed design.

FINANCIAL IMPLICATIONS:

Included in the 2024 Budget was $534,550 for Stocking Lake dam design with half of the funding ($267,275) coming from CVRD. This proposal comes in within budget.

LEGAL IMPLICATIONS:

N/A

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:

N/A

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:

N/A

ALIGNMENT WITH STRATEGIC PRIORITIES:

☒ Core Infrastructure
☐ Economy
☐ Official Community Plan Implementation
☐ Leadership
☐ Waterfront Area Plan
☐ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENT:

A. Ecora – Stocking Lake Dam Detailed Design proposal

June 28, 2024 Ecora File No.: P240202

Town of Ladysmith
410 Esplanade – PO Box 220
Ladysmith, BC V9G 1A2

Attention: **Ryan Bouma, P.Eng., Director of Infrastructure Services | Town Ladysmith**

Reference: **Stocking Lake Detailed Design**

Ecora Engineering and Environmental Ltd. (Ecora) is pleased to submit this proposal to the Town of Ladysmith (ToL) in response to the requested services pertaining to Stocking Lake Dam Detailed Design. Ecora has assembled a strong team with extensive experience relevant to this assignment including completing dam safety reviews, dam engineering assessments, dam remediation design, hydrotechnical engineering, geotechnical engineering, and construction administering.

The price provided in this response will be guaranteed for a period of 60 days following the submission date. Please do not hesitate to call or email Michael J. Laws at 250.470.8808 or michael.laws@ecora.ca with any questions.

Sincerely

Ecora Engineering & Environmental Ltd.

Michael J. Laws, P.Eng.
Principal Dams & Geotechnics
Direct Line: 250.470.8808
michael.laws@ecora.ca

Stocking Lake Dam Remediation Detailed Design

Presented To:

Ryan Bouma, P.Eng., Director of Infrastructure Services

Town of Ladysmith
410 Esplanade – PO Box 220
Ladysmith, BC V9G 1A2

Dated: June 2024
Ecora File No.: P240202

Company Information: Ecora Engineering & Environmental Ltd.
200 – 2045 Enterprise Way, Kelowna, BC V1Y 9T5
Permit to Practice #: PP766

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Table of Contents

Appendices

1. Introduction

Ecora Engineering & Environmental Ltd. (Ecora) is pleased to submit this proposal to the Town of Ladysmith (ToL). We understand that the Town of Ladysmith is seeking professional engineering services to undertake detailed design for the remediation of Stocking Lake Dam.

Ecora is familiar with the Stocking Lake Dam as we have previously been engaged by the ToL to provide professional engineering services for the conceptual and preliminary design phases of this project in 2021 and 2022 respectively. Additionally, Ecora has provided emergency response design services in 2023.

Referencing the *Stocking Lake Dam Remediation Preliminary Design Report (Ecora, 2022)*, the proposed design includes the construction of a new dam downstream of the existing one in order to address deficiencies in the existing dam. The proposed replacement dam consists of:

- A vertical FRP (Fibreglass Reinforced Polymer) sheet pile centre wall (water retention element) with upstream and downstream rock embankments,
- A reinforced concrete spillway control drop structure and stilling basin,
- A 450 mm HDPE low-level outlet with upstream valve control, and
- A riprap lined spillway channel.

In addition to the above components, the design includes a plan for breaching the existing dam, an access road to the dam crest, a pedestrian trail to provide continuity with the existing trail network, and site grading to improve the stability of the spillway channel slopes.

The detailed design phase will include a collaborative effort between disciplines including Civil, Geotechnical, Hydrotechnical and Structural Engineering as well as environmental services. Ecora is pleased to offer all these services in house and will assign responsibilities for the technical components of the design upon completion, as per Engineers & Geoscientists British Columbia guidelines.

2. Proposed Scope of Services

Ecora proposes the following tasks to be performed as part of the Stocking Lake Detailed Design:

- Project Initiation and Kick-Off Meeting,
- Background Review,
- Site Reconnaissance,
- Hydrotechnical Analyses,
- Geotechnical Investigation & Analyses,
- Environmental Investigation,
- Detailed Design,
- Tendering/Request for Proposals,

- Construction Support Services,
- Environmental Monitoring, and
- Post-Construction Services.

2.1 Project Initiation and Kick-Off Meeting

Ecora's project manager, Adam Kerk-Hecker P.Eng., will organize a Kick-Off meeting with key Ecora personnel and ToL staff. During this meeting, introductions, lines of communication, project administration requirements including deliverable dates, quality control, and safety requirements will be established/confirmed. The meeting is anticipated to occur virtually to lower project costs.

2.2 Background Review

Ecora will carry out a desktop review of existing background information. Ecora's familiarity with this site and watershed from previous projects including the conceptual design, preliminary design, and emergency repairs of Stocking Lake Dam will expedite this process.

A LiDAR survey of Holland Lake and the surrounding area including Stocking Lake/Stocking Creek watershed is scheduled to be completed as part of the Holland Lake project Ecora is undertaking. This information can be used to supplement the detailed design of Stocking Lake dam. The LiDAR will also allow Ecora to undertake more accurate catchment assessment and inundation modelling.

Additional sources will be reviewed as necessary and aid in the review and completion of relevant hydrological and geotechnical investigation / analysis as well as the completion of a Construction Environmental Management Plan (CEMP) in line with the detailed design.

2.3 Site Reconnaissance

A site reconnaissance will be completed by the Professional of Record (PoR) in order to visually assess the conditions of the site. This will allow the team to confirm no major changes have occurred at the site since last visit and that the site investigation data collected as part of the conceptual and preliminary design remediation project is still relevant.

2.4 Hydrotechnical Analysis

The analysis completed during the conceptual and preliminary design of the dam will be assessed and any aspects that have not yet been completed, and are needed for the detailed designs would be completed in accordance with the following:

- Conduct a hydrological analysis to determine design flows, wind and wave effects and freeboard capacity of the proposed dam structure,
- Confirm hydraulic analysis of the low-level outlet, spillway and outlet channel using the US Army Corps of Engineers "HEC-RAS" modelling software. Hydraulic modelling will be completed to assess channel flow characteristics and design any necessary channel upgrades that may be required to mitigate against overtopping and erosion of the dam's hydraulic appurtenant structures, and

- With new LiDAR data becoming available as part of the Holland Lake dams project Ecora is also undertaking, dam breach analysis will be re-run with the new terrain data to confirm the inundation areas and proposed consequence classification as per the guidelines.

2.5 Geotechnical Site Investigation

2.5.1 General

In support of the Stocking Lake Dam detail design Ecora proposes a supplemental geotechnical site investigation. Existing geotechnical investigations have been undertaken by Ecora in addition to historical geotechnical investigations performed by other firms, however, these have been focused on the existing dam structure as summarized in section 2.5.3 below. This geotechnical site investigation would supplement the known data with information localized to the proposed new design. Ecora proposes the use of multi channel analysis of surface waves (MASW) over the proposed dam location to better understand to the profile of the known shallow bedrock. MASW has been previously used at Stocking Lake Dam however the locations do not provide adequate information for detailed design. MASW is described in more detail in section 2.5.2 below. Ecora will use manual hand augers to confirm MASW results and provide increased detail on the encountered soils overlaying the shallow bedrock. A standpipe piezometer will be installed in one of the hand auger boreholes to monitor fluctuations in water levels within the existing water supply pipe trench downstream of the existing dam.

2.5.2 Multichannel Analysis of Surface Waves (MASW)

MASW is a seismic method which utilizes low frequency surface waves to determine the shear wave velocity with respect to depth. Surface waves of different wavelengths travel in various velocities depending on the soil material. The wave velocities will reflect the changes in stiffness in the soil material. It is a non-intrusive in-situ test, very similar to other seismic data collection methods. A series of geophones are placed in a line along the surface of the target area. Multiple shots, or recordings, are taken to record the time offset and amplitude of the waves. Due to the close relation between surface wave velocity and shear wave velocity, the cross section between depth and shear wave velocity can be determined.

2.5.3 Existing Stocking Lake Dam Geotechnical Investigations

John Motherwell & Associates. – "Geophysical Survey Stocking Lake Dam" dated Jan 1975.

Seismic and resistivity geophysical survey data was performed by Geo-Recon Explorations Ltd. This indicates the bedrock profile along the existing dam structure.

EBA Engineering Consultants Ltd. – "Stocking Lake Dam Geotechnical Assessment" dated March, 2007.

On August 23, 2006, EBA arranged for a tracked mounted drill rig to advance four boreholes comprising augers and dynamic cone penetration testing to depths ranging between 2.1 and 10.4 mbgl. Standpipe monitoring wells were installed in two of the boreholes upon completion.

Ecora - "Dam Safety Review and Risk Assessment of Stocking Lake Dam" dated Nov 28, 2018.

This comprised of two boreholes with SPT testing, one on the upstream and one on the downstream side of the existing dam crest, using the sonic drilling method reaching depths of 5.2 m and 4.6 m respectively. Standpipe piezometers were installed in each borehole upon completion. To further supplement this investigation, Conetec Investigation Ltd. performed a geophysical survey comprising two two-dimensional

Multichannel Analysis of Surface Waves (MASW) tests to identify the location of the LLO and to determine the localized bedrock profile.

Ecora - "Geotechnical Assessment of Stocking Dam" dated June 2021.

The 2021 investigation comprised of a 22.5 mbgl inclined borehole using the sonic drilling method. This borehole was advanced adjacent to the outlet channel, downstream of the existing dam, at 45 degrees towards the spillway channel (azimuth of 245 degrees). This was completed to investigate the soil conditions under the spillway channel and to confirm the sharp dip in the bedrock profile as indicated in previous geophysical investigations. Hand augers and Lightweight Dynamic Cone Penetration (LDCP) tests were also performed to a maximum depth of 2.99 mbgl.

2.6 Environmental Assessment

Ecora's Qualified Environmental Professionals (QEP's) will confirm relevant details in the existing environmental assessments which investigates and catalogs the environmental assets at the dam site and in the surrounding areas and prepare a Construction Environmental Management Plan (CEMP) for the works.

- Ecora will work in-house with the environmental team at multiple stages to ensure the strict adherence to all necessary environmental regulations. Ecora will maintain communication with project stakeholders, including regulatory authorities, resource managers, and applicable community groups or local conservation organisations to ensure the project meets the requirements of all parties, and
- A guide to the preparation of a detailed site restoration and enhancement plan to be implemented post-construction to mitigate and offset any negative project impacts.

The environmental team will include a summary on any sensitive areas or protected ecosystems that must be considered during the detailed design development and construction phases.

The environmental team will provide support during construction phases of the project by providing environmental monitoring on behalf of the ToL, directing the implementation and effectiveness of mitigation measures, and documentation compliance with permit terms and conditions for the duration of the works. The environmental team will also manage any restoration and compensation requirements, to ensure all permit conditions are satisfied. Monitoring plans will be developed to ensure the environmental impact will be minimized.

2.7 Detailed Design

2.7.1 General

The emergency works performed in 2023 as summarized in Ecora's Stocking Lake Emergency Repairs Post-Construction Memorandum dated December 2023, were in response to seepage observed at the right abutment and softening of the dam embankment material. The emergency repairs were intended to address the aforementioned issues until such a time the dam could be replaced.

The detailed design will serve to elevate the preliminary design prepared by Ecora to a tender-ready design for construction and will include detailed cost estimates to assist in the final budgeting process. This phase will also include the preparation and submittal of any required provincial and federal permits for construction and an application for amendments to the Town's water license(s) as applicable.

2.7.2 Geotechnical Design

The geotechnical design scope of work generally encompasses several key aspects. One primary task is a detailed design stage review of the preliminary design considering the proposed 2024 investigation data to ensure accuracy and feasibility. This review includes, but is not limited to, several critical components:

- Seepage Analysis: Reviewing and refining the existing seepage analysis is essential to accurately assess and manage water flow through the dam structure. This involves evaluating current models, incorporating new data, and ensuring that the design effectively mitigates potential seepage issues.
- Slope Stability Assessments: Reviewing and refining existing slope stability assessments ensures that the dam slopes remain stable under various conditions, including static, dynamic, and seismic loads. This involves reassessing slope designs, performing additional stability analyses, and making necessary adjustments to enhance safety.
- Sheet Pile Wall Design: The existing sheet pile wall design must be reviewed and refined to ensure it adequately addresses seepage control and structural stability. This includes verifying penetration depths, material selection, and the wall's ability to withstand loads from the dam and water pressure.
- Construction Recommendations: This includes guidance on material placement, compaction requirements, construction sequencing, and measures to mitigate potential construction-related issues.

2.7.3 Structural Design

The scope of the structural design includes the detail design of the concrete portions of the structure including the spillway, concrete wing wall and concrete gate well structure. This will encompass the design of the steel reinforcement, the stability analysis of the concrete spillway structure, and the specification of the FRP sheet pile wall.

In addition to the concrete elements, the design will also include the steel bridge structures on the spillway and gatewell as well as bearing plates and connection of the bridges to the concrete structures. This also includes the specification of the guardrails and decking.

The structural design will include a Finite element analysis (FEA) using SAP2000 will be undertaken to evaluate the interaction between the FRP wall and the concrete structure. This work will be completed in collaboration with the geotechnical/hydrotechnical design team to determine applied design loads to ensure that the design meets/exceeds the minimum criteria as set forward in the following design guides and applicable criteria.

- 2007 CDA Dam Safety Guidelines and associated Technical Bulletins (2013 Edition).
- BC Dam Safety Regulation (BC. Reg. 40/2016).
- British Columbia Building Code 2024.
- National Building Code 2022.
- CSA/CAN A23.1 Design of Concrete Structures.
- CSA/CAN S16.1 Design of Steel Structures.

The analysis will also utilise and expand previous similar design cases such as the White River hydropower project completed in 2016 for the design of a FRP sheet piles with concrete footings.

The analysis can then be compared against the on-site instrumentation installed on the sheet piles to confirm that the assumptions made in the design model are accurate and the dam is behaving as expected on site.

As part of the role as structural engineers, an independent design review will be carried out by an alternative structural engineer as well as an independent review by an engineer not associated with the project to meet the EGBC criteria for structural quality control and assurance. Unless required otherwise, a type 1 as defined by EGBC Guide to the standard for documented independent review of high-risk professional activities or work, will be carried out on the design.

2.7.4 CADAM3D Concrete Structure Stability Analysis

A stability review of the detailed spillway structure design will be assessed in accordance with the CDA Dam Safety Guidelines (2007) that provides acceptance criteria for the structural stability of concrete gravity dams including the position of the resultant force for rotational modes of failure, the allowable normal compression stress, and minimum factors of safety for resistance to sliding for concrete gravity dams. This was already completed as part of the preliminary design stage, so will only require updating as per any detailed design changes. The stability review of the spillway will be undertaken utilizing the software CADAM3D v.2.5.11.1. The software performs the stability analysis of gravity dams, spillways, weirs, and water intakes based on the gravity method using rigid body equilibrium and beam theory to perform stress analyses, compute crack lengths and factors of safety for the static and seismic stability in accordance with the Canadian state of practice as documented in CDA (2007,2013) and USACE (1995).

2.7.5 Design Deliverables

Ecora will produce detailed design drawings for the proposed dam as refined through Ecora's findings during the previously completed preliminary design process. The detailed design drawings will include a level of detailed sufficient to construct the proposed works and may include but not limited to:

- Site maps displaying plan and cross-section views of key areas pre- and post-construction,
- Construction material specifications and volumes,
- Temporary dewatering or diversion works plan (if needed),
- Access areas, staging areas, and soil disposal areas (anticipated to be similar to the areas identified and utilized during the Stocking Lake Dam Emergency Repairs),
- Re-vegetation / environmental restoration plan(s),
- Constructability notes and details, and
- Reporting/Permitting/Licensing as required.

Ecora will complete a Plan Submission Report in accordance with Plan Submission Requirements for the Construction and Rehabilitation of Small Dams (Version 14a – July 2018). The Plan Submission Report serves as the primary permitting requirements to be submitted to the Dam Safety Officer (DSO) for the proposed works.

2.8 Tendering / Request for Proposals

Ecora understands the ToL anticipates construction to begin during the summer of 2025. Ecora will assist as requested by the ToL in the tendering phase of this project. Due to the complexity of the construction works, we are recommending that the ToL proceed with a Request for Proposal (RFP) process to procure construction services for this project, as opposed to traditional tender call. This will allow the ToL to evaluate the suitability of

potential contractors for this type of project and their proposed methodology for construction. The tasks for this phase will include but are not limited to:

- Producing a schedule of tender items and a Class A cost estimate,
- Assisting the ToL with the preparation and issuance of tender / RFP documents,
- Answer bidders' questions and prepare/issue addendums as necessary,
- Review bids for compliance and suitability to complete the work with the ToL solicitor if needed,
- Completing a decision matrix to assist the ToL with selection of a preferred construction contractor, and
- Issuance of contract documents for execution of the ToL and the Contractor.

2.9 Construction Support Services

The construction phase of the project is proposed to proceed as follows:

- Following the issuance and execution of the construction contract, Ecora will send a notice to proceed to the Contractor, initiating the construction phase,
- Ecora will organize a pre-construction meeting with the Contractor, Site Inspector, Contract Administrator, and the ToL in order to confirm the following;
    - Contact Information,
    - Permit Requirements,
    - Transportation to Site and any Vehicle/Foot Traffic Management Plans,
    - Communications,
    - Scope of Work,
    - Optimum Construction Staging,
    - Materials Testing, and
    - Roles and Procedures.
- Ecora will provide inspection services and contract administration services, as required, to ensure works are constructed in compliance with the contract documents and to meet compliance with IFC drawings,
- Inspection services shall include the following:
    - Keep complete construction records,
    - Inspect works, notify the contractor in writing of deviations from the specifications,
    - Monitor results of all material and quality control testing,
    - Issue all site instruction in writing within 24 hours from issuing such instruction. A copy of all instructions is to be kept for record purposes. The contractor will be required to coordinate and pay for all required quality control and materials testing (Ecora can provide quality control and testing upon request by the contractor).

- Contract Administration services shall include:
    - Geotechnical supervision, erosion and sediment control, and environmental (QEP) monitoring as required. Ecora expects that full-time environmental monitoring may be stipulated by one or more permits (see 3.11 Environmental Monitoring below),
    - Ecora will request random checks of line and grade constructed by the contractor and take measurements for the computation of construction quantities,
- Ecora's project manager will ensure all budgets, schedules and quality control specifications are met,
- Chair bi-weekly site meetings with the Contractor, Project Manager, Site Inspector, and the ToL Project Manager. The objective of the meetings shall be to maintain project communications, assess work progress, ensure compliance with construction schedule, identify potential change orders or extra work requirements, and, where possible, resolve disputes. This meeting shall also be used to document the number of working days utilized to date and any additions or deletions to the approved number of days to complete the Contract works.
- Preparation, certification, and submission of monthly progress payments at the end of each calendar month. A construction schedule, prepared by the contractor and acceptable to the Contract Administrator, is to be included in all progress payments; and,
- Issuance of substantial and total performance documentation at the conclusion of the construction tasks.

2.9.1 Strain Gauge Installation

The fibre reinforced sheet pile wall will require strain gauge installation to allow for measurement of load, stress and pressure. The layout, number and location for the installation of the strain gauges shall be confirmed following the detailed design and in consultation with the instrumentation supplier. This will be to confirm that the assumptions made during the design phase are accurate and the dam is behaving as predicted. Installation of the gauges will be performed by the suppliers technical personal, and this cost is not included in our fees. For preliminary purposes, it is anticipated that three locations will be used for the strain gauges with three gauges per location but may change following detailed design and consultation.

2.10 Environmental Monitoring

The Environmental team will provide support during the construction phase of the project by developing environmental management and mitigation plans for contractors, providing environmental oversight on behalf of the town, directing the implementation and effectiveness of mitigation measures, and documentation compliance with permit terms and conditions for the duration of the works. The environmental team will also manage the restoration and compensation requirements, to ensure all permit conditions are satisfied, which may include a maintenance period. This will be completed by Ecora's biologists and will include details on how the impacts to the environment will be monitored during construction. Ecora will oversee the implementation of the terms and conditions described in the environmental permits.

Ecora's environmental team will undertake an environmental impact evaluation of the required vegetation removal and identifying other environmental issues that will need to be addressed during the construction of the dam. This will begin during the detailed design phase but may continue into the construction phase.

Monitoring plans will be developed to ensure the environmental impact be minimized. A description of potential enhancement opportunities will be developed and provided.

The environmental monitoring and reporting work does not include any works associated with a Fisheries act authorization or offsetting required as part of an authorization that may arise from environmental impact reviews.

2.11 Post-Construction Services

The contractor will complete the post-construction survey. Survey data will be provided to Ecora for use in the record drawings.

Ecora will provide post-construction reports as required by the BC Dam Safety Regulation and will include a summary of the construction process and any deviations from the design. At the completion of the construction works, guidance and training will also be provided to the ToL staff to familiarize them with the operational and maintenance requirements of the dam.

A record drawings package will be provided to the ToL from Ecora.

3. Summary of Deliverables

The key deliverables for the detailed design phase include:

- Plan Submission Report that meets the requirements of the BC Dam Safety Regulations, which includes:
    - Development Report,
    - Design Drawing Package and Specifications (Issued for Permit),
    - Construction Supervision Plan and Schedule,
    - Material Specification Report,
    - Construction Environmental Monitoring Plan (CEMP),
    - Draft Operation, Maintenance and Surveillance (OMS) Manual, and
    - Draft Dam Emergency Plan (DEP).
- Class A cost estimate and schedule of quantities.

It is assumed that the design drawings, specifications, and cost estimate would be provided to the ToL for review and comment at 50% and 95% and the Plan Submission Report would be submitted as 100% detailed design draft for review prior to finalizing.

The key deliverables post construction include:

- Final commissioning report summarizing the construction records, recommendations, photo documentation, assessment of overall quality standards achieved etc.,
- Record drawings (will be included in the final commissioning report package), and
- Inspection of the work one month prior to the end of the warranty period and submit report to the ToL. It is understood that Ecora will also be responsible for any additional post-construction inspections required by permit(s) (e.g. to monitor habitat restoration).

All deliverables are to be signed and sealed in accordance with EGBC guidelines, following the ToL and Regulator review and acceptance of the documents (where applicable).

4. Ecora Personnel

4.1 Key Personnel

The Ecora team will comprise of senior engineer Michael J. Laws, P.Eng., and intermediate engineer Adam Kerk-Hecker, P.Eng. They will be supported by intermediate and junior engineers as required. The senior biologist, Adam Patterson, R.P.Bio., will be supported by intermediate and junior and biologists as required. Dr. Adrian Chantler, Ph.D, P.Eng., will support Ecora during this project as a senior/independent hydrotechnical reviewer. Dr. John Sully, Ph.D, C.Eng., P.Eng., will support Ecora during this project as a senior/independent geotechnical reviewer. This project will be led from our Kelowna office, with resources drawn from other offices, including Ecora's Vancouver office, as necessary.

The proposed Dam Safety Engineer has an excellent working relationship with the MoF Dam Safety Officers through his continued dam safety work experience across the province. A short description of the proposed team members and their abilities and duties follows, with detailed resumes of key personnel attached in Appendix A.

Michael J. Laws, P.Eng., Principal Dams & Geotechnics (Lead Qualified Professional) — Michael J. Laws has over 24 years of broad geotechnical, hydrological and dam engineering experience, including analysis and design of soil and rock slopes, rock fall assessments, geotechnical design of shallow and deep foundations, seismic and liquefaction analyses, specialized analysis of existing dams, structural stability of concrete gravity dams, dam break analysis, flood routing including inundation and flood mapping, design and rehabilitation of dams and the design of geostructures. He previously worked for New Zealand's second largest dam owner where he ran the dam safety program. He has worked on numerous run-of-river hydro projects, designed and undertaken engineering assessments on dams and completed over 20 comprehensive dam safety reviews as the lead qualified professional over the last 5 years including the Okanagan Lake Regulatory System dams for the Ministry of Forests.

Adam Kerk-Hecker, P.Eng., Civil/Hydrotechnical Engineer (Project Manager) — Mr. Kerk-Hecker is a hydrotechnical engineer with previous experience on dam engineering assessments and remediation design. Adam has been involved in over 15 dam remediation projects in the last 5 years. Adam will be managing this assignment and has experience working on projects on Vancouver Island and is familiar with the local geography. Adam will be responsible for managing deliverables and project milestones. Adam has over 8 years of consulting experience working as a civil/hydrotechnical engineer. His experience includes hydrology, hydraulics, numerical hydraulic modelling, and hydrological assessments of dam watersheds. Adam is well versed in both the BC Dam Safety Regulation and the Canadian Dam Association (CDA) Dam Safety Guidelines. Adam has experience using specialized hydrotechnical software such as HEC-RAS and HEC-HMS.

Adrian Chantler, Ph.D., P.Eng., Senior Hydrotechnical Engineer — Dr. Chantler is a hydrotechnical and civil Engineer with over 40 years of experience in the areas of hydrology, hydraulics, and physical and numerical hydraulic modelling. Adrian is a senior/independent reviewer. He has been engaged in floodplain studies and hydrotechnical engineering for dams and water resource projects throughout western and northern Canada. Dr. Chantler's experience encompasses river engineering, dam engineering, stormwater and watershed management, floodplain management, mine water management and dam safety reviews in North America and overseas. He has been involved with over 50 dam safety reviews in the last 10 years. He is an independent consulting engineer under contract to Ecora and will provide senior hydrotechnical review for this assignment.

Lalinda Weerasekara, Ph.D., M.A.Sc., P.Eng., Senior Geotechnical Engineer — Mr. Weerasekara is a senior geotechnical engineer who has previously worked on design for some of the largest civil projects in the Yukon,

including being the Geotechnical Engineer on record for the Crooked Creek and Nisutlin Bay Bridge projects. Lalinda's background experience includes seismic and stability analysis on embankments, deep and shallow foundations, and seismic liquefication analysis from high-consequence dams. He is proficient with multiple seismic modelling softwares, including D-MOD2000, SHAKE2000, DeepSoil, ProSHAKE, CLiq, SHAKE91, SeismoSignal and SeismoMatch.

Adam Patterson, R.P.Bio., Senior Biologist — Mr. Patterson is a Senior Biologist with 18 years of relevant consulting experience. His experience includes conducting and overseeing the implementation of environmental assessment and management for large infrastructure projects throughout BC. He has expertise in terrestrial and aquatic environments as they relate to fish and wildlife ecology, impact assessment, land development, and conservation. His experience includes various terrestrial wildlife and vegetation surveys and habitat assessments, species at risk assessments, habitat restoration and design, and environmental permitting, compliance monitoring, and auditing. Adam has provided environmental management support for dam safety reviews and inspections for Lind Creek, Holland Lake Dam, Stocking Lake Dam, Cannell Lake Dam, Dickson Lake Dam, and a series of dams for the Ministry of Forests near Okanagan Lake.

Duncan Hendricks, R.P.Bio., CPM, Senior Biologist — Duncan Hendricks is a Senior Biologist with 30 years of experience in environmental consulting throughout western and northern Canada. Duncan specializes in managing and directing multi-disciplinary projects. Duncan's technical background is in the assessment of aquatic habitat and aquatic restoration. He has extensive experience in assessing stream and river habitat throughout BC and the western United States.

Matt Roche, P.Eng., Structural Engineer – Mr. Roche is a Structural Engineer with 10 years of relevant consulting experience. Matt has previously worked on several hydro-geotechnical projects and dam assessments ranging from small structures such as the Chain Lake dam assessment and replacement to the very large such as the Hells gate arch wall dam assessment. He specialises in structural finite element modelling and dynamic analysis of structures. He is also the recipient of the 2009 Sean Du Courcy reward from the Concrete society of Ireland for his research into the durability of concrete with the addition of Carbon multiwalled nanotubes. He will be providing input and review on structural factors with context to the dams.

Patrick Machibroda, M.Sc., P.Eng., **Geotechnical Engineer —** Mr. Machibroda as over 7 years of experience in geotechnical engineering. He has worked on various large-scale projects in YK, BC, AB, SK, MB, ON, and NU. Patrick has worked with Ecora on the Chain Lake Dam Upgrades, Princeton, BC, the Conuma (Shikano) Tailings Storage Facility, Tumbler Ridge, BC, and the BC Hydro Feeder Extension. Patrick's areas of expertise include materials testing, drilling, slope stability analysis, deep foundation design, 2D Limit Equilibrium and Finite Element Modelling (slope stability, deformations/settlements, and seepage), and site inspections and reviews.

4.2 Supporting Personnel

Prajakta Jadhav, Ph.D., E.I.T., Geotechnical Consultant — Ms. Jadhav is a geotechnical consultant based in Ecora's Vancouver office. Her background is in civil engineering with a specialization in geotechnical engineering with experience in static and seismic design of geotechnical structures and numerical modeling of soil-structure interactions. She is proficient in a number of modeling and simulation software packages including: OpenQuake, OpenSees, ABAQUS, GEO-STUDIO, GEO-5, and MSEW. Ms. Jadhav has published multiple papers on seismic loading and will assist Ecora in the geotechnical data review.

Melony Catana, AScT, Environmental Technologist — Melony Catana is a registered Applied Science Technologist that has been consulting in BC for 18 years. She specializes in environmental assessment and mitigation for infrastructure and land development projects. She is experienced with conducting terrestrial and aquatic wildlife and vegetation surveys, habitat assessments, impact assessments, environmental management, project design, regulatory liaison, permitting and compliance monitoring. She has developed and implemented project-specific management plans for mitigating impacts to Species at Risk (SAR), including wildlife exclusion and salvages. She has extensive experience working as part multidisciplinary project teams for the remediation of

dams, culverts, and bridges, including fish and wildlife salvages and monitoring watercourse diversions. Her design experience includes fish and wildlife habitat restoration and compensation. She has worked extensively in permit acquisitions. Melony has provided environmental management support for dam remediations for Frazer Lake Dam, Yellow Lake Dam, Rose Lake dam and Star Gulch Dam.

Adam Tieman, E.I.T., Junior Hydrotechnical Engineer — Mr. Tieman is a Hydrotechnical Engineer-In-Training with 3 years of relevant consultant experience. Adam has experience using specialized hydrotechnical software such as FLO-2D with QGIS and HY-8. He is familiar with dam inundation mapping through his experience being involved in several ongoing safety reviews being completed for Mamit Lake, Becher, Toosey, and Botanie Lake dams.

Daniel Tamas, G.I.T., Junior Geoscientist — Mr. Tamas is a Geoscientist-in-Training (G.I.T.) with 6 years of experience with Ecora. Daniel's experience is split between the environmental and geotechnical sectors. Daniel has been coordinating geotechnical drilling programs and assessment reporting for major highway and pipeline projects across the interior. Daniel's area of expertise is in safety coordination, contractor communications, procurement of subcontractors and machinery support, field report development, terrain and geohazard mapping, and Standard Penetration Test (SPT) analysis and data processing. Mr. Tamas has experience communicating with First Nation stakeholders on a number of projects.

Abbas Rahman, PMP, Hydrotechnical Consultant — Mr. Rahman is an experienced Civil and Hydrotechnical engineer with Ecora. Abbas has over 11 years of experience. A chartered professional engineer in New Zealand, Abbas is currently a candidate for his P.Eng. with EGBC. Mr. Rahman is based out of Vancouver, BC, and has experience in hydrotechnical assessments. Abbas has worked on multiple culverts, runoff treatment, and bridge assessments. His work includes updating Botanie Lake, Toosey, and Becher dam OMS manuals and DEPs.

Bram Samuels, M.Eng., E.I.T., Junior Geotechnical & Hydrotechnical Engineer — Mr. Samuels has 4 years of industry experience in geotechnical and hydrotechnical engineering sectors. Bram is based out of Vancouver, BC and is experienced in modeling software including LiqSVs, HEC-RAS, HEC-HMS, FLO-2D, and MODFLOW. Bram has worked on projects including Seton Portage Debris Flow Mitigation, Nunns Creek Culvert Replacement, and Fairbanks Road Landslide Remediation. Bram is experienced with soil conditions on Vancouver Island, designing monitoring wells and piezometers.

Meghan Sherwood, E.I.T., Junior Geotechnical Engineer – Meghan Sherwood has experience conducting ARD/ML assessments and site reconnaissance, geotechnical site investigations, terrain analysis and mapping, slope stability analysis, retaining wall design, lab testing and construction monitoring. She is proficient with industry standard geotechnical slope stability and seepage modelling software such as GeoStudio Suite, Rocscience (Slide2, RocPlane, RocFall, SWedge, Dips) and gINT.

Tomos Edmonds, E.I.T., Junior Hydrotechnical Engineer — Mr. Edmonds 2 years of total experience in Ecora's civil, geotechnical and hydrotechnical departments. Tomos specializes in 2D/3D AutoCAD Civil3D drafting, has experience using specialized hydrotechnical software such as HEC-RAS, and supports the structural stability assessment of concrete gravity dams using CADAM3D. Tomos has worked on projects in the Ladysmith area on Vancouver Island including the Holland Creek Dam Safety Inspections & Mackie Rd Dam Decommissioning.

5. Achievements on Projects

5.1 Project Experience

Within the past ten years, Ecora has undertaken numerous dam projects throughout British Columbia. The scopes and scales of the projects vary and includes dam safety inspections, dam safety reviews, engineering assessments and designs, decommissioning plans, and dam construction and administering.

Ecora has experience working on a number of dams on Vancouver Island and in the Ladysmith area. These projects include the Holland Creek Dams Assessment and Decommissioning, Stocking Lake Dam Preliminary Design, Holland Lake Dam Safety Inspections, and Cowichan Valley Regional District DSRs for Stocking Lake Dam, Youbou Creek Dam, Ashburnham Creek Dam, and Shawnigan Lake Weir.

The Ecora team is experienced in undertaking dam safety reviews, engineering assessments of dams, conceptual, preliminary, and detailed dam design, and engineering services related to construction, with a successful reputation for completing similar types of assignments and acceptance of their reports by regulator(s). A list of dam projects that Ecora has completed is listed below. Full project profiles including detailed descriptions, client name and contact, scope, and scheduled/actual completion date(s) for selected recent dam projects are provided in Appendix D. See Table 5.1.1 below for a summary of projects Ecora has conducted since 2015.

Table 5.1.1 Past Dam Projects Completed by Ecora

Client	Province/ Territory	Dam	Services	Year
Ministry of Forests	BC	Nicklen Lake Dam	Comprehensive Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability analysis, hydrotechnical assessments, reporting. Conceptual design of improvements to Nicklen Lake Dam.	2021-2023
City of Kelowna	BC	Frazer Lake Dam	Detailed design and construction services for the remediation of Frazer Lake Dam including design of a hybrid sheet pile embankment dam, LLO, and spillway, and procurement and contract administration services.	2019-2023
City of Prince George	BC	Shane Lake Dam	Detailed design, procurement, contract administration, and construction services for the remediation of Shane Lake Dam. Includes design of remediation works, including spillway upgrades, to address deficiencies identified during a Dam Safety Review.	2021-2022
ISL Engineering	BC	Centre Star Gulch Dam	Detailed design and construction services for the remediation of Centre Star Gulch Dam. Includes design of remediation works, including spillway upgrades, to address deficiencies identified during a Dam Safety Review.	2020-2022
Town of Ladysmith	BC	Stocking Lake Dam	Preliminary Design (60%) services for a replacement dam structure at Stocking Lake. Included the design of a hybrid sheet pile embankment dam, primary spillway structure with stilling basin, and low-level outlet works.	2021-2022
City of Abbotsford	BC	Cannell Lake Dam	Detailed design, procurement, contract administration, and construction services for the remediation of Cannell Lake Dam including re-design of a spillway, spillway control structure, and filter berm.	2020-2022
City of Powell River	BC	Haslam Lake Dam	Comprehensive Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability analysis, hydrotechnical assessments, reporting.	2021
City of Penticton	BC	Ellis #4 Dam, Greyback Dam, Penticton #2 Dam	Comprehensive Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical	2021

Client	Province/ Territory	Dam	Services	Year
			stability analysis, hydrotechnical assessments, reporting. Project was completed jointly with Austin Engineering Ltd.	
Ministry of Forests	BC	Yellow Lake Dam	Detailed design, procurement, contract administration, and construction services for the remediation of Yellow Lake Dam. Includes design of remediation works, including spillway upgrades, to address deficiencies identified during a Dam Safety Review.	2020-2021
Yukon Energy Corporation	YT	Aishihik Generating Station, Whitehorse Rapids Generating Station, Mayo Generating Station	Completion of audit style dam safety reviews on three generating stations owned and operated by Yukon Energy Corporation. DSR include review of eight structures of a variety of dam types including concrete, rockfill and earthen embankments.	2020-2021
City of Prince George	BC	Shane Lake Dam	Comprehensive Dam Safety Review including geotechnical stability and piping assessments of embankment dam. Consequence Classification Review including dam break analysis and inundation mapping. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2020
City of Trail	BC	Violin Lake Dam	Consequence Classification Review including dam break analysis and inundation mapping. Recommended spillway improvements. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2019-2020
Ministry of Forests	BC	Minton Lake Dam	Owner's Engineer during construction of new dam.	2017-2019
Ministry of Forests	BC	Okanagan Lake Dam, Skaha Lake Dam, McIntyre Dam	Comprehensive Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, structural stability analysis of concrete gravity dams, reporting. Includes condition assessment of vertical drop structures, drainage and dike works. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2018-2019
City of Abbotsford	BC	Cannell Lake & Dickson Lake Dams	Engineering Assessment, incorporating dam geotechnical investigation, geotechnical stability assessment of embankment dam, reporting. Includes predesign of rehabilitation works.	2018-2019
Ministry of Forests	BC	Swan Lake Dam	Dam operations plan that provides guidance on outflow.	2019
Cowichan Valley Regional District	BC	Stocking Lake Dam, Youbou Creek Dam, Ashburnham Creek Dam, Shawnigan Lake Weir	Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, structural stability analysis of concrete gravity dams, geotechnical stability and piping assessments of embankment dam, reporting. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2018-2019
City of Trail	BC	Cambridge Reservoir Dam	Consequence Classification Review including dam break analysis and inundation mapping. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2018-2019

Client	Province/ Territory	Dam	Services	Year
Regional District of Okanagan-Similkameen	BC	Chain Lake Dam	Consequence Classification Review of Chain Lake Dam including dam break analysis and inundation mapping.	2018
No. 21 Great Projects Ltd. (The Ponds)	BC	Hill Spring Dam	Completion of plan submission report for the rehabilitation of Hill Spring Dam. Includes design of new embankment and spillway weir. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2016-2018
Xaxli'p First Nation / Neskonlith Indian Band / Cook's Ferry Indian Band / Indigenous Services Canada	BC	Kwotlenemo Lake Dam / Neskonlith Lake Dam / Calling Lake Dam	Dam Safety Reviews incorporating dam break analysis and inundation mapping, consequences classification review, geotechnical stability and piping assessments of embankment dams, reporting. Preparation of Dam Emergency Plan and Operation, Maintenance & Surveillance Manual.	2016-2017
Ministry of Forests	BC	Yellow Lake Dam	Engineering Assessment, incorporating dam break analysis and inundation study, geotechnical investigation, geotechnical stability assessment of embankment dam, reporting.	2016-2017
Regional District of North Okanagan	BC	Goose Lake Dam	Engineering Assessment, incorporating dam break analysis and inundation study, geotechnical investigation, geotechnical stability assessment of embankment dam, reporting.	2016
The City of Abbotsford	BC	Cannell Lake & Dickson Lake Dams	Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability and piping assessments of embankment dams, reporting.	2015-2016
Xat'sull First Nation / Indigenous Services Canada	BC	Rose Lake Dam	Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability and piping assessments of embankment dam, reporting.	2015-2016
Ministry of Forests	BC	Swan Lake Dam	Engineering Assessment, incorporating dam break analysis and inundation study, geotechnical investigation, geotechnical and structural stability assessment of gravity dam, reporting.	2015-2016
Allendale Water Users Community	BC	Allendale Lake and Clark Meadows Lake Dams	Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability and piping assessments of embankment dams, reporting.	2015
City of Rossland	BC	Centre Star Gulch Dams	Dam Safety Review incorporating dam break analysis and inundation mapping, consequence classification review, geotechnical stability and piping assessments of embankment dams, reporting.	2015

5.2 Client References

Table 5.2.1 below provides two references and corresponding projects that Ecora has completed where the Michael J. Laws, P.Eng. was the Lead Qualified Professional (LQP).

Table 5.2.1 List of References for Recent Dam Projects Where Michael J. Laws, P.Eng. was the LQP

Project	Project Date /Duration	Tasks	Client	Client Contact	Client Contact Position	Contact
Shane Lake Dam Remediation	2020-2021	▪ Detailed Design ▪ Plan Submission Report ▪ Construction Administration ▪ Procurement ▪ Construction Services	City of Prince George	Alan Clark, P.Eng.	Infrastructure Engineer	250-614-7826 Alan.Clark@prince george .ca
Centre Star Gulch Dam Remediation	2021-2022	▪ Detailed Design ▪ Plan Submission Report ▪ Construction Services	ISL Engineering and Land Services Ltd.	Sean Annan, P.Eng.	Project Engineer	250-362-2229 Sannan@islengineering.com

6. Project & Quality Management

6.1 Project Management

For this assignment Ecora's Project Manager will be Mr. Adam Kerk-Hecker, P.Eng. who will work closely with the Dam Safety Engineer to ensure all engineering aspects of the design and construction are carried out effectively and efficiently. He will also be responsible for undertaking many of the hydrotechnical aspects of the project. Mr. Kerk-Hecker has worked on previous projects on Vancouver Island including the conceptual and preliminary design, and emergency remediation of Stocking Lake dam, and Holland Creek Dam Safety Inspections and Decommissioning. Mr. Kerk-Hecker is a professional engineer with strong communication skills and has managed many similar projects. It is anticipated that the project manager shall:

- Liaise with the Town, licensees, and the BC MoF DSO to access available information and verify DSO requirements for review, inspection, and reporting,
- Provide brief monthly updates, more frequent meetings during phases on the critical path, to the Town on work status, schedule, and budget. Meetings are expected to be virtual unless an in-person meeting is required,
- Identify potential risks to scope, schedule, and budget as early as possible and take appropriate steps to mitigate such risks by working collaboratively with the Town,
- Coordinate with all internal and external disciplines and sub-contractors/consultants to ensure project efficiency, and
- Plan arrangements for meetings, recording of meeting minutes, and tracking of action items.

The meetings will be conducted whenever possible remotely to mitigate costs. Meeting minutes shall be circulated to all participants for comment and confirmation and copied to the respective project officials as soon as possible.

6.2 Quality Management

Ecora's quality control processes are contained within our Professional Practice Management Plan (PPMP). This is a living document that is updated as required for policy changes and is signed off by all Responsible Registrants.

All projects begin with a Project Start-up meeting that includes all team members. Roles and Responsibilities of each team member are clearly defined and any barriers to project delivery are discussed and addressed. Project Objectives, Deliverables and Critical Success Factors are documented, and a review schedule is determined.

All team members are required to sign off on the completed Project Start-up form and this form is filed on the network in the Project Folder. If new team members are brought on to the team, they are required to review the project start-up form and sign off their understanding. During the scheduled review as defined in the project start-up form, success milestones are assessed, and any deficiencies are discussed amongst team members to drive performance improvements.

Additionally, small, office-based discipline team meetings are held on a weekly basis. During these meetings, lessons learned from on-going or completed projects are discussed. While topics may be broad and include lessons learned on professional development, client relations, technical subjects, and safety, the discussion of all aspects of project delivery helps to ensure performance improvement in the long-term.

6.3 Document Control

Ecora's record and document management are split into three categories; setting up project filing, preparing documents, and filing documents. These three categories are detailed below:

Setting up Project Filing

A standard project directory is created for each project and tagged with the internal project number.

Preparing Documents

Standard templates are used to facilitate consistent quality, and Ecora uses validated and approved software & media for creating and maintaining documents. Standard file naming conventions to save document files are used and include document identifiers (project name, project number, filename, file directory) in the document, as appropriate, or in document properties or metadata stored with each electronic file.

The project name, project number, purchase order number, and topic are included in the subject line of project or work-related e-mail containing information. Peer review, spellcheck and check documents are applied before submittal.

Filing Documents

All documents and email communications are filed in their appropriate directory, with correct revisions in the name of the document. Periodically, files are converted and saved to a portfolio PDF and saved to the project filing. Printed documents are converted to digital documents and saved to files. A check-in/check-out system is in place where multiple users have access to working documents. Included is a revision record indicating revision number, what was revised and by whom on documents where version control is required (drawings, reports, etc.). Revisions are clearly identified and documented with version control.

Issuing Documents

An issue record is included, indicating purpose for issuing and when issued, on documents where version control is required (drawings, reports, etc.). The revision and issue records may be combined into one record. When issuing electronic documents, providing and retaining the file in PDF/A exactly as issued. A formal transmittal form or informal transmittal (form, e-mail or other) may be used as a record of what was sent to whom, when and how.

Receiving Documents

All documents received from the client are stored in the project file, designated as 'received documents'. If receiving physical documents, the document gets coded and filed in the digital document project file structure. On an as-needed basis, actions taken will be recorded based on received documents.

7. Safety

Ecora is committed to compliance with all government agencies, regulators and regulations, and industry best practices. Our Health and Safety Program follows a safety-first philosophy for best practices utilizing companywide policies, rules, procedures, and continued on-going training. Our safety program is externally audited and certified by the BC Forest Safety Council. We provide our employees with ongoing training, and information on company policies, safe work, and emergency procedures.

Prior to undertaking fieldwork, Ecora staff are required to complete a Job Hazard Assessment (JHA) and an Emergency Response Plan (ERP) for review and approval by the Ecora project manager. The JHA summarizes any potential and known hazards associated with the work site and type of work to be undertaken, the personal protective requirements, training requirements, and work procedures and mitigation methods to be followed by Ecora staff. Additionally, the JHA lists the required external personnel such as flaggers and utility locators. The ERP further highlights the risks associated with field work and must be signed by all Ecora employees who visit the site.

Ecora is Safety Accord Forestry Certified (SAFE).

Ecora's WorkSafeBC Registration number is 954444 and is currently in good standing with WorkSafeBC.

8. Schedule and Fees

It is envisioned that the geotechnical site investigations can be performed concurrently with the site investigations for the Holland Lake project, with a target window of summer/fall 2024. This could reduce the overall cost for this phase for the detailed design of Stocking Lake. For the construction support services fees, the period of construction was assumed to be 12 weeks.

The detailed design phase of the project would be performed during the winter of 2024/2025. The target submission date for the Plan Submission Report is spring 2025.

It is estimated the fees and disbursements for Ecora to undertake this project is estimated at $381,439, excluding GST. See Appendix C for a fee and disbursement breakdown.

Table 8.1 Fee Summary (excluding GST)

Phase	Sub-Total
Project Management	$11,040
Site Investigation and Background	$21,716
Detailed Design Development / Permitting	$149,830
Pre-Construction	$20,755
Construction*	$158,050
Post-Construction	$20,048
Total:	**$381,439**

*Note: Engineering support fees for the construction phase are based on an estimated 12-week construction timeline. Actual fees for this phase are dependent on construction and are billed at time and materials.

9. Closure

We trust this proposal meets your present requirements. Do not hesitate to call with any questions. We look forward to the opportunity of working with you on this project.

Sincerely,

Ecora Engineering & Environmental Ltd.

Prepared by:

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References

Ecora. (2022). *Stocking Lake Dam Remediation Preliminary Design*.

Appendix A

Resumes

CONSULTANT PROFILE

Michael J. Laws, P.Eng.

Senior Geotechnical & Dam Safety Engineer

Summary of Experience

Mr. Laws is a Senior Geotechnical and Dam Safety Engineer with over 24 years' experience in dam engineering, including undertaking dam safety reviews of existing dams, geotechnical investigations, design and construction supervision of new dams and specialized analysis of existing dams and appurtenant structures. He has successfully completed comprehensive dam safety reviews, design and engineering assessments of over 30 dams in the past 5 years and is very familiar with the requirements of the Canadian Dam Association, Dam Safety Guidelines 2007 (2013 edition) and the 2016 BC Dam Safety Regulation. He is experienced with specialized geotechnical, structural stability and hydrotechnical modelling software for modelling embankment stability, seismic performance, seepage, settlement, dam breach and inundation such as Geostudio Suite, Slide, Plaxis 2D & 3D, CADAM, L-Pile, Shake, BREACH, and FLO—2D.

Areas of Experience

- Embankment Dam Engineering and Dam Safety Reviews
- Structural Stability of Concrete Gravity Dams
- Deep and Shallow Foundation Design
- Geotechnical Site Investigation and Design
- Numerical Modelling with Specialization in Finite Element Analysis
- Retaining Wall Design
- Seismic Hazard Assessments and Analysis
- Stability of Soil/Rock Slopes and Landslide/Rock Fall Remediation
- Landslide Runout and Impulse Wave Analysis
- Dam Breach Analysis
- 2D Hydraulic Modelling for Flood Plains and Open Channels

Relevant Experience

- Comox Dam Safety Review, Courtenay, BC (2023—Ongoing) – Project Manager and Lead Qualified Professional Engineer for an audit-style Dam Safety Review of Comox Dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the BC Dam Safety Regulation. DSR report prepared for BC Hydro.
- Lind Creek Dam Safety Inspection, Greenwood, BC (2023—2024) – Lead Qualified Professional Engineer for a Dam Safety Inspection involving site reconnaissance and preliminary hydrological analyses.
- Mamit Lake Dam Safety Review, Lower Nicola, BC (2022—2024) – Lead Qualified Professional Engineer for the comprehensive dam safety review of Mamit Lake Dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the BC Dam Safety Regulation. The scope of work included undertaking dam inspections, dam breach and 2D flood routing analyses, consequences classification review, structural stability analysis, preparation of Dam Emergency Plans and Operation, Maintenance &

Contact Information

michael.laws@ecora.ca

Education

Bachelor of Engineering (Civil), University of Auckland, New Zealand

Bachelor of Science (Geology), University of Auckland, New Zealand

Years of Experience

24+

Years with Firm

9+

Office

Kelowna, BC

Associations

Canadian Dam Association

Canadian Geotechnical Society

Member Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Member Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)

Member Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS)

Member Engineers Yukon

Michael J. Laws, P.Eng.
Senior Geotechnical & Dam Safety Engineer

Surveillance manuals, and preparation of DSR report. A Dam Safety presentation was provided to dam operators at the conclusion of the project.

- Haslam Lake Dam Safety Review, Powell River, BC (2021) – Lead Qualified Professional Engineer for the comprehensive dam safety review of Haslam Lake Dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the 2016 BC Dam Safety Regulation. A Dam Safety presentation was provided to dam operators at the conclusion of the project.
- Violin Lake Dam Safety Review, Trail, BC (2019) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety review of Violin Lake Dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the 2016 BC Dam Safety Regulation. The scope of work, included undertaking dam inspections, dam breach and 2D flood routing analyses, consequences classification review, structural stability analysis, preparation of Dam Emergency Plans and Operation, Maintenance & Surveillance manuals, decommissioning cost estimate, design of spillway improvements, and preparation of DSR reports.
- Minton Lake Dam Rehabilitation, Williams Lake, BC (2018—2019) – Owners Engineer for the rehabilitation of Minton Lake Dam, including review of existing back ground information, development of the technical scope of work for the RFP, assistance in evaluation of the bids, and review of technical deliverables for the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.
- Dam Safety Reviews of the Okanagan Lake, Skaha Lake and McIntyre Dams, Okanagan Valley, BC (2018—2019) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety reviews of the of the Okanagan Lake, Skaha Lake and McIntyre concrete gravity dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the BC Dam Safety Regulation. The scope of work, included undertaking dam inspections, dam breach and 2D flood routing analyses, consequences classification review, structural stability analysis, preparation of Dam Emergency Plans and Operation, Maintenance & Surveillance manuals, and preparation of DSR reports for the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development.
- Cannell & Dickson Lake Dams Engineering Assessment, Mission, BC (2018—2019) – Lead Engineer for the engineering assessment of two existing embankment dams, including undertaking an intrusive geotechnical investigations and vibrating wire piezometer installation, updated liquefaction triggering analysis, piping assessment, seepage and stability analysis, conceptual design of remedial works and reporting for the City of Abbotsford.
- Chain Lake Dam Consequences Classification Re-Determination, Princeton, BC (2018) - Lead Qualified Professional Engineer for the consequence's

Training

APEGBC Technical Seminar on Methods for Predicting Metal Leaching and Acid Rock Drainage (ARD) Potential , Vancouver, Canada - December 2015

PLAXIS Advanced Course on Computational Geotechnics & Dynamics – Berkeley, USA – May 2013

PLAXIS Advanced Course on Computational Geotechnics – New York, USA – May 2012

PLAXIS Short Course on Computational Geotechnics & Dynamics – Portland, USA – August 2011

Professor Harry Polous Piling Short Course, Canterbury University, Christchurch, NZ – September 2006.

Geo-Slope International Geotechnical Modelling Workshop (including Slope/W, Seep/W and Sigma/W) Monash University, Melbourne, Australia – July 2003

classification re-determination of an existing embankment dam, including undertaking dam inspection, dam breach and 2D flood routing analyses, consequences classification review, and reporting for the Regional District of Okanagan-Similkameen.

- Dam Safety Reviews and Risk Assessment of the Stocking Lake, Ashburnham Creek, Youbou and Shawinigan Lake Dams, Vancouver Island, BC (2018—2019) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety reviews of the of the Stocking Lake, Ashburnham Creek, Youbou and Shawinigan Lake Dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and the BC Dam Safety Regulation. Stocking Lake Dam is an earthen embankment, while, Ashburnham Creek, Youbou and Shawinigan Lake Dams are concrete gravity dams. As part of the scope of the DSR an intrusive geotechnical investigation including installation of piezometers of Stocking Lake Dam was undertaken. The scope of work, included undertaking dam inspections, dam breach and 2D flood routing analyses, consequences classification review, static and dynamic geotechnical stability analyses, structural stability analysis, preparation of Dam Emergency Plans and Operation, Maintenance & Surveillance manuals, risk assessments in accordance with the National Disaster Mitigation Program framework and preparation of DSR reports for the Cowichan Valley Regional District.
- Cambridge Dam Consequences Classification Re-Determination, Trail, BC (2018) – Lead Qualified Professional Engineer for the consequences' classification re-determination of an existing embankment dam, including undertaking dam inspection, dam breach and 2D flood routing analyses, consequences classification review, and reporting for the City of Trail.
- Hill Spring Dam Rehabilitation, Kelowna, BC (2017—2018) – Lead Design Engineer for the rehabilitation of an existing embankment dam, including undertaking intrusive geotechnical investigations, dam breach and 2D flood routing analyses, consequences classification review, seepage and stability analyses, design of embankment rehabilitation options, dam preparation of design reports, drawings and specifications for the Ponds.
- Dam Safety Reviews of Calling Lake, Neskonlith Lake and K'wotlenemo Lake Dams, Southern Interior, BC (2017) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety reviews of the three earthen embankment dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspections, dam breach and 2D flood routing analyses, consequences classification review, static and dynamic stability analyses, piping assessment, preparation of Dam Emergency Plans and Operation, Maintenance & Surveillance manuals and preparation of DSR reports for Indigenous and Northern Affairs Canada.

Michael J. Laws, P.Eng.
Senior Geotechnical & Dam Safety Engineer

- Allendale Lake Dam Geotechnical Assessment, Okanagan Falls, BC (2018) – Lead Engineer for the geotechnical assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, liquefaction triggering analysis, piping assessment, seepage and stability analysis, for the Allendale Waters Users Community.
- Yellow Lake Dam Engineering Assessment, Penticton, BC (2016—2017) – Lead Engineer for the engineering assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, dam breach and 2D flood routing analysis, consequences classification review, seepage and stability analysis, piping assessment and reporting for the Regional District of North Okanagan.
- Goose Lake Dam Engineering Assessment, Vernon, BC (2016—2017) – Lead Engineer for the engineering assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, dam breach and 2D flood routing analysis, consequences classification review, seepage and stability analysis, pipping assessment and reporting for the Regional District of North Okanagan.
- Dam Safety Review of Cannell Lake and Dickson Lake Dams, Mission, BC (2015—2016) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety review of two embankment dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspection, dam breach and 2D flood routing analysis, consequences classification review, static and dynamic stability analysis, pipping assessment, landslide generated impulse wave analysis, preparation of DSR reporting for the City of Abbotsford.
- Dam Safety Review of Rose Lake Dam, Williams Lake, BC (2015—2016) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety review of the Rose Lake dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspection, dam breach and 2D flood routing analysis, consequences classification review, static and dynamic stability analysis, preparation of DSR reporting for Indigenous and Northern Affairs Canada.
- Dam Safety Reviews of Calling Lake, Neskonlith Lake and K'wotlenemo Lake Dams, Southern Interior, BC (2017) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety reviews of the three earthen embankment dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspections, dam breach and 2D flood routing analyses, consequences classification review, static and dynamic stability analyses, piping assessment, preparation of Dam Emergency Plans and Operation,

Michael J. Laws, P.Eng.
Senior Geotechnical & Dam Safety Engineer

Maintenance & Surveillance manuals and preparation of DSR reports for Indigenous and Northern Affairs Canada.

- Allendale Lake Dam Geotechnical Assessment, Okanagan Falls, BC (2018) – Lead Engineer for the geotechnical assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, liquefaction triggering analysis, piping assessment, seepage and stability analysis, for the Allendale Waters Users Community.
- Yellow Lake Dam Engineering Assessment, Penticton, BC (2016—2017) – Lead Engineer for the engineering assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, dam breach and 2D flood routing analysis, consequences classification review, seepage and stability analysis, piping assessment and reporting for the Regional District of North Okanagan.
- Goose Lake Dam Engineering Assessment, Vernon, BC (2016—2017) – Lead Engineer for the engineering assessment of an existing embankment dam, including undertaking an intrusive geotechnical investigations and piezometer installation, dam breach and 2D flood routing analysis, consequences classification review, seepage and stability analysis, pipping assessment and reporting for the Regional District of North Okanagan.
- Dam Safety Review of Cannell Lake and Dickson Lake Dams, Mission, BC (2015—2016) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety review of two embankment dams in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspection, dam breach and 2D flood routing analysis, consequences classification review, static and dynamic stability analysis, pipping assessment, landslide generated impulse wave analysis, preparation of DSR reporting for the City of Abbotsford.
- Dam Safety Review of Rose Lake Dam, Williams Lake, BC (2015—2016) – Project Manager and Lead Qualified Professional Engineer for the comprehensive dam safety review of the Rose Lake dam in accordance with the Canadian Dam Association Dam Safety Guidelines 2007 (2013 Edition) and BC Dam Safety Regulation, including dam inspection, dam breach and 2D flood routing analysis, consequences classification review, static and dynamic stability analysis, preparation of DSR reporting for Indigenous and Northern Affairs Canada.

CONSULTANT PROFILE

Adam Kerk-Hecker, P.Eng.
Civil/Hydrotechnical Engineer

Summary of Experience

Adam Kerk-Hecker is a Hydrotechnical Engineer based out of Ecora's Kelowna office. He has over nine years of experience in civil and hydrotechnical engineering with a Bachelor of Engineering in Civil Engineering from BCIT.

His experience has been primarily focused on small to medium embankment dam systems design, hydraulic structure design, watershed hydrological assessments, 1D/2D hydraulic modelling, dam safety reviews, culvert and open channel drainage design, streambank/lakeshore erosion protection design, and minor road design. Adam is proficient in hydrologic modelling and streamflow prediction in gauged or ungauged watersheds including using the latest projected data and industry standards to account for potential climate change impacts. He is familiar with various hydrologic/hydraulic software tools (1D/2D HEC-RAS, HEC-HMS, HY-8), project management, topographical and construction survey, contract administration, cost estimating, and reporting. He also has extensive experience with AutoCAD Civil3D modelling and design. Adam is well versed with the BC Dam Safety Regulations (BC Reg 40/2016) and 2007 Canadian Dam Association (CDA) Dam Safety Guidelines (2013 Edition).

Areas of Expertise / Specializations

- Hydrotechnical engineering design
- Dam engineering
- Hydrological analysis
- 1D/2D Hydraulic Modelling (HEC-RAS, HEC-HMS, HY-8)
- 2D/3D CAD drafting and modelling
- Contract administration
- Project management
- Cost estimating

Relevant Experience

Kitley Creek Dam Remediation – Detailed Design and Construction, Kaleden, BC (2021 – Ongoing)

- Conceptual/detailed design and construction services for improvements to Kitley Creek Dam in Kaleden, BC. Duties included hydrological analysis and modelling, flood routing, design of a new low-head concrete dam with integrated spillway and low-level outlet, production of design drawings/specifications, and provincial permitting requirements (Plan Submission Report). Hydrotechnical engineer of record.

Chain Lake Dam Upgrades – Dam Safety Review, Detailed Design, and Construction, Princeton, BC (2021 - Ongoing)

- Conceptual/detailed design and construction services for improvements to Chain Lake Dam near Princeton, BC. Duties included hydraulic modeling of

Contact Information
adam.kerkhecker@ecora.ca

Office
Kelowna, BC

Education
B.Eng. in Civil Engineering from the British Columbia Institute of Technology – 2017

Diploma in Civil Engineering Technology from the British Columbia Institute of Technology – 2014

Associations / Memberships
Engineers and Geoscientists of British Columbia (EGBC)

Years of Experience
+9

Years with Firm
+7

the IDF, flood/reservoir routing, design of a new ogee spillway control structure with stilling basin, design of a replacement low-level outlet, upgrades to the spillway channel and dam embankment, production of design drawings/specifications, and provincial permitting requirements (Plan Submission Report). Hydrotechnical engineer of record.

Frazer Lake Dam Rehabilitation – Detailed Design and Construction, Kelowna, BC (2019 – 2022)

- Design and construction services for the reconstruction of Frazer Lake Dam in Kelowna, BC. Duties include hydrological analysis and modelling of the watershed and IDF, design of a hybrid embankment dam with a sheet pile centre wall, design of a low-level outlet intake structure and pipe, production of design drawings/specifications, Plan Submission Report, procurement services, field reviews, and post-construction reporting.

Shane Lake Dam Improvements – Dam Safety Review, Detailed Design, and Construction, Prince George, BC (2021 – 2022)

- Design and construction services for improvements to Shane Lake Dam in Prince George, BC. Duties included hydrological analysis and modelling, flood routing, design of a new open channel lined spillway, production of design drawings/specifications, Plan Submission Report, procurement services, contract administration, field reviews, and post-construction reporting.

Stocking Lake Dam Replacement – Dam Safety Review, Conceptual Design, and Preliminary Design, Ladysmith, BC (2020 – 2022)

- Dam Safety Review, Conceptual Design, and Preliminary Design for the replacement of Stocking Lake Dam near Ladysmith, BC. The existing earthen embankment dam at Stocking Lake was determined to contain multiple deficiencies and needs to be replaced. The preliminary design consists of a new FRP sheet pile/rockfill dam downstream of the existing dam, RC spillway structure and stilling basin, and RC gated intake tower. Duties include hydraulic modelling of the dam, hydrologic analysis and modelling of the watershed, preliminary design of the spillway control structure, spillway channel, intake tower, dam geometry, and access road. Design included the production of preliminary design drawings/specifications, design report, and Class C cost estimate.

Yellow Lake Dam Upgrades – Dam Safety Review, Detailed Design, and Construction, Kaleden, BC (2020 – 2022)

- Dam Safety Review, design, and construction services for upgrades to the Yellow Lake Dam in Kaleden, BC. Duties include hydraulic modelling of the dam, spillway, and downstream channel, design of a spillway control structure, design of spillway channel upgrades, production of detailed design drawings/specifications, Plan Submission Report, procurement services, contract administration, and post-construction reporting.

Cannell Lake Dam Rehabilitation – Detailed Design, and Construction, Abbotsford, BC (2019 – 2020)

- Completed detailed design, reporting, and permit acquisition for the rehabilitation of Cannell Lake Dam in Abbotsford, BC. Duties included review of hydrological analysis of the watershed and IDF, hydraulic (1D/2D) modelling of IDF passage through dam, hydraulic design of the spillway control structure and channel, hydraulic design of the dam structure, surface modelling in CAD, production of detailed design drawings, Class A construction cost estimates, production of Plan Submission Report, tender support, contract administration, and post-construction services.

Dickson Lake Dam and Cannell Lake Dam Rehabilitation Conceptual Design, Abbotsford, BC (2018 – 2019)

- Completed conceptual design and reporting for the rehabilitation of Dickson Lake Dam and Cannell Lake Dam in Abbotsford, BC. Duties included review of hydrological analysis of the watershed and IDF, hydraulic (1D/2D) modelling of IDF passage through dam, hydraulic design of the spillway control structure and channel, preliminary hydraulic design of the dam structure, surface modelling in CAD, production of design drawings, construction cost estimates, and production of preliminary design report.

CONSULTANT PROFILE

Adrian Chantler, Ph.D., P.Eng.
Senior Hydrotechnical Engineer

Summary of Experience

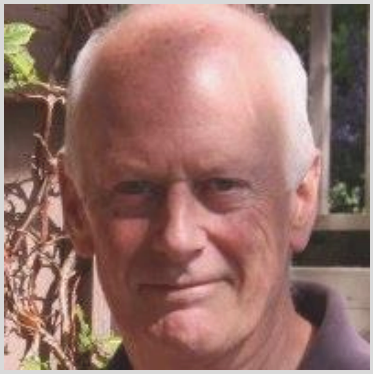
Dr. Chantler is a Civil Engineer with over 40 years of experience in the areas of hydrology, hydraulics, and physical and numerical hydraulic modelling. He has been engaged in floodplain studies and hydrotechnical engineering for dams and water resource projects throughout western and northern Canada. Dr. Chantler's experience encompasses river engineering, dam engineering, stormwater and watershed management, floodplain management, mine water management and dam safety reviews in North America and overseas. He has been involved with over 60 dam safety reviews in the last 10 years. He is an independent consulting engineer under contract to Ecora.

Areas of Experience

- Dam safety reviews
- Floodplain mapping
- Bridge and culvert hydraulic design
- Mine water management
- Protection of pipeline river crossings
- Hydrological studies
- River engineering
- Physical model studies of hydraulic structures
- Research on hydraulic geometry of tidal watercourses

Relevant Experience

- Hydrotechnical and senior review for the Haslam Lake Dam safety review (City of Powell River, 2021-Ongoing)
- Hydrotechnical and senior review for the Haslam Lake Dam safety review (City of Powell River, 2021)
- Senior review for dam safety reviews for seven Yukon Energy Corporation dams (Yukon Energy Corporation, 2020-2021)
- Hydrotechnical and senior review for the Shane Lake Dam safety review (City of Prince George, 2020)
- Hydrotechnical review for dam safety reviews and risk assessments for Stocking Lake, Ashburnham and Youbou Dams and Shawnigan Lake Weir (Cowichan Valley Regional District, 2018-2019)
- Hydrotechnical review for dam safety reviews for three Okanagan Lake Regulation System dams (Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2018-2019)
- Development of mitigation options for dam breach scenarios at Sooke, Saddle and Deception Dams (Capital Regional District, 2018)
- Hydrotechnical component of Clayton Falls Dam safety review (BC Hydro, 2018)
- Senior review of Niskonlith Lake Dam safety review (Neskonlith Indian Band, 2017)



Contact

adrian.chantler@ecora.ca

Education

Ph.D., Civil Engineering Hydraulics, University of Strathclyde, Scotland, 1973

B.Sc. (Hons.), Civil Engineering, University of Dundee, Scotland, 1970

Years of Experience

40 +

Associations

Canadian Dam Association

Member Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)

Member, Canadian Water Resources Association (CWRA) (BC President 1996/7)

Work History

Independent Consulting Hydrotechnical Engineer, under contract to several consulting firms 2014 to present

Tetra Tech EBA/EBA Engineering Consultants Ltd.
Manager of the Water and Marine Engineering Group, then Principal Specialist 2004–2014

Adrian Chantler, Ph.D., P.Eng.
Senior Hydrotechnical Engineer

- Senior review of dam breach inundation study for Tabor Lake Weir (Regional District of Fraser-Fort George, 2017)
- Senior review of Kwotlenemo Lake Dam safety review (Xaxli'p Indian Band, 2017)
- Senior review of Calling Lake Dam safety review (Cook's Ferry Indian Band, 2017)
- Senior review of Yellow Lake Dam engineering assessment (MFLNRO, 2016)
- Hydrotechnical component of Sooke Lake Dam safety review (Capital Regional District, 2016)
- Senior review of Goose Lake dam engineering assessment (Regional District of North Okanagan, 2015)
- Senior review of Dickson and Cannell Lake dam safety reviews (Abbotsford Mission Water Commission, 2015)
- Senior Review of Rose Lake dam safety review (Xaťsūll First Nation, 2015)
- Senior review of Swan Lake dam safety review (North Okanagan Regional District, 2015)
- Senior review of Allendale and Clark Meadows dam safety reviews (Blue Mountain Vinyards, 2015)
- Senior review of Arrowsmith Dam inundation study (Arrowsmith Water Service, 2014)
- Senior reviewer for Cumberland Creek dam's inundation study (Village of Cumberland, 2014)
- Member of technical committee on removal of Fortymile Creek Dam (Town of Banff, 2014)
- Senior reviewer for hydrotechnical aspects of Brent and Farleigh Dam Safety Reviews (Aboriginal Affairs and Northern Development, 2014)
- Senior reviewer for hydrotechnical aspects of Nickel Plate Tailings Facility Dam Safety Review (Barrick Gold Inc., 2014)
- Senior reviewer for hydrotechnical aspects of Saddle Lake Dam Safety Review (Regional District of Kootenay Boundary, 2013)
- Senior reviewer for hydrotechnical aspects of HB Tailings Storage Facility Dam Safety Review and remedial design of spillway chute and energy dissipator (RD of Central Kootenay, 2013/14)
- Review of dam breach analyses and inundation maps for Postill, Bulman, South and McKinley Dams, (Glenmore Ellison Improvement District, 2012/13)
- Senior reviewer for hydrotechnical aspects of Lacey Lake No.1 Dam Safety Review (Cherry Creek Water District, 2012)
- Hydrotechnical aspects of dam safety audits for Battle River Dam and Sheerness Cooling Pond Dyke, (ATCO Power, AB, 2012)
- Dam Safety Review project management for Lund and Thulin Lake Dams, (Lund Waterworks Improvement District, 2012)

Hay & Company Consultants Ltd., Principal, later President, of a specialist water resources consulting company that was acquired by EBA 1997–2004

Steffen Robertson and Kirsten, Principal in Hydrotechnical Engineering, 1988–1997

Crippen Consultants, Hydraulic Design Engineer then Head of the Hydrotechnical Department 1975–1988

Crouch and Hogg in Glasgow, Scotland, Assistant Engineer 1973–1975

LALINDA WEERASEKARA, PH.D., P.ENG.
SENIOR GEOTECHNICAL ENGINEER

Summary of Experience

Lalinda Weerasekara is a Senior Geotechnical Engineer with over 18 years' experience in geotechnical engineering in both research and consulting throughout Western Canada. He has extensive experience working on projects in the Yukon Territory for the past 7 years and was the Geotechnical Engineer on Record for several of them.

Lalinda has completed both a Masters and a Doctorate in Civil Engineering, and his experience with evaluating seismic hazards is evidenced by his leading the section on seismic design of foundations for the 2023 Canadian Foundation Engineering Manual. He is familiar with a wide range of modelling software's used for evaluating embankment and slope stability, seismic performance, settlement including D-MOD2000, SHAKE2000, DeepSoil, ProSHAKE, CLiq, SHAKE91, SeismoSignal, SeismoMatch (Seismic), SLIDE, GEOSTUDIO suite (slope stability) and SETTLE3D (settlement). Lalinda is also well versed in dam related geotechnical work including evaluating liquefaction and slope/embankment stability and has completed designs for projects on the Alaska Highway where permafrost was a high concern geohazard.

Areas of Experience / Specializations

- Seismic Ground Response and Liquefaction Assessments
- Seismic Ground Deformation Analyses
- Shallow and Deep Foundations Design
- Slope Stability and Retaining Walls Design
- Ground Improvements Design and Recommendations
- Utility Analysis for Seismic/landslide and other Loadings
- Settlement and Preload Design
- Geotechnical Site Characterization and Advanced Laboratory Testing
- Cut-and-Cover Tunnel

Relevant Experience

- Walter Hardman Dam, Revelstoke, BC, Canada (2019 - ongoing) -Undertake seismic liquefaction triggering and seismic ground deformation analyses as a part of the Dam Safety Review. As a part of this analysis, 2D FLAC model was developed to estimate the static bias coefficient. Client: BC Hydro model.
- Louise Lake Dyke, Whitehorse, YK, Canada (2016) - Development of input ground motions for the seismic assessment, site-specific ground response analyses and liquefaction assessment, 2D FLAC (seismic ground deformation) analysis for the high consequence dam. Client: ATCO.
- Clinton Creek Waste and Tailing dumps, YK, Canada (2016): * Preliminary seismic liquefaction analyses. Client: Government of Yukon.
- Farleigh Lake Dam, Penticton, BC, Canada (2016) - Site-specific seismic liquefaction analyses, developing ground motions for seismic analyses and review of slope stability analyses. Client: Penticton Indian Band.

Contact Information

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Education

Ph.D. Civil Engineering, University of British Columbia - 2011

M.A.Sc., Civil Engineering, University of British Columbia - 2007

B.A.Sc. Civil Engineering, University of Peradeniya, Sri Lanka - 2002

Years of Experience

18+

Years with Firm

<1

Office

Vancouver, BC

Associations

Member Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)

Member of Engineers Yukon

LALINDA WEERASEKARA, PH.D., P.ENG.
SENIOR GEOTECHNICAL ENGINEER

- Bralorne Mine, BC, Canada (2016) -Seismic liquefaction analyses, review of stability analyses, filter design and remediation options to improve the stability. Client: Bralorne Gold Mine Ltd.
- Cantung Mine, Tungsten, NWT, Canada (2012, 2015): * Conducted seismic liquefaction, seismic ground deformation and stability analyses for two of the existing and one proposed tailing storage facilities. Client: North American Tungsten Corporation Ltd.
- Bluefish Dam, Yellowknife, NWT, Canada (2012): * Review of grouting details and QA/QC work. Client: Northwest Territories Power Corporation (NTPC).
- Nisutlin Bay Bridge, Teslin, YK, Canada (2020 - ongoing): Geotechnical Engineer of Record. The project includes design and construction of replacing the existing 600 m long bridge over Teslin Lake. Lalinda is responsible for the seismic liquefaction and ground deformation assessments, pile design, slope stability, permafrost evaluations and providing reviews during construction. Client: Yukon Government.
- Nordenskiold River Bridge, Carmacks, Yukon, Canada (2019-2022). Geotechnical Engineer for the new bridge over the Nordenskiold River, which is part of the new Carmacks bypass road. The bridge was designed as a lifeline bridge. Responsible for the geotechnical analyses which included soil liquefaction, slope stability, frost jacking forces, axial and lateral pile capacity. A thorough review of the CAPWAP analysis was required for the 40 m long piles at the abutments due to complexities matching signals. Client: Yukon Government.
- Nares River Bridge, Carcross, YK, Canada (2016-2018): Geotechnical Engineer of Record. The existing bridge was located along Klondike highway near Carcross. The replacement bridge is a three-span structure of about 145 m long. Responsible for the developed earthquake ground motions, conduct seismic liquefaction, and ground deformation analyses. Performed lateral and axial pile capacity calculations, including the generation of p-y curves for structural analysis. Estimated settlements and conducted slope stability assessments for the approach fills. Client: Yukon Government.
- Crooked Creek Bridge Replacement and Highway Realignment, Stewart Crossing, YK, Canada (2018 –ongoing): Geotechnical Engineer of Record. The existing bridge located along Klondike highway south of Stewart Crossing. The bridge was selected replacement to improve the geometric design and increase speed to 100 km/h. Responsible for the settlement estimations, slope stability, seismic analyses, pile design and preparing specifications. The design challenges included soil liquefaction, permafrost, frost heaving, settlement, large cut volumes and high fill embankments. Client: Yukon Government.
- MacDonald Creek Bridge, Racing River Bridge and Tetsa River Bridge No 1, , Alaska Highway, BC (2021-ongoing). Review engineer for the conceptual design of the replacement bridges at these locations. The study included

evaluating the potential soil conditions/geology, seismic concerns, permafrost potential, stability of approach embankments and constructability concerns. Client: Client: Public Service Procurement Canada

- Bougie Creek slope stability, Alaska Highway, BC, Canada (2020): Review Engineer for the preliminary geotechnical assessment completed for the slope instability observed near Bougie Creek along the Alaska Highway. The area is potentially impacted by multiple geohazards, including permafrost, compressible soft soils, river erosion and prehistoric landslide debris. Preliminary recommendations for mitigating the slope instability were provided, which included construction of a piled wall or road realignment. Client: Public Services and Procurement Canada (PSPC).

Journal Publications

- Weerasekara, L. (2023). “Impact from bridge superstructure on pile foundations in lateral spreading areas”, International Journal of Bridge Engineering.
- Weerasekara, L, Hall, B.E., and Wijewickreme, D. (2017), “A new method for designing and analyzing rein-forced soil structures”, Geosynthetics International.
- Wijewickreme, D and Weerasekara, L. (2015) “Analytical Modelling of Field Axial Pullout Tests Performed on Buried Extensible Pipes”, Journal of Geomechanics, ASCE.
- Weerasekara, L. and Wijewickreme, D (2010) “An Analytical Method to Predict the Pullout Response of Geo-textiles”. Geosynthetics International. 17(4): 193-206
- Weerasekara, L. and Wijewickreme, D. (2008) “Mobilization of Soil Loads on Polyethylene Natural Gas Pipe-lines Subject to Relative Axial Ground Displacements”, Canadian Geotechnical Journal, 45(9):1237-1249

Conference Publications

- Weerasekara, L., Wang, T, Jiang, J., Zhang, Q. and Hamersley, B. (2023). “Seismic Performance Evaluation of Previously Retrofitted Oak Street Bridge”, Canadian Conference-Pacific Conference on Earthquake Engineering 2023, Vancouver, BC, from June 25-30, 2023.
- Weerasekara, L., Miller, C., Honegger, D. and Wijewickreme, D. (2023). “Semi-empirical framework to predict watermain failure rates from permanent ground displacement for a regional scale seismic vulnerability study”, Canadian Conference-Pacific Conference on Earthquake Engineering 2023, Vancouver, BC, from June 25-30, 2023.
- Weerasekara, L., Rahman, M. and Wijewickreme, D. (2023). “Performance of buried natural gas distribution pipes in a landslide area: Observations from nine years of pipe strain monitoring”, Canadian Geotechnical Conference, Saskatoon, Saskatchewan.

LALINDA WEERASEKARA, PH.D., P.ENG.
SENIOR GEOTECHNICAL ENGINEER

- Weerasekara, L. (2023). “Limitations in existing methods for analyzing MSE walls reinforced with steel strips, Geotechnical Symposium, Vancouver Geotechnical Society, Vancouver, BC.
- Weerasekara, L. (2022). “A simplified approach to model deck resistance and back rotation of abutments due to lateral spreading”, GeoCongress, ASCE, Charlotte, NC.
- Weerasekara, L. (2021). “Limitations in using full scale instrumented wall results to develop and validate de-sign methods for MSE wall”, Canadian Geotechnical Conference, Niagara, Ontario.
- Sinha, T., Dhar, A.S., Weerasekara, L., and Rahman, M. (2021). “Effects of lateral ground movements on MDPE gas distribution pipes and branches”, Canadian Geotechnical Conference, Niagara, Ontario.
- Weerasekara, L. and Rahman, M. (2019). “Framework for assessing integrity of natural gas distribution pipes in landslide areas”, Canadian Geotechnical Conference, St. Johns, Newfoundland.
- Reza, A, Dhar, A.S., Rahman, M. and Weerasekara, L (2019). “Pulling rate effects on the pullout force of buried small diameter MDPE pipe in loose sand”, Canadian Geotechnical Conference, St. Johns, Newfound-land.
- Zhang, Q, Weerasekara, L., Jianping, J. and Shahria, A.M. (2019) “Seismic performance of integral abutment bridges in liquefiable soils”, 12th Canadian Conference on Earthquake Engineering – CCEE 2019, June 2019, Quebec
- Weerasekara, L, (2018), “Improvements to Pullout Failure Estimation in MSE Walls”, Canadian Geotechnical Conference, Edmonton, AB.
- Weerasekara, L, (2018), “Steel Strip Reinforced Soil Walls at Working Stress Conditions”, Canadian Geotechnical Conference, Edmonton, AB.
- Weerasekara, L, Hall, B.E., and Wijewickreme, D. (2016), “Ultimate Load Carrying Capacity of Steel Strip Reinforced Earth Structures”, Canadian Geotechnical Conference, Vancouver, BC.
- El-Dean, G.D., Weerasekara, L., Azizian, A., Mills, R. and Oljace, G. (2016), “Equivalent-Linear and Nonlinear Effective Stress Analyses for Watermain Seismic Design”, Canadian Geotechnical Conference, Vancouver, BC.
- Hall, B.E., Weerasekara, L, and Dabeet, A. (2016), “Case History of Ground Heave and Lateral Movement Resulting from Pile Driving”, Canadian Geotechnical Conference, Vancouver, BC.
- Weerasekara, L., Hall, B.E., and Wijewickreme, D. (2015), “A New Approach to Assess Soil-Geosynthetic In-teraction in Reinforced Slopes and Walls”, 23rd Symposium of the Vancouver Geotechnical Society on Soil-Structure Interaction, Vancouver, BC.

LALINDA WEERASEKARA, PH.D., P.ENG.
SENIOR GEOTECHNICAL ENGINEER

- Azizian, A, Weerasekara, L., Hall, B.E., Naesgaard, E., Amini, A., Khan, S., Knaus, M., and Preece, M. (2015), “Seismic Soil-Structure Interaction Analyses for an Elevated Guideway Structure of the Evergreen Line”, 23rd Symposium of the Vancouver Geotechnical Society on Soil-Structure Interaction, Vancouver, BC.
- Rahman, M. and Weerasekara, L. (2014) “Field Monitoring and Modelling of Natural Gas Pipelines Subject to Ground Movement”, Geohazards6, Kinston, Ontario., June 15-18, 2014.
- Dinovitzer, A., Fredj, A., Rahman, M., Weerasekara, L. and Wijewickreme, D. (2014). “Performance Monitoring of Small Diameter MDPE Natural Gas Pipelines Subject to Ground Movement”, Proc. of 14th International Pipeline Conf., ASCE, Calgary, AB. September 29-October 3, 2014.
- Wijewickreme, D and Weerasekara, L. (2011) “Analytical Modelling of Pipe Subject to Axial Ground Displacement”, Proceedings of the 12th IACMAG Conference, May 9 - 11, 2011, Melbourne, Australia.
- Weerasekara, L. and Wijewickreme, D (2010) “Response of Buried Plastic Pipelines Subject to Lateral Ground Movement”, Proc. of 8th International Pipeline Conf., ASCE, Calgary, AB.
- Weerasekara, L. and Wijewickreme, D. (2010) “Full-scale Model Testing of Buried Extensible Pipes Subject to Relative Axial Soil Loading”, 7th International Conference on Physical Modelling in Geotechnics (ICPMG), June 28 - July 01, 2010, Zurich, Switzerland.
- Wijewickreme, D. and Weerasekara, L., (2009) “Pipeline Geotechnical Engineering, Encyclopedia of Lifeline Support Systems, www.eolss.net (online).
- Wijewickreme, D, Weerasekara, L and Johnson, G. (2008) “Soil Load Mobilization in Axially Loaded Buried Polyethylene Pipes”, Proceedings of the 12th IACMAG Conference, 1-6th Oct, Goa, India.
- Weerasekara, L., Wijewickreme, D. and Mitchell, A. (2006) “Response of Tee-Junctions in Buried Polyeth-ylene Natural Gas Distribution Piping Subject to Ground Movement”. In Proceedings of the 59th Canadian Geotechnical Conference, 1-4 October 2006, Vancouver, B.C.

CONSULTANT PROFILE

Adam Patterson, R.P.Bio

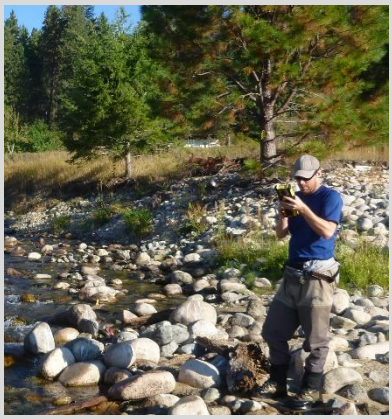
Environmental Impact Assessment Team Lead – Senior Biologist

Summary of Experience

Adam Patterson is a Registered Professional Biologist who has been conducting wildlife and fisheries fieldwork since 2000 and working in environmental consulting since 2005. His interests are focused on terrestrial and aquatic environments as they relate to fish and wildlife ecology, impact assessment, land development, and conservation. His experience includes various terrestrial wildlife and vegetation surveys and habitat assessments, species at risk assessments, ecosystem mapping and classification, and environmental permitting for a wide variety of small to large land development projects throughout BC. Adam manages many multi-disciplinary projects at Ecora, generally including environmental services such as biophysical inventory, impact assessment, and mitigation planning. Adam works closely with First Nations partners on many projects, including training and coordination of field crews, collaboration and sharing of Traditional and Cultural information, and attendance at engagement meetings and workshops.

Relevant Experience

- **BC Hydro Bridge River Transmission Project (BRTP) Environmental Services** – Adam has been the Principal Biologist and project manager of the environmental scope of services for the BC Hydro BRTP since early 2021. The project includes development of a Valued Components (VC) Table and workplan to conduct surveys for identified environmental values such as wildlife and species at risk, important habitat features and ecosystems, stream crossings and fish presence. Adam is part of the Szumin'ts project team, which is an Indigenous business and partnership between Ecora and St'at'imc First Nation communities. Adam's role includes coordination and planning with the archaeology and heritage team, as well as the overseeing the environmental services.
- **Fortis Interior Gas Upgrade (IGU)** – Adam is the project manager and technical lead providing environmental services and regulatory support for various projects related to the Fortis IGU program. To date these include drilling investigations, restoration programs, and contributing to project planning and mitigation strategies to avoid or reduce risks to aquatic and other sensitive habitats.
- **Westbank First Nation (WFN) Foreshore Inventory Update and Analysis** – Adam was the project manager and technical lead for the WFN foreshore mapping and update project. The project was initiated in 2022 and included a workplan to review existing Okanagan Lake FIM and WFN shoreline information, collect current and additional foreshore, shoreline, and riparian biophysical data, and provide spatial data results, including statistical analyses Spatial data tools were developed to facilitate use and interpretation of the data during WFN review of development applications, referrals, and other shoreline and foreshore planning efforts.
- **Tsal'alh Indigenous Guardians Program** – Adam is the lead biologist and project manager in support of the Tsal'alh Indigenous Guardians program, in the Lillooet region of BC. Adam led the program proposal and helped secure federal funding to support the Tsal'alh mule deer population study initiative,



Contact Information

adam.patterson@ecora.ca

Education

Bachelor of Science in Wildlife and Fisheries (2005); University of Northern British Columbia

Applied Science Diploma in Recreation Fish, and Wildlife Technology (1998); Selkirk College

Associations

College of Applied Biology:

Registered Professional Biologist

Training and Certificates

- Project Management (PSMJ)
- Occupational First Aid Level 1
- Electrofishing Crew Lead
- Riparian Areas Protection Regulation Assessment Course
- Power Systems Safety Program (PSSP)
- BC Hydro Heritage Awareness & Helicopter Safety Awareness
- Small Vessel Operator Proficiency (SVOP) & Marine Emergency Duty (MEDA3)
- Amphibian and Reptile Salvage Methods
- Ungulate Field Survey Methods
- Experimental Design in Ecology

Adam Patterson, R.P.Bio

Environmental Impact Assessment Team Lead – Senior Biologist

which includes development of a workplan and methodology to inventory and assess deer populations within the Tsal'alh Traditional Territory using Traditional Knowledge and Elder interviews. This project is being delivered through the Szumin'ts Indigenous Business and includes capacity building for the Tsal'alh Guardians, including GIS licensing and training, developing fieldwork data collection methods, and other technical support.

- **Conuma Willow Creek Expansion (WCE) Baseline Wildlife Inventory** – Adam is the project manager and technical wildlife lead for the WCE project in northern BC. The project includes determination of Valued Components in collaboration with First Nations, development of Wildlife Habitat Ratings (WHR) tables and wildlife inventory, as well as the coordination and completion of fieldwork. Adam will also lead the reporting, mapping, and data analysis for the project, expected to continue through 2023.
- **BC Hydro Site C Fish Stranding Monitoring Program (Mon-12)** – Adam was the project manager and technical lead for the BC Hydro Fish Stranding Monitoring Program (MON-12) along the Peace River near Fort St. John. The project was conducted over a four-year period, which included complex field and safety planning and coordination, conducting fish stranding monitoring surveys, data management and analysis, summary reporting, and mapping. The program is intended to determine the change in magnitude of fish stranding associated with the dam construction and focussed on baseline data collection.
- **Conuma Hermann Mine Site Reptile and Amphibian Salvage** – Adam was the project manager, senior biologist, and field coordinator for the amphibian and reptile salvage works for the Hermann Mine Test Sample project in northern BC. The project included a review of site conditions and footprint to determine risks to wildlife. Ecora developed a salvage plan and acquired Wildlife Act permits for the collection, handling, and translocation of identified species of concern, including frogs, toads, and snakes. Initial fieldwork and inventory was completed in fall of 2020 with additional monitoring efforts to be completed in spring 2021.
- **City of Kelowna Frazer Lake Environmental Assessment –** Adam is the project manager and technical lead for the environmental impact assessment and mitigation planning for proposed dam remediation works at Frazer Lake in Kelowna. Adam planned and completed biodiversity inventory surveys, including plant and ecosystem inventory, songbird point counts, owl call-playback and amphibian aural surveys, bat detection, and shoreline surveys. The inventory results were used to develop mitigation strategies which became part of an Environmental Management Plan for the project, which required review of potential dam safety improvement scenarios. Adam also oversaw the environmental permitting associated with the proposed works.

Workshops and Conferences

- College of Applied Biologists Conference (2023)
- Wetlands Institute – Wetland Restoration Techniques (2020)
- Qualified Environmental Professional Workshop - Species and Ecosystems at Risk (2020)
- Designing Avoidance and Mitigation for Migratory Birds and Species at Risk Critical Habitat Workshop (2019)
- Critical Habitat Screening Workshop (2019)
- Foreshore Plant Species At Risk Workshop (2018)
- Professional Practice Guidelines: Legislated Riparian Area Assessments in BC (2017)
- Riparian Areas Regulation Workshop, West Kelowna (2015)
- Wetlands, not wastelands Panel Discussion and Wetland Tour, Kelowna (2015)
- Wetland Keepers Workshop, Kelowna (2015)
- Wetland Working Group Workshop, Grand Forks (2014)
- Map Our Marshes Workshop, Peachland (2013)
- WildResearch Nighthawk surveys, Penticton and Kelowna (2012-2014)

Years of Experience

>20

Years with Firm

7

Office

Kelowna, BC

CONSULTANT PROFILE

Duncan Hendricks, R.P.Bio, CPM

Director of Environment – Senior Biologist

Summary of Experience

Duncan Hendricks is a Senior Biologist with 30 years of experience in environmental consulting throughout western and northern Canada. Duncan specializes in managing and directing multi-disciplinary projects. Duncan's technical background is in the assessment of aquatic habitat and aquatic restoration. He has extensive experience in assessing stream and river habitat throughout BC and the western United States.

In his previous role, Duncan supported BC Hydro's transmission and distribution projects throughout the province. In this role, he managed a dedicated team of environmental coordinators and specialists to deliver environmental, archaeological, and geotechnical deliverables.

Mr. Hendricks has experience in identifying and quantifying environmental impacts and outlining mitigation and compensation strategies associated with municipal infrastructure, transportation, mining, and hydroelectric developments. His experience includes management, coordination, and preparation of environmental assessments.

Relevant Experience

- **BC Hydro, Environmental Support for Transmission and Distribution Projects** – Program Manager for all environmental, geotechnical, and archaeological work as a subcontractor on Wood Canada's Engineering Services contract with BC Hydo. The projects included environmental and ground engineering work connected to upgrades and construction of new substations as well as transmission and distribution lines. The environmental support included archaeology, contaminants, aquatic, wildlife, and vegetation biology, and hazardous materials.
- **BC Hydro Victoria to Esquimalt Cable Replacement** – Overall supervision of environmental scope for 230 kV oil-filled cable replacement between Victoria and Esquimalt. The project included work within the urban area of Victoria, where the cable runs in ductbanks, as well as work within the marine environment of the Gorge area. Risk analyses were completed for shallow burial and directional drilling through the Gorge area. The work included environmental overview assessment, eelgrass survey, environmental management plan, and support for permitting and approvals.
- **BC Hydro 2L13/14 Upgrades** – Overall supervision of environmental scope for pole replacement on 230 kV transmission line in Capilano River watershed in North Vancouver. The project involved construction of new roads and work pads within a highly sensitive area, as well as helicopter access work. Work included environmental overview assessment, Marbled Murrelet surveys, management of archaeological and geotechnical services, environmental management plans, environmental monitoring and auditing, and *Water Sustainability Act* Section 11 permitting.
- **BC Hydro Kamloops Substation** – Overall supervision of environmental scope for construction of the new Kamloops Substation and associated line upgrades. Work included environmental overview assessment, management of

Contact Information

duncan.hendricks@ecora.ca

Education

Bachelor of Science in Biology and Physical Geography (1992); Carleton University

Certificate in Fish and Wildlife (1993); Lethbridge College

Associations

College of Applied Biology:

Registered Professional Biologist

Training and Certificates

- Certified Project Manager (PMLG)
- Occupational First Aid Level 1
- Certified Electrofishing Crew Lead, BC and USFW
- Riparian Areas Protection Regulation Assessment Course
- BC Hydro Power Systems Safety Program (PSSP)
- BC Hydro Heritage Awareness & Helicopter Safety Awareness

Workshops and Conferences

- College of Applied Biologists Conference (2024)
- Canadian Wildlife Service Migratory Bird Regulation Training (2023)
- River Restoration Northwest (2017)

Years of Experience

>30

Years with Firm

1

Office

Kamloops, BC

Duncan Hendricks, R.P.Bio, CPM
Director of Environment – Senior Biologist

archaeological and geotechnical services, environmental management plans, a detailed Lewis's Woodpecker management plan, and environmental auditing.

- **FortisBC Interior Transmission System Transmission Integrity Project** – Overall supervision of the environmental scope for FortisBC's ITS Transmission Integrity Management Capability (TIMC) Project. FortisBC identified the need for alterations to three sections of pipeline and 12 facilities. The project involved a review of biophysical and land use resources, an assessment of the potential effects on biophysical and/or land use resources, prescription of mitigation measures that could be used for required environmental protection, and development of a Class 3 cost estimate for environmental and archaeological costs associated with the implementation of the project.
- **TransMountain, TMEP Highway 1 Re-alignment Project** – Overall supervision of the environmental scope for Trans Mountain re-alignment of the eastbound lanes of Trans-Canada Highway No. 1 at two locations between Hope and Chilliwack, BC. The project included the following tasks conducting full-time environmental auditing to ensure compliance with the project construction environmental management plan (CEMP) and conformance with the environmental plans, instructions, and regulations, conducting regular communication, development of an approach for dealing with contact water from trenches within areas with potential for ML/ARD, and response to environmental incidents including spills to ensure compliance with the CEMP and regulations.
- **BC Hydro and Power Authority, Kitimat LNG Transmission Line Environmental Assessment** – Project manager, senior biologist, and reviewer for the environmental assessment for the construction of the transmission line between Terrace and Kitimat BC to support LNG Canada's facility in Kitimat. This scope involved an assessment of aquatic, wildlife, vegetation, and socio-economic resources, as well as a separate archaeological overview assessment. The project involved virtual open house meetings with First Nations to address concerns with the project.
- **Exxon, West Coast Canada LNG Environmental Assessment, Prince Rupert, BC** – Senior advisor for the Environmental Assessment through BCEAA and CEAA for Exxon's proposed LNG export facility. Proposed facility would include production, storage, and loading of LNG as well as transportation by vessel through BC waters to offshore markets. Role included management and support of staff and resources as well as interaction with client to ensure efficient project delivery.
- **City of Kelowna, Road Upgrade and Bridge Replacement Environmental Assessment, Mission Creek, Kelowna, BC** – Senior biologist for a detailed environmental impact assessment for the City of Kelowna road improvement project at Swamp, Casorso, and Benvoulin Roads. The road improvement project included replacing the existing bridge over Mission Creek, and road upgrades adjacent to several other streams, wetlands, and ditches. Conducted detailed fish and wildlife inventories of the areas to be impacted by the project. Prepared a habitat compensation with the City of Kelowna and the Ministry of Environment.

Matthew Roche, P.Eng.
Structural Engineer

Summary of Experience

Matthew Roche is a structural engineer with the Ecora Team. Based in Kelowna, he is part of the Structural Team and supports the group with project management, the design of commercial and multi-story buildings, and dam engineering services. Mr. Roche supports clients in both the public and private sectors.

Matthew has worked on various high-profile projects worldwide, including as the Lead Design and Project Engineer on the Microsoft European Headquarters in Dublin, Ireland, and the SIT Gymnasium in Southland, New Zealand. He has also worked on multi-million-dollar housing projects and large data storage facilities throughout Europe. Mr. Roche has assisted Ecora with the structural analyses of multiple dam projects including Chain Lake Dam, Kitley Creek Dam, and Frazer Lake Dam.

His expertise includes FEA modelling, lightweight serviceability analysis of buildings and bridges, structural assessment of buildings, design of small and large-scale commercial, residential, and industrial buildings, and engineering analyses related to dam infrastructure.

He has experience with design of various materials including reinforced concrete, structural steel both mild and stainless, timber, masonry both unreinforced and reinforced, and composite materials, such as composite steel and concrete.

Matthew has also lectured in Advanced Engineering Design for the Master of Engineering program at the Dublin Institute of Technology.

Areas of Experience

- Large scale and small scale Commercial and Industrial buildings.
- Tilt up concrete building design.
- Steel, Concrete and Timber building design to Canadian and European design code standards.
- Seismic design and analysis of buildings in Canada and New Zealand.
- Structural design and analysis of concrete gravity dams to CDA guidelines.
- Timber framed residential design.
- Human induced vibrational analysis of lightweight structures.
- Insurance and building condition assessment.

Awards

- 32nd Sean DeCourcy Award, from the Irish Concrete institute
- 2019 ACEI Winner Category Structures Large (Team) - One Microsoft Place

Contact Information

matt.roche@ecora.ca

Education

BE (Hons) Structural Engineering, Dublin Institute of Technology – 2013

MSc., Structural Engineering & Mechanics, University of Edinburgh – 2014

Associations

- Engineers and Geoscientists British Columbia
- Institute of Structural Engineers (Graduate Member)
- Structural Engineers Association of British Columbia

Specializations

- FEA modelling and analysis
- Vibration serviceability analysis
- Dynamic earthquake analysis and design.
- Large and small scale Industrial, Commercial and Infrastructure Building design.

Years of Experience

9

Years with Firm

2-3

Office

Kelowna, BC

Matthew Roche, P.Eng.
Structural Engineer

Relevant Experience

Infrastructure Sector

- **Chain Lake Dam Upgrades, Princeton, BC (2021 – Ongoing) –** Project involved the design of a new spillway for Chain Lake Dam. Structural EOR for the concrete sections of the spillway, including pedestrian bridge. Development of structural Autodesk Civil3D drawings.
- **Kitley Creek (Upper Prather) Dam Rehabilitation, Okanagan Falls, BC (2021 – Ongoing) –** Project was the design of a new dam, including concrete gravity sections, for St. Andrews by the Lake golf course. Structural EOR for concrete gravity sections of dam. Design and analysis of reinforced concrete sections, including the placement of reinforcing rebar. Development of structural Autodesk Civil3D drawings.
- **Frazer Lake Dam Upgrades, Kelowna, BC (2019 – 2022) –** Ecora was retained by the City of Kelowna to design dam upgrades for Frazer Lake Dam. Site inspection services during construction and post-construction. Development of structural Autodesk Civil3D drawings.
- **Rose Lake Dam Remediation, Williams Lake, BC (2020 – 2022) –** Project to upgrade Rose Lake Dam to protect downstream infrastructure. Independent reviewer of structural design and drawings.
- **Powell River Wastewater Treatment Facility, Powell River, BC (2019 – 2023) –** This $70 million project included the construction of three new buildings, including an administration building, large process mechanical building and the 6 exterior tanks in a Bioreactor building. Matthew was the lead design engineer for the process mechanical building which stored and treated the wastewater prior to transporting it for further treatment in the bio-reactor. The building was 2 storeys which were comprised of reinforced concrete walls, internal masonry walls, a concrete two-way spanning slab, and a steel deck roof.
- **Hells Gate Arch Wall Dam, Boston Bar, BC (2023) –** Performed full 3D finite element analyses for double curvature dam, including deflection calculations (see Image). Client was the Ministry of Transportation and Infrastructure.

Commercial and Industrial Sector

- **YVR Site Works, Underground Structures, Vancouver, BC –** Structural Engineer for the underground structures at Vancouver International Airport. Structural design of 7 m deep filter reinforced concrete filter chamber. Matthew designed many above and underground structures including external steel staircases, elevated generator pads and access ramps.

Insurance Sector

- **Muncho Lake Park Bridge Condition Assessment, Muncho Lake, BC –** Conducted a detailed structural assessment for a road bridge for the Ministry of Environment, Parks and Protected Area Division in Liard Area British Columbia. The bridge is a 71 m long, 1960's Bailey bridge. Recommended three different repair approaches with a corresponding service life and monitory cost for each.

Patrick Machibroda, P.Eng.
Geotechnical Engineer

Summary of Experience

Patrick Machibroda is a geotechnical Engineer-in-Training (EIT) with over 7 years of experience in engineering practice across various Canadian provinces/territories including British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Nunavut, Yukon.

He has specialized knowledge of construction materials testing, high-end geotechnical testing (oedometer, direct shear, permeameter, tempe pressure cell, and triaxial) construction stage site reviews/inspections, 2D limit equilibrium and finite element modelling (slope stability, deformations/settlements, and seepage), deep foundation design, mechanically stabilized earth wall design, reinforced soil slope design, sub-surface investigations and in-situ testing.

Areas of Expertise / Specializations

- Construction Materials Testing
- Dam Embankment Stability Analysis
- High-end Geotechnical Laboratory Testing
- Slope Stability Analysis
- 2D Limit Equilibrium and Finite Element Modelling
- Sub-surface Investigation
- In-situ Testing
- Construction Site Reviews

Relevant Experience

- **Chain Lake Dam Upgrades, Princton, BC (2024) –** Stability analysis of embankment dam sections during various loading conditions. Wrote geotechnical portions of Plan Submission Report
- **Quintette (Shikano) Coal Mine Tailings Storage Facility, Tumbler Ridge, BC (2024 – Ongoing) –** Duties included developing preliminary 3D tailings deposition and breach analysis model using RIFT TD software.
- **Highway 1 Salmon Arm West (2024 – Ongoing) –** Performing consolidation and direct shear testing followed by interpretation of results for reporting and use.
- **BC Hydro Feeder Extension (2024 – Ongoing) –** Providing technical input on geotechnical investigations and analyses to a team of geotechnical engineers.
- **Metro Vancouver Coquitlam Water Main No. 4, Coquitlam, BC (2023) –** Role of geotechnical field engineer for a water main project. Conducted supplementary site investigations and assisted in coordination and reporting.

Contact Information
patrick.machibroda@ecora.ca

Office
Kelowna, BC

Education
University of Manitoba – M.Sc. in Civil Engineering – 2023

University of North Dakota – B.Sc. in Civil Engineering *cum laude* – 2021

College of Southern Idaho – A.A. in Liberal Arts *cum laude* – 2015

Associations / Memberships
Engineers and Geoscientists British Columbia (EGBC)

Years of Experience
+7

Years with Firm
< 1

Patrick Machibroda, P.Eng.
Geotechnical Engineer

- **Hodgson Slide, Williams Lake, BC (2023) –** Role of geotechnical modelling lead. Developed finite element slope stability, deformations, and settlements model post-landslide. Conducted sensitivity analysis of potential remediation efforts, communicated through PowerPoint presentation and technical memorandums. Performed direct client communication.
- **Canola Crush Facility, Regina, SK (2022 – 2023) –** Geotechnical Field Intern. Conducted preliminary site investigation, construction review of continuous flight auger piles, piezometric cone (CPTu) soundings, and analysis of instrumented static axial load test results.
- **Northern Hamlet of Patuanak Water Treatment Plant Upgrade, Patuanak, SK (2019 – 2020) –** Concrete Testing/Materials Technician. Conducted concrete testing, mechanical analysis, index testing of soils, and compaction testing by nuclear densometer.
- **Riverlanding East/North Tower, Saskatoon, SK (2016 – 2020) –** Concrete Testing/Materials Technician. Conducted concrete testing, mechanical analysis, and index testing of soils, and compaction testing by nuclear densometer.
- **Venus Tailings Facility Gap Analysis, Tagish, YK, (2023) –** Geotechnical Modelling Lead. Development finite element slope stability analysis model. Conducted sensitivity analysis of potential remediation efforts, communicated through PowerPoint presentation and technical report. Client: Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)
- **Long-term Care Centre, Rankin Inlet, NU, (2022) –** Geotechnical Engineering Intern. Conducted materials testing, gabion wall inspection, reporting, and compaction by nuclear densometer. Client: Nunavut Department of Health.

Publications

- “Estimating Pile Shaft Capacities Using Direct Methods for Continuous Flight Auger Piles in Silts and Sands”, Unive (Machibroda, 2023)

Prajakta Jadhav, Ph.D. E.I.T,
Junior Geotechnical Engineer

Summary of Experience

Prajakta is a Geotechnical Consultant based in Ecora's Vancouver, BC office. Her background is in civil engineering with a specialization in geotechnical engineering with experience in static and seismic design of geotechnical structures and numerical modelling of soil-structure interactions.

She is proficient in a number of modelling and simulation software packages including: OpenQuake, OpenSees, ABAQUS, GEO-STUDIO, GEO-5 and MSEW.

Relevant Experience

- **Stabilization of silty ravines along Sabarmati River using Geosynthetics**: Performed comparative study of coir geotextiles with grouted rip-rap to inhibit surface erosion of silty ravines, design of gabion walls to impart global stability to the silty ravines.
- **Deformation-based seismic design of cantilever retaining walls:** Developed analytical double wedge model for predicting seismic sliding displacements of cantilever retaining walls simulating mechanism in backfill, design input for location of shear-key to improve the performance of retaining walls under seismic loading
- **Prediction of earthquake-induced lateral spread displacement using PSHA framework:** Performed PSHA in OpenQuake to estimate regional lateral-spread displacement curves for Canada, contributed GMPE source codes (Youd et a. 2002, Zhang & Zhao 2005) to OpenQuake GSIM library
- **Response of buried pipelines subjected to ground movements**: Estimated strain capacities of intact and corroded buried pipelines under ground movement, numerical modelling of pipeline subjected to longitudinal and transverse ground movements, studied the effect of varied ground displacement patterns on buried pipelines.

Publications & Conference Presentations

Jadhav, P.R, and Wijewickreme, D. (2022). "Regional liquefaction-induced ground displacement predictions for Canada Using 5th Generation NBCC seismic hazard model", *Canadian Geotechnical Journal, 59(*8), 1487-1502.

Jadhav, P.R. and Prashant, A. (2022). "Scaling factors quantifying seismic load uncertainty with soil nonlinearity effect in displacement-based design of bridge abutments." *Journal of Bridge Engineering, 27(*11), 04022110.

Jadhav, P.R. and Prashant, A. (2022). "Charts for permanent displacement-based seismic design of cantilever retaining walls", *Journal of Earthquake Engineering.* 2134943

Jadhav, P.R. and Prashant, A. (2020). "Computation of seismic translational and rotational displacements of cantilever retaining wall with shear key" *Soil Dynamics and Earthquake Engineering, 130,* 105966.

Office
Vancouver, BC

Education
Postdoctoral Research Fellow, University of British Columbia, Vancouver, BC

Ph.D. (Civil) Geotechnical, Indian Institute of Technology Gandhinagar, India

B.Tech (Civil Engineering), Veermata Jijabai Technological Institute, India

Associations / Memberships
Earthquake Engineering Research Institute
Canadian Geotechnical Society
Vancouver Geotechnical Society

Years of Experience
5+

Years with Firm
<1

CONSULTANT PROFILE

Melony Catana, AScT
Environmental Technologist

Summary of Experience

Melony Catana is a registered Applied Science Technologist that has been consulting in BC since 2005. She specializes in environmental management and permitting for infrastructure and land development projects. She is experienced with conducting terrestrial and aquatic wildlife and vegetation surveys, habitat assessments, impact assessments, project design, regulatory liaison, permitting and compliance monitoring. She has developed and implemented project-specific management plans for mitigating impacts to Species at Risk (SAR), including wildlife exclusion and salvages. She has extensive experience working as part multidisciplinary project teams for the remediation of dams, culverts, and bridges, including fish and wildlife salvages and monitoring watercourse diversions. Her design experience includes fish and wildlife habitat restoration and compensation. She has worked extensively in permit acquisitions and compliance under the Riparian Areas Protection Regulation (RAPR), the *Water Sustainability Act;* the *Fisheries Act* and municipal bylaws (development permits).

Relevant Experience

Fortis BC Interior Gas Upgrade (IGU) – As & When Services | 2023 to Present

- Provision of expert technical support and environmental auditing services for various gas line upgrade projects, including drilling investigations, restoration programs, and pipeline stream crossings. Work includes contributing to project planning and mitigation strategies to avoid or reduce risks to aquatic and sensitive habitats, regulatory liaison, and permit strategy development, and conducting fish habitat assessments.

City of Merritt – Flood Hazard Mitigation Options Analysis | 2023 to Present

- Conduced a biophysical site assessment; and is presently undertaking an options analysis, as part of a multi-disciplinary team of professionals, with inputs from other consultants, engineers, and community stakeholders, to examine options for dike and walkway reinstatements in consideration of environmental impacts, BMP, landowner agreements, public interest and permitting requirements.

BC Hydro – La Joie Dam Environmental Assessment | 2023 to Present

- Coordination of field work for an environmental assessment and environmental monitoring for geotechnical investigations on dam infrastructure, including overseeing and coordinating the field work program and safety training for Ecora and Tsal'alh First Nation personnel. Tsal'alh Development Corporation and Ecora are performing this work under their partnership at Szumin'ts.

Contact Information

melony.catana@ecora.ca

Education

Integrated Resource Management Technology, Sault College of Applied Arts and Technology, Sault Ste. Marie, ON

Ecosystem Management Technician, Sir Sanford Fleming College of Environmental and Natural Resource Sciences, Lindsay, ON

Associations

Applied Science Technologists & Technicians of BC (ASTTBC)

Specializations

- Environmental Assessment, Monitoring, Permitting & Liaison
- Fish & Wildlife Salvage
- Habitat Mitigation & Compensation Design
- Natural Resource Interpretation
- Project Management & Coordination

Years of Experience

18

Years with Firm

5

Office

Kelowna, BC

Melony Catana, AScT
Environmental Technologist

City of Vernon – 43rd Street Bridge Replacement & Flood Hazard Mitigation | 2023 to Present

- Conducted an environmental impact assessment, including a fish habitat assessment according to Fish Habitat Assessment Procedures (FHAP); prepared an environmental management plan, including habitat balance, restoration plans, compensation, cost estimates, tender documents and a long term effectiveness monitoring plan; and liaised with DFO and the Province for permit submissions.

City of Kelowna – Frazer Lake Dam Remediation | 2018 to Present

- Conducted field inventory surveys for wildlife species and vegetation; Assessed potential impacts to habitats and wildlife, including known and potential Species at Risk, based on three different dam remediation/water level scenarios; Worked within a multi-disciplinary project team, including engineers, technicians, specialist biologists and City staff, to develop engineering and mitigation designs that A) conformed with provincial and federal regulatory requirements and best management practices and B) met dam management objectives, while maintaining minimum habitat requirement for the Species at Risk present; Prepared an Environmental Management Plan including a habitat restoration/compensation plan. Provided support for provincial Dam Safety Regulation permitting and completed permitting under the *Wildlife Act* for wildlife salvages. Monitored construction, conducted wildlife salvage, completed salvage data reporting.

Chandos Construction – Grand Forks Flood Hazard Mitigation | 2022

- Performed environmental management, monitoring and reporting for integrated flood hazard mitigation works in the City of Grand Forks, which involved the construction of dikes, sheet piling, and horizontal directional drilling (HDD). Prepared Construction Environmental Management Plans (CEMP) based on existing permits (Section 11s and DFO authorizations) and EMP's prepared by the auditing consultant firm. This included producing management plans for Erosion & Sediment Control (ESC), spills and hazardous material, wildlife, Species at Risk, and emergency response for potential HDD fracking.
- Monitored water quality, inventoried vegetation, performed wildlife and breeding bird nest surveys. Developed management plans and 'No Disturb' buffers for active bird nests encountered, including those of the endangered Lewis' Woodpecker. Coordinated the development of plans during construction to address disposal of potentially hazardous HDD drilling fluids and potentially contaminated soils. Provided recommendations for risk management of environmental sensitivities encountered during construction. Provided daily environmental reports and communications. Coordinated and supervised junior personnel, coordinated senior contaminated sites specialist, and liaised with a large multidisciplinary project team.

CONSULTANT PROFILE

Adam Tieman, E.I.T., B.A.Sc
Junior Hydrotechnical Engineer

Summary of Experience

Adam Tieman is a Junior Hydrotechnical Engineer with our Hydrotechnical team supporting the group with design, modelling, drafting, and field reviews of projects in the Okanagan area. He is a 2020 graduate from the Civil Engineering program at UBCO. Adam has two years experience working at Ecora and has worked on projects performing drafting, modelling, design, and field services. Adam is experienced with a range of software including Autodesk Civil3D, HY-8, and FLO-2D. Adam's experience has been spread across B.C. with the majority of project in the Okanagan dealing with a variety of municipalities from RDOS to RDNO and MOTI projects.

Areas of Experience

- FLO-2D Dam Breach Modelling
- HY-8 Culvert Modelling
- Autodesk Civil3D Drafting & Surface Creation
- Civil Construction Field Reviews

Relevant Experience

Botanie Lake Dam DSR – 2023

- Assisting with OMS, DEP, & DSR report drafting

Becher & Toosey Dams DSR – Ongoing

- Modelling dam breach scenarios in FLO-2D
- Assisting with OMS, DEP, & DSR report drafting

Mamit Lake Dam DSR – 2023

- Modelling dam breach scenarios in FLO-2D
- Assisting with OMS, DEP, & DSR report drafting

Lodestone FSR Remediation – 2023

- Hydraulic modelling and culvert design
- Low volume road design

Contact Information
adam.tieman@ecora.ca

Education
University of British Columbia Okanagan – B.A.Sc. Civil Engineering – 2020

Associations
Engineers and Geoscientists of British Columbia (EGBC)

Years of Experience
2

Years with Firm
2

Office
Kelowna, BC

Daniel Tamas, B.Sc.
Geoscientist in Training (GIT)

Summary of Experience

Daniel Tamas is a Geoscientist in Training with Ecora based in Vernon, BC. He is a graduate of the University of British Columba Okanagan with a Bachelor of Science B.Sc., in Earth and Environmental Sciences. He is registered in good standing with EGBC as a Geoscientist in Training (GIT) pursuing certification as a Professional Geoscientist.

He has 6 years of experience in consulting, 3.5 years in the environmental sector, and 2.5 years in the geotechnical sector. His geotechnical focus has been on coordinating and executing geotechnical drilling programs, developing terrain maps, and geotechnical assessment reporting. For field programs, he has performed the role of field technician and Prime Contractor for major highway projects and gas pipeline integrity digs. In the office, his focus is geotechnical reporting for completed field programs and desktop site assessments typically including factual geotechnical reporting and terrain mapping along existing and planned linear infrastructure.

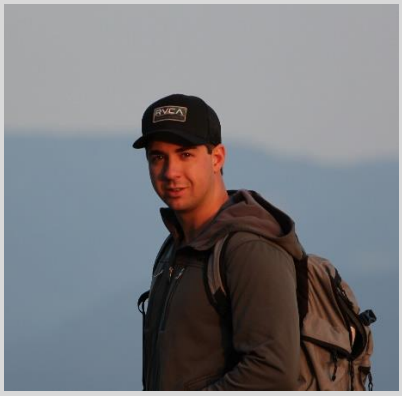
Areas of Experience

- Project coordination and implementation
- Safety coordination as Prime Contractor
- Scope and budget preparation and estimates/feasibility assessments
- Client, Contractor, and Owner communication and liaison
- Procurement of Contractor/Subcontractor and machinery support
- Quality Control / Quality Assurance
- Geotechnical report development
- Terrain and geohazard mapping
- Standard Penetration Test (SPT) Analyzer and data processing

Relevant Drilling Site Supervision Experience

Ministry of Transportation – As and When Contract: Highway 33 Dave's Creek Crossing, Chief Louis Way, Highway 3 Lamont Creek

- Performed the Prime Contractor duties leading site safety and construction coordination between utility locators, traffic control, drilling contractors, and first nations monitors.
- Identified and classified subsurface material using ODEX, Mud rotary, and Sonic drilling methods.
- Collected soil samples from drilling test holes, split spoon SPT, and test pits.
- Coordinated the use of SPT Analyzer, collected data, and processed data.
- Developed lab programs for soil sample testing.



Contact Information
daniel.tamas@ecora.ca

Education
Bachelor of Science in Earth and Environmental Science at the University of British Columbia Okanagan 2012—2017

Training and Certificates
- Occupational First Aid Level 1
- Workplace Hazardous Materials Information System (WHMIS)
- Radiation Safety & TDG – Portable Gauge Users
- CCiL – Concrete Testing Type QF certification

Years of Experience
6

Years with Firm
6

Office
Vernon, BC

Daniel Tamas, B.Sc.
Geoscientist in Training (GIT)

- Developed soil stratigraphy logs classifying encountered materials.

Fortis BC – Voght Creek Integrity Dig Intrusive Investigation

- Performed the Prime Contractor duties leading site safety and construction coordination between the client, their subcontractors, pipeline inspectors, and drilling contractors.
- Performed preliminary site assessments, including marking the site locates and identifying potential construction constraints such as loading requirements related to complex infrastructure designs.
- Identified and classified subsurface material using Sonic rigs to ensure proper depth was reached during exploration.
- Collected soil samples using boreholes, split spoon SPT, and test pits.
- Developed a geotechnical suitability assessment report detailing the pipeline repair options, including Horizontal Directional Drilling (HDD), auger, and trenched methods.
- Reviewed and assessed site conditions on steep slopes for temporary geohazard mitigation measures during integrity digs.

Relevant Geohazard and Terrain Mapping Experience

Ministry of Transportation and Infrastructure – Highway 1 Hoffmans Bluff

- Completed a historical imagery review and delineated terrain polygons based (TSIL E) based on the surficial material, surface expression, geomorphic qualifiers, and geomorphic processes.
- Developed a terrain characterization and sequence overview detailing the geomorphological history of the site.

Ministry of Transportation and Infrastructure – Highway 1 Remote Avalanche Control

- Completed a historical imagery review and delineated terrain polygons based (TSIL E) based on the surficial material, surface expression, geomorphic qualifiers, and geomorphic processes.
- Characterized an overview of terrain hazards detailing active and potential geomorphological processes which could impact infrastructure.
- Determined appropriate infrastructure placement to minimize geohazard interactions and maximize infrastructure lifespan.

Abbas Rahman, PMP
Hydrotechnical Consultant

Summary of Experience

Abbas brings with him extensive experience as a civil design engineer and project manager. Starting his career as a project manager managing the reinstatement of damaged commercial buildings in the aftermath of the Christchurch earthquakes, Abbas progressed onto becoming a civil design engineer, designing and delivering infrastructure projects for municipalities, government agencies, businesses, and developers. Abbas' experience includes land development for residential and commercial subdivisions, designs for water, sanitary sewer and stormwater infrastructure, contract management, and assessment of drinking water infrastructure in accordance with Ministry of Health guidelines. Abbas has also led the preparation of tender documentation, evaluated bids, managed communications, and provided design changes during the construction phase.

Areas of Expertise / Specializations

- Hydrotechnical Assessment
- Project Management
- Municipal Engineering
- Land Development Engineering
- Site Servicing Design
- Tender Document Preparation
- Drainage Engineering

Relevant Experience

Maxwell Lake DSR, North Salt Spring Waterworks District (NSSWWD) (2024)

- Project Manager for the dam safety review of Maxwell Lake Dam on Salt Spring Island, liaising with NSSWWD staff, geotechnical team and principal consultants for the delivery of the Dam Safety Review (DSR).
- Undertook hydrotechnical analysis and inflow design flood (IDF) calculations.
- Drafted hydrotechnical section and dam risk assessment sections in the DSR.

Shikano North Tailings Facility Hydrological Analysis, Conuma (2024)

- Supported the Engineer of Record with due diligence study, assessing the condition of the dam, reviewing historical reports and deficiencies, and recommended remedial works to ensure compliance with the latest federal and provincial regulations.
- Undertook a comprehensive hydrological analysis including water balance assessment and derivation of an elevation-storage curve, catchment analysis, and Inflow Design Flood (IDF) and Probable Maximum Flood (PMF) calculations.

Rogers Creek FSR Deactivation, BC Ministry of Forest (2023)

- Undertook hydrological analysis, characterised debris floods/ flows scenarios and evaluated the effects of climate change to determine design flows within Rogers Creek for the removal of a culvert and deactivation of the Forest Service Road (FSR).
- Using HEC RAS to determine the optimal channel and riprap size, and alignment to safely convey flows during flood events, and collaborating closely with the geotechnical and geohazard teams, incorporating measures for bank stabilization.

Contact Information
abbas.rahman@ecora.ca

Office
Vancouver, BC

Education
BEng (Hons) – Natural Resources Engineering, University of Canterbury, New Zealand

Associations / Memberships
Chartered Professional Engineer (CPEng), Engineers New Zealand

Candidate for P.Eng. with Engineers and Geoscientists BC (EGBC)

Years of Experience
12+

Years with Firm
1

External Certificates
Project Management Professional (PMP)

Abbas Rahman, PMP
Hydrotechnical Consultant

214B Street Sanitary Lift Station Design, Township of Langley (2022 - Present)

- Civil Designer and Project Manager for the upgrades to a sanitary lift station in the Township of Langley. The wet well is to have a new, slip-in fibreglass liner, and the electrical kiosk, backup power supply generator and SCADA antenna are to be upgraded.
- Assessed options for specially made below ground chambers to house flow meter and overbuild manhole due to soft ground conditions coupled with high ground water levels.
- This project is currently in the construction phase, reviewing and recommending shop drawings for approval while working with the Contract Administrator for field reviews and payment claim approvals.

Becher and Toosey Dam OMS and DEPs, Tl'esqox of the Tsilhqot'in First Nation (2023)

- Drafted the OMS and DEPs for earthfill embankment dams which are situated along Riske Creek. The dams supply water to the First Nation community in Toosey IR No. 1. The tasks included gathering background information from various sources, historical design documents and drawings to identify the characteristics, operational and safety features of the dams, technical aspects such as the spillway levels, hydrological and hydraulic aspects of the dams including upstream and downstream features.
- Reviewing periodic surveillance, inspection and maintenance schedule, safety practices and infrastructure, emergency procedures, contingencies, water licenses and reporting procedures to ensure current procedures at the dam are in accordance with the Water Sustainability Ace and Dam Safety Regulation (BC Reg. 40/2016)
- Assisted in drafting the DSRs, reviewing hydraulic features, dam safety reporting activities and hydraulic features of the dam.

Botanie Lake Dam OMS, Lytton First Nation (2023)

- Drafted the OMS for the earthfill embankment dam situated along Botanie Creek. This dam provided water supply to the Lytton First Nation community.
- Reviewed periodic surveillance, inspection and maintenance schedule, safety practices, emergency procedures, water licenses, historical design documents and drawings to identify the characteristics, operational and safety features of the dams, and technical aspects such as the spillway levels, hydrological and hydraulic features.

Highway 3 Lamont Creek, BC MoTI (2022 — 2023)

- Hydrotechnical Designer for the replacement of a culvert under Highway 3 which was damaged during the 2021 atmospheric river flooding event. Several options were assessed for the replacement of the culvert. Some of the challenges included hydraulic and hydrology assessment for the large catchment with limited hydrometric data in close proximity and depth of culvert pipe cover under the highway.

BC-750 Culvert Assessment, Michels Canada, BC, (2022)

- Hydrotechnical assessment and design for a culvert along a fish-bearing creek where Michel Canada's pipeline crosses. The culvert outlet support had been undermined due to erosion over time.
- The capacity of the existing culvert was assessed in accordance with MoTI Supplementary to TAC Geometric Design Guide and was found to be inadequate. So, a design for a new upgraded culvert in accordance with Fish-stream Crossing Guidebook by Fisheries and Oceans Canada was provided, including riprap rock armouring to prevent scouring at the outlet.

Anderson Creek Bridge Assessment, Michels Canada, BC (2022)

- Hydrotechnical Designer to verify the elevation of a proposed temporary bridge which is to be constructed over Anderson Creek to support the construction of the Trans Mountain Pipeline.
- The scope included site investigations, catchment analysis, and hydrological and hydraulic assessment to determine the water elevation in the creek during a flood event. Given the catchment characteristic, effects of debris flood and debris flood had to be considered too.

Highway (SH1) Runoff Treatment, Te Awa Lakes, NZ (2022)

- Lead designer for stormwater swale channels to treat and convey road storm runoff from State Highway 1 in Waikato. The channel was sized to provide adequate capacity and treatment for the runoff.

Abbas Rahman, PMP
Hydrotechnical Consultant

- Channel outlet designed to discharge treated runoff to the Waikato River. Since the discharge point is submerged during a 1% annual exceedance probability storm event, a tide gate was required to prevent backflow into the swale channel. The swale channel was also designed large enough to detain the runoff during such a storm event.

Stormwater Network Contamination, KiwiRail, NZ-wide (2019 to 2020)

- Investigated source of contamination for storm sewer networks that discharge to the environment.
- Designed network upgrades for sanitary sewer, stormwater, and oil waste networks for sites across the North Island.
- Assisted the Capital Programme Manager with programme planning for infrastructure renewal.
- Responsible for the design, tender evaluation, and construction administration for sanitary sewer and trade waste upgrades at the Auckland and Hamilton train depot.

CONSULTANT PROFILE

Bram Samuels, M.Eng., E.I.T.

Junior Geotechnical & Hydrotechnical Engineer

Summary of Experience

Bram Samuels is a Junior Geotechnical & Hydrotechnical Engineer in Ecora's Vancouver office. Bram has four years of broad experience in geotechnical, hydrogeological, hydrotechnical, and coastal engineering site investigation, analysis, and design, across the Lower Mainland and Vancouver Island, in highly variable soil, groundwater, and surface water conditions.

Bram has completed engineering consulting work for a variety of client types, including other engineers, earthworks contractors, municipalities, small and large residential and commercial developers, the Ministry of Transportation (MoTI), and First Nations groups.

For each of his projects Bram has been involved from the investigation phase all the way through to the design and construction phases and has been in technical communication with every level of employee from field workers/EITs to superintendents/managers to CEOs. He therefore understands how to tailor technical communications to each audience.

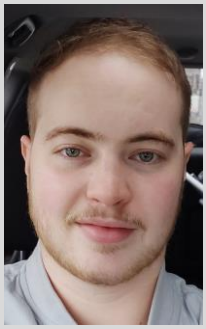
Bram is a strong project manager and field engineer with experience managing, coordinating, and conducting site investigation programs and field reviews with a small team of younger EITs and technical laboratory staff (including himself).

Bram has successfully conducted more than 35 site investigations in all types of soil and rock across the Lower Mainland and Vancouver Island in the last four years, including the design and installation of monitoring wells and piezometers. These investigations were completed using auger, sonic, ODEX, or Mud Rotary drills.

Bram is familiar with the requirements of the 2019 Vancouver Building Bylaw (VBBL), 2020 National Building Code of Canada (NBCC), 2019 Canadian Highway and Bridge Design Code (CHBDC) S6-19, BC MoTI Supplement to CHDBC S6-19, and the 2020 BC MoTI Standard Specifications as these documents pertain to shallow and deep foundations, embankment slopes, hydrologic analysis, and hydraulic structures.

Bram can complete analyses and design for excavation shoring systems, soil and rock slopes, shallow and deep foundations, ground improvement systems, retaining walls, various piping systems, spillways, culverts, and coastal engineering systems.

Bram is experienced with specialized geotechnical, hydrogeological, hydrotechnical, and coastal engineering modelling software (and conventional coding languages with useful software packages) such as Geostudio Suite (Slope/W, Seep/W, Sigma/W, Quake/W), L-Pile/RS-Pile, Settle3, ProShake, GRL-WEAP, SupportIT/SpanIT, LiqSVs, SRwall, Gwall, WallAP, MODFLOW, TopoDrive/ ParticeFlow, HEC-RAS, HEC-HMS, HY-8 and FLO-2D, QGIS, Python, and Matlab.



Contact Information

bram.samuels@ecora.ca

Education

M.Eng. in Civil Engineering
University of British Columbia - 2022

B.A.Sc. in Geological Engineering
Queen's University - 2018

Associations

Association of Professional Engineers & Geoscientists BC (APEGBC)

Vancouver Geotechnical Society (VGS)

The Canadian Society for Civil Engineers (CSCE)

Training

First Aid-Emergency First Aid for Industry (OFA Level 1), Nov. 2020

WHMIS 2015

Indigenous Awareness 101 & 201

Years of Experience

4

Years with Firm

1

Office

Vancouver, BC

Bram Samuels, M.Eng., E.I.T.

Junior Geotechnical & Hydrotechnical Engineer

Relevant Experience

- **Pier West Excavation Shoring (Field Reviews) –** Main field EIT at a 10-15 m deep excavation adjacent to the Fraser River and three major rail lines. Reviewed jet grout wall installation. Reviewed secant wall shoring using backflow preventers adjacent to major rail lines and dealt with related sinkholes. Reviewing pipe pile installations and completing static load tests for these piles. Subgrade reviews. Working with many contractors from different trades.
- **YVR Airport - CORE Program** – This site has extremely high consequence factors and is built on liquefiable sands that required extensive ground improvement. Reviewed stone column and RAP installations for parkade and utility building. Completed many stone column load tests. Review of slopes related to long-term shutdown of program. Vibration monitoring of Canada Line piers. Subgrade reviews. Working with many contractors from different trades.
- **YVR Pedestrian Facilities** – Design of helical piles to support the rain protection structures over the pedestrian pickup area outside of YVR. Design of helical piles and field reviews of installations for new YVR warehouses along Miller Rd.
- **60 Isleview Place, Lions Bay, BC** – Design of retaining walls, stormwater detention/infiltration tank, and drainage system for new construction on very steep slope. Field reviews and design change memos to bring project to fruition.
- **Fairbanks Load Landslide Remediation, 1108/1110 Fairbanks Road, Cowichan Bay, BC** – Design of a pipe system to convey flows down a cliff where previous overland flooding caused a surficial slope failure. This design includes slope stabilization/armouring, inlet and outlet structure design, pipe anchor design, and coastal engineering analysis.
- **Nunns Creek Culvert Replacement, Highway 19A ~150 m West of Spit Road, Campbell River, BC** – Site investigation and pile design for culvert replacement. This included an auger test hole, mud rotary test hole, sonic test hole, CPT/sCPT sounding, and downhole compressional and shear wave velocity sounding. Also included liquefaction analyses, constructability considerations, discussions on affecting sewer with the City of Campbell River.
- **Lefferson Creek Retaining Wall Design, 5260 Goldspring Place, Chilliwack, BC** – Replacing an existing timber retaining wall with a new wall comprised of lock blocks and geogrid. Significant utility conflicts and constraints.
- **Glenmore Voltage Conversion Project (Overpass Loading), 15th St and Highway 1, West Vancouver, BC** – Slope stability modelling looking at suitability of open trenching below footings for major Highway 1 overpass bridge. Also included subgrade reviews of vaults/manholes for other sections.
- **Seton Portage Debris Flow Mitigation Project, Seton Portage, BC** – Mitigation system design for debris flow hazard from Goat Mountain.
- **Seton Portage Engineering Services to Support Hotel, Seton Portage, BC** – Hydrological and hydraulic analyses to determine flood control elevation for the hotel, as well as general geotechnical engineering services.

CONSULTANT PROFILE

Meghan Sherwood, E.I.T.
Junior Geotechnical Engineer

Summary of Experience

Meghan Sherwood is a Junior Geotechnical Engineer based in Ecora's Penticton, BC office. She has experience conducting ARD/ML assessments and site reconnaissance, geotechnical site investigations, terrain analysis and mapping, slope stability analysis, retaining wall design, lab testing and construction monitoring. She is proficient with industry standard geotechnical slope stability and seepage modelling software such as GeoStudio Suite, Rocscience (Slide2, RocPlane, RocFall, SWedge, Dips) and gINT.

Areas of Expertise / Specializations

- Conducting Acid Rock Drainage and Metal Leaching (ARD/ML) and riprap suitability assessments for numerous quarries and rock sources in BC.
- Geotechnical site investigations and assessments.
- Slope stability assessments, modelling, and remediation recommendations.
- Construction monitoring and field reviews, including on-site recommendations for highway construction, riprap slope armouring and residential construction.

Relevant Experience

FSR Riprap Source Assessments, BC – BC Ministry of Forests (2022-present)

- Preliminary and detailed ARD/ML assessments for numerous potential riprap sources along Forest Service Roads, comprising site reconnaissance and bedrock sampling, laboratory analysis, geochemical characterization of rock samples, and assessing the potential for the rock source to generate metal leaching and acid rock drainage. Preparing ARD/ML prediction and mitigation plans.

Ntequem East Quarry ML/ARD Assessments, Ashcroft, BC (2023-2024)

- Detailed ML/ARD assessment for existing rock quarry comprising site reconnaissance and bedrock sampling, laboratory analysis, geochemical characterization of rock samples, and assessing the potential for the rock source to generate metal leaching and acid rock drainage.

Genelle Quarry ML/ARD Prediction, Genelle, BC (2023)

- Detailed ML/ARD assessment for existing rock quarry and aggregate pit and preparing a ML/ARD Prediction and Mitigation Plan.

2021 Emergency Flood Response Works, Hwy 1, 3, 5, 8 – BC MoTI (2021—2023)

- Preliminary and detailed ARD/ML and riprap suitability assessments for numerous potential rock sources utilized in emergency response and recovery repairs due to the 2021 atmospheric river flooding event.

Hwy 3 Rock Source, Princeton, BC (2022)

- Detailed ARD/ML and riprap suitability assessments for proposed rock source on private property to provide riprap material for mitigation measures of a roadway due to a slope failure caused by river erosion.

Contact Information
meghan.sherwood@ecora.ca

Office
Penticton, BC

Education
B.A.Sc. in Geological Engineering, University of British Columbia

Associations / Memberships
Member Engineers and Geoscientists British Columbia (EGBC)

Years of Experience
3

Years with Firm
2+

Certifications

- Metal Leaching/Acid Rock Drainage Field School – Bulkley Valley Research Centre, 2023.
- Introduction to Mineral Exploration Safety Course - Association for Mineral Exploration, 2020.
- Occupational First Aid – Level 1
- Ground Disturbance for Workers
- Fall Protection Worksite Safety
- Radiation Safety & TDG – Portable Gauge Users

CONSULTANT PROFILE

Tomos Edmonds, E.I.T.
Junior Hydrotechnical Engineer

Summary of Experience

Tomos Edmonds is a junior hydrotechnical engineer currently working with Ecora Engineering & Environmental Ltd. He has worked with Ecora for 5 years throughout the summer months working on a wide range of projects within the civil, geotechnical and hydrotechnical engineering disciplines.

Tomos is proficient in AutoCAD Civil3D and is working towards specializing in hydrotechnical analysis, modelling, and design, with a special interest in emergency management within the hydrotechnical sector.

Areas of Expertise / Specializations

- 2D/3D CAD drafting and modelling in Civil, Geotechnical & Hydrotechnical engineering disciplines
- Hydrotechnical engineering design including hydrological modeling
- Dam Safety
- 3D Stability Modeling of Concrete Gravity Dams (CADAM3D)

Relevant Experience

City of Vernon - Vernon Creek Rehabilitation

- Drafting Assistant to Vernon Creek rehabilitation in Vernon, BC. Tasks included 2D hydraulic modeling of the subject reach of Vernon Creek, and Civil3D Construction drawing design and production.

Town of Ladysmith – Holland Creek Dam Safety Inspections & Decommissioning

- Dam safety inspection reporting for three dams owned and operated by the Town of Ladysmith. Decommissioning plan for one of the dams including Civil3D construction drawing design and production.

BC Hydro Bridge River 1 Generating Facility – Slope Stabilization & Remediation

- Slope stabilization and rehabilitation construction drawing design and production since May 2022.

Contact Information
tomos.edmonds@ecora.ca

Office
Kelowna, BC

Education
BaSC – Civil Engineering

Associations / Memberships
Engineer in Training (E.I.T) - Engineers and Geoscientists of British Columbia (EGBC)

Years of Experience
1.5

Years with Firm
5

Appendix B

Project Profiles

Yellow Lake Dam Upgrades

PROJECT DESCRIPTION

An engineering assessment of the Yellow Lake Dam was completed in 2017 by Ecora. This assessment indicated that the dam was not in compliance with the Provincial Dam Safety regulations or the Canadian Dam Safety Association Review Guidelines. The assessment report recommended that several action items be met to bring the dam into compliance. The recommendations included:

- Complete works to ensure the dam has freeboard to handle wind and wave effects and is capable of handling the Inflow Design Flood (IDF);
- Remove blockages of the low-level outlet and ensure proper function of the outflow pipe and gate; and
- Increase channel capacity, to prevent overtopping of banks along Highway 97. Reduce the potential for highway overflow and erosion.

Based on the findings of the engineering assessment, in 2021 Ecora completed engineering and environmental services to prepare and submit construction ready engineered designs and acquire all necessary authorizations for the required dam structural and operational upgrades as described above. This work also included the preparation of a detailed tender ready documents, Class 1 cost estimates and corresponding costing reports, contract administration, inspection services, environmental monitoring during the construction, production of record drawings and delivery of a final construction report.

Client

Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Location

Penticton, BC

Duration

July 2016 — October 2021

Project Team

Michael J. Laws, P.Eng.
Adrian Chantler, Ph.D., P.Eng.
Jeff Redwood, P.Eng.
Pete Wittstock, P.Eng.
Adam Kerk-hecker, P.Eng.
Andrew Gain E.I.T.

Key Features

- Background review and site reconnaissance of the dams
- Geotechnical investigation.
- Geotechnical assessment including, seepage, static and seismic embankment stability, piping failure and liquefaction.
- Determination of Inflow Design Flood (IDF) and hydraulic assessment of spillway structures.
- Engineered conceptual design of remediation options for the dam structure and spillway.
- Completion of design reports and budgetary construction cost estimates.
- Preliminary and detailed design for the preferred option.
- Tendering and construction services.

Fees

$114,000

Client Contact

Tara White, R.P.Bio
778.622.6839
Tara.white@gov.bc.ca

Cannell Lake Dam Remediation

PROJECT DESCRIPTION

In 2018, Ecora conducted an engineering assessment and conceptual remediation design for the Cannell Lake earthfill dam owned and operated by the City of Abbotsford. The assessment was performed in response to deficiencies identified in the most recent Dam Safety Review (Ecora, 2016).

Following the engineering assessment, Ecora proceeded with engineering designs and prepared a design report, recommendations, and budgetary construction cost estimates for the Works. Ecora was further retained to prepare a detailed design package for the preferred option and to tender the project. Contract administration and construction supervision was also completed as part of the project.

Ecora conducted background reviews, topographical surveys, geotechnical investigations and materials testing, hydrotechnical analyses that included determining the Inflow Design Flood's (IDF), hydraulic assessments of the spillway structures including 1D and 2D modelling (HECRAS) and undertook a series of geotechnical assessments for potential embankment failure modes, including embankment overtopping, piping through the embankment, piping through the foundation, static and seismic downstream and upstream stability and liquefaction. The analysis included the review of previous design information.

Ecora completed all aspects of the project in accordance with the requirements of the BC Dam Safety Regulation (BC Reg. 44/2016) and the Canadian Dam Association 2007 Dam Safety Guidelines (2013 Edition).

Client

City of Abbotsford

Location

Mission, BC

Duration

July 2018 — December 2020

Project Team

Michael J. Laws, P.Eng.

Adrian Chantler, Ph.D., P.Eng.

Chelsea Evans, B.E. (Hons) Civil

Pete Wittstock, P.Eng.

Adam Kerk-hecker, P.Eng.

Andrew Gain E.I.T.

Key Features

- Background review and site reconnaissance of the dams
- Geotechnical investigation.
- Geotechnical assessment including, seepage, static and seismic embankment stability, piping failure and liquefaction.
- Determination of Inflow Design Flood (IDF) and hydraulic assessment of spillway structures.
- Engineered conceptual design of remediation options for the dam structure and spillway.
- Completion of design reports and budgetary construction cost estimates.
- Preliminary and detailed design for the preferred option.
- Tendering and construction services.

Fees

$196,000

Client Contact

Kristi Alexander, P.Eng.

604.864.5502

kalexander@abbotsford.ca

PROJECT PROFILE

Centre Star Gulch Reservoir Dam Safety Review

PROJECT DESCRIPTION

Ecora in partnership with ISL Engineering and Land Services Ltd. conducted the 2015 Comprehensive Dam Safety Review of the Centre Star Gulch Reservoir for the City of Rossland, BC. The reservoir is formed through the construction of two dams within a north south trending valley providing an upland source of potable water for the City of Rossland, BC. The maximum height of the two dams vary from 4.1 m to 4.6 m and are each between 55 m and 118 m long.

Ecora completed all aspects of the Dam Safety Review in accordance with the requirements of the BC Ministry of Environment Dam Safety Guidelines (2012) and the Canadian Dam Association 2007 Dam Safety Guidelines (2013 Edition).

Ecora conducted a back ground review, site reconnaissance, failure mode assessment, dam breach analysis, consequence classification review of the two dams, reviewed the inundation mapping and hydraulic assessment of the spillway structure, and undertook a series of geotechnical assessments for potential embankment failure modes, including embankment overtopping, piping through the embankment, piping through the foundation, static and seismic downstream and upstream stability and liquefaction.

The geotechnical assessment also included a seepage analysis to determine the input ground water conditions in the embankments for the stability assessment.

A review of the dam's system management system and a dam safety expectations assessment utilizing the BC MFLNRO Dam Safety Branch, Dam Safety Expectations check sheet was also undertaken.

CLIENT

City of Rossland

LOCATION

Rossland, BC

DURATION

June 2015 to October 2015

PROJECT TEAM

Michael J. Laws, P.Eng.

Pete Wittstock, E.I.T.

KEY FEATURES

- Dam Safety Review in accordance with the requirements of the British Columbia Water Act, the BC Ministry of Environment Dam Safety Guidelines (2012), the BC Dam Safety Regulation and Canadian Dam Association 2007 Dam Safety Guidelines (2013 Edition).
- Background review and site reconnaissance of the dam
- Failure mode assessment.
- Dam break analysis and consequential classification review.
- Geotechnical assessment including, seepage, static and seismic embankment stability, piping failure and liquefaction.
- Review of dam safety management system.
- Dam safety expectation assessment.

Contract Amount

$15,950

Contract Type

Lump Sum Fixed Fee

Shane Lake Dam Safety Review, Dam Remediation, and Dam Safety Review Updates

PROJECT DESCRIPTION

Shane Lake Dam is a zoned earthen embankment dam with the function of providing redundancy to existing beaver dams at the south end of Shane Lake in the event one of the beaver dams fail. The dam is maintained and operated by the City of Prince George (the City) and has been assigned a consequences classification of “Very High”, as defined in the BC Dam Safety Regulations (BC. Reg. 40/2016) and the 2007 Canadian Dam Association (CDA) Dam Safety Guidelines (2013 Edition).

Ecora conducted a Dam Safety Review (DSR) for the structure in 2020, and based on the findings, Ecora was asked to provide engineering and environmental services related to remediation design and construction. The required improvements included:

- Improvements to the access road that leads to the dam; and.
- Replacement of the existing piped overflow system with a new auxiliary open channel spillway.

The open channel spillway was cut into the right abutment of the dam embankment and featured a control section constructed of articulated concrete block mats and 70 meters of riprap lined channel with a berm constructed for the left bank. The channel then discharged into a fish-bearing stream (Shane Creek). To facilitate these improvements to the dam, Ecora provided the City with the engineering and environmental services necessary to complete site investigation, detailed design and implementation plan, tender preparation and support, construction services and post construction services.

Client

The City of Prince George

Location

Prince George, BC

Duration

March 2020 — Ongoing

Project Team

Michael J. Laws, P.Eng.
Adrian Chantler, Ph.D., P.Eng.
Adam Kerk-Hecker, P.Eng.
Glen McCrae, P.L.Eng.
Adam Patterson, R.P.Bio

Key Features

- Dam safety review.
- Background review.
- Stakeholder engagement.
- Site investigation.
- Hydrotechnical analysis for upgrade design.
- Detailed design package preparation.
- Environmental assessment.
- Completion of design reports and construction cost estimates.
- Tender package preparation.
- Contract administration.
- Construction and post construction services.

Frazer Lake Dam Rehabilitation

CLIENT
City of Kelowna

LOCATION
Kelowna, BC

DURATION
July 2019 to Nov 2022

PROJECT TEAM
Michael J. Laws, P.Eng.
Adrian Chantler, Ph.D., P.Eng
Adam Kerk-Hecker, E.I.T.
Andrew Gain, E.I.T.
Glen McCrae, P.L.Eng.
Jordan Bokla, Int. Tech.
Adam Patterson, R.P.Bio., QEP
Melony Catana, AScT, Env. Tech.

PROJECT DESCRIPTION

Ecora provided engineering services to the City of Kelowna for the rehabilitation of Frazer Lake Dam, located in the Upper Mission neighbourhood of Kelowna, BC.

The preliminary design included review of existing documentation, conducting site reconnaissance including a geotechnical subsurface investigation, geotechnical analyses, hydrotechnical analysis, development of design alternatives, evaluation of design alternatives and a class C cost estimate. At the completion of the preliminary design the project proceeded to detailed design and completion of tender ready IFC drawings and schedule of quantities.

Environmental impact assessments were completed by the Ecora team which included several surveys of wildlife in the area. A construction environmental management plan was completed as part of the BC Dam Safety Regulation Plan Submission Requirements.

Details of the dam remediation design included:

- Removal of existing earthen embankment, concrete headwall, and outlet works;
- Temporary cofferdam design;
- Steel sheet pile cut-off wall;
- Rock ramp spillway channel;
- Cast-in-place concrete level control structure; and
- Low-level outlet and gate works;

KEY FEATURES

- Site reconnaissance including geotechnical subsurface investigation.
- Hydrotechnical analysis including rainfall analysis, dam breach analysis and flood routing.
- Environmental services including wildlife survey, impact assessment, and CEMP.
- Development of rehabilitation alternatives up to and including a class C cost estimate and evaluating benefits of each option.
- Detailed design of preferred option including a Class A cost estimate.
- Completion of Plan Submission Requirements for MFLNRORD approval.
- Procurement and Contract Administration services
- Construction and Environmental Monitoring services

Frazer Lake Dam Rehabilitation

FEES
$140,000

CONSTRUCTION VALUE
$761,000

CLIENT CONTACT
Robinson Puche
250.469.8480
rpuche@kelowna.ca

Brian Beach
250.469.8726
bbeach@kelowna.ca

This project had challenging construction issues with environmental requirements for preservation of amphibians, terrestrials, and groundwater seepage within the existing dam. Ecora prepared Request for Proposal documents for construction and participated in the selection process for the successful contractor. The project was constructed in 2022. The contractor chose to install a temporary sheet pile dam to isolate the dam removal and reconstruction works. Ecora is provided construction environmental monitoring services including nesting surveys, aquatic and terrestrial sweeps, contract administration, engineering oversight and field reviews.

STAFF REPORT TO COUNCIL

Report Prepared By: Ryan Bouma, P. Eng.
Reviewed By: Allison McCarrick, CAO
Meeting Date: September 3, 2024
File No:
Re: **Mackie Weir Decommission – Contractor Award**

RECOMMENDATION:

That Council award the Mackie Road Dam Decommissioning RFP 2024-IS-05-A to Spider Excavators in the amount of $383,085 plus applicable taxes.

EXECUTIVE SUMMARY:

After a competitive pre-qualification selection process, Ladysmith staff selected four contractors that had relevant work experience, adequate equipment and personnel, and met the Town's "Best Value" criteria. Following the selection, all four contractors were provided the Mackie Road Dam (weir) decommissioning plan and requested to provide proposals for a Holland Creek diversion, site access, dam and sediment removal, and disposal. After review with Ecora Engineering and Environmental Ltd. (Ecora), Spider Excavators was selected by staff for recommendation to Council.

PREVIOUS COUNCIL DIRECTION:

CS 2023-224	2023-09-26	That Council direct staff to: 1. Include in the 2024-2028 Financial Plan funding for the Decommissioning of old weirs on the lower portion of Holland Creek, with the funding to come from grants; and 2. Apply for grant funding under the UBCM Community Emergency Preparedness Fund, Disaster Risk Reduction - Climate Adaptation stream for the Decommissioning of old weirs on the lower portion of Holland Creek and commit to cover any unexpected ineligible costs and project overruns.

INTRODUCTION/BACKGROUND:

In the early stages of the procurement process, staff and the Town's consultant, Ecora Engineering and Environmental Ltd. (Ecora), determined that a pre-qualification and proposal process for selecting a contractor would be the best approach for this project. Due to the complexity and unknown aspects of the project, a conventional tender was not appropriate. There were several aspects, such as the volume of material to be removed,

methodology for creek diversion, and access into the creek bed that could not be defined well.

Staff posted a Request for Qualifications on BC Bid and the Town's website, which provided staff with four pre-qualified contractors. These contractors are considered pre-qualified for future dam removal and/or remediation if needed. Following the pre-qualification process, a Request for Proposal was sent to all four contractors. Three contractors provided proposals; the fourth responded with concerns about schedule as the project has a tight timeline. One of the proposals included two methodologies. A summary of the contractors, costs, and methodology is provided below.

IWC Excavating Ltd. - $508,879 + GST

> Using the Mackie Road access, the trail would be widened by removing several trees in preparation for equipment access. The Holland Creek embankment at the dam would be cleared to allow an excavator with a safety winch to walk down to the dam. A long reach excavator would be used at the top of the dam. A diversion channel and pipes with coffer dam were proposed to divert water around the work area.

Hazelwood Construction Services Inc. - $422,447 + GST

> Also using the Mackie Road trail for access, Hazelwood proposed crane access to the dam. An 8m x 8m area would be cleared above the dam in the trail area to create a crane pad. Trees would be topped along the creek embankment to allow the crane to swing as minimally as necessary. A 450 to 600mm creek diversion pipe would be used, although Ecora had some concerns regarding the size of the pipe and the ability to convey creek flows required by the Ministry of Environment.

Spider Excavators - $383,085 + GST

> Two methodologies were submitted, although the first included access from private land along the east side of Holland Creek and was not considered. The second proposal used the Mackie Road access trail and the embankment to walk a specialized excavator onto the dam. Some tree removal and disturbance of the bank would be required, although the specialized "spider" excavator should reduce the impact. A diversion channel is planned to divert water around the work area. The parking lot on Mackie Road would be used to store and de-water excavated soil prior to disposal.

All three proposals are under the budgeted amount and span a reasonable costing spread given the complexity of the work and differing methodologies proposed. Therefore, staff generally considered the methodology and techniques of the individual proposals more than cost. Spider Excavators had the preferred methodology and had the lowest price, so they are being recommended for award by staff and Ecora.

This work must be completed within a fish window that typically ends September 15th. Ecora has applied for an extension to October 18th on the Town's behalf. We are working with the Ministry of Environment for approvals and with the Stz'uminus First Nation for water sampling and environmental oversight. Because of the environmental sensitivity and timeline for this project, Spider will be awarded and mobilized as soon as possible.

ALTERNATIVES:
Council can choose to direct staff to award another proponent.

FINANCIAL IMPLICATIONS:
Spider's estimate of project costs combined with Ecora's contract management estimate are under budget.

LEGAL IMPLICATIONS:
BC Dam Safety and the Ministry of Environment are regulating and permitting the project. Requirements by either regulator will be followed.

CITIZEN/PUBLIC RELATIONS IMPLICATIONS:
The project will impact trail users as portions of the Holland Creek Trail and the Mackie Road parking lot and connecting trail will be closed for the duration of the work.

INTERDEPARTMENTAL INVOLVEMENT/IMPLICATIONS:
Infrastructure Services will work with Corporate Services to notify the public of trail closures and provide updates with respect to progress of construction.

ALIGNMENT WITH STRATEGIC PRIORITIES:

☐ Core Infrastructure	☐ Economy
☐ Official Community Plan Implementation	☐ Leadership
☐ Waterfront Area Plan	☒ Not Applicable

I approve the report and recommendation.

Allison McCarrick, Chief Administrative Officer

ATTACHMENTS:

A. Spider Excavators Proposal
B. Spider Excavators Schedule
C. Ecora Letter of Recommendation

ATTACHMENT A

FORM OF PROPOSAL

Mackie Road Dam Decommissioning - RFP 2024-IS-05-A

(RFP Title and RFP Number)

To: Town of Ladysmith - 410 Esplanade, PO Box 220, Ladysmith, BC V9G 1A2

[Owner's name and address]

Capitalized terms used but not defined in this Form of Proposal have the meanings assigned to such terms in the Request for Proposals applicable to this Form of Proposal (the "**RFP**"), unless the context requires otherwise.

1.0 PROPONENT INFORMATION

This Proposal is submitted by:

Legal Name of Proponent (the "**Proponent**"):	Spider Mountain Excavators Ltd.
Legal Structure of Proponent (if not incorporated):	Incorporated
Date and Place of Formation (or incorporation):	May 7, 2020 in Golden BC
Address:	PO Box 1512, Golden BC V0A 1H0
Name of Representative:	Dan Livingston, Isabelle Thibault
Representative's Telephone Number:	403-462-6874, 250-344-3508
Representative's Email Address:	dan@spiderexcavators.com, info@spiderexcavators.com
GST Registration Number (if no GST registration number is provided, the Proponent will be considered as not registered for GST):	735260135 RT0001
WorksafeBC Registration Number (if coverage for the Proponent's workers is provided by an insurance policy rather than under the *Workers Compensation Act* (British Columbia), attach particulars of such policy to this Form of Proposal):	200339856

2.0 RFP DOCUMENTS

The RFP Documents include the following documents attached to this Form of Proposal:

Schedule Title	Schedule Number
RFP Submission Requirements	1
Schedule of Quantities and Prices	2
~~Proponent's References~~	~~3~~
Subcontractors	4
(Not Used)	
Proposed Amendments to Commercial Terms	6

	Alternatives	7
	(Not Used)	
	Baseline Construction Schedule	9
	Relationship Disclosure Statement: Conflict of Interest and Unfair Advantage	10

3.0 PROPONENT'S DECLARATIONS

The Proponent declares and confirms it:

(a) received, has examined and understands the RFP Documents, including any issued Addenda;

(b) agrees to all terms and conditions of the RFP;

(c) has full knowledge of the Site and the work required to be performed by it in accordance with the Contract Documents;

(d) complied with the RFP;

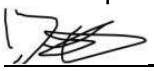
(e) based its Proposal Price on the estimated quantities set out in the Schedule of Quantities and Prices, if any, and understands that actual quantities may vary; and

(f) completed and includes with this Proposal all documents listed in Section 2 of this Form of Proposal.

4.0 PROPONENT'S OFFER

The Proponent offers to perform and complete all of the work and provide all the labour, equipment and material all as set out in the Contract Documents, in strict compliance with the Contract Documents and for the Proposal Price, subject to the provisions of the Proponent's Proposal.

This Proposal is executed by the undersigned as of the date noted below.



Authorized Signatory

Dan Livingston, Sr. Operations Manager

Name and Title of Authorized Signatory

8/15/2024

Date

SCHEDULE 2 – SCHEDULE OF QUANTITIES AND PRICES

1. All prices unless expressly stated otherwise:

   (a) will be deemed to be in Canadian dollars (and if any price is expressed in any other currency, then for the purposes of evaluation the Owner will convert such price to the Canadian dollar equivalent, calculated as of the Closing Time); and

   (b) will be deemed to include all applicable duties and all costs of performing the work and all applicable taxes, except only GST.

2. The abbreviations in the Schedule of Quantities and Prices are defined as follows:

LS	lump sum
PS	provisional sum
m	linear metre
m2	square metre
m3	cubic metre

3. The Owner reserves the right to delete the requirement for bonds under the Contract. In such case, the Proposal Price will be reduced by the price for such bonds as entered in the Schedule of Quantities and Prices. If no price is entered for such bonds, then, pursuant to Section 7.3(b) of the RFP, and notwithstanding paragraph 4 of this Schedule 2, the Owner may request the Proponent to clarify the price for such bonds that was included in the Proposal Price.

4. Where the Proponent does not enter a price for a payment item in the Schedule of Quantities and Prices, then that payment item shall be deemed to have been included in the other prices the Proponent entered in the Schedule of Quantities and Prices and no separate payment will be owing for that payment item.

5. If there are any discrepancies in the Schedule of Quantities and Prices between the unit prices (if any) and the extended totals, then the unit prices will be deemed to be correct, and corresponding corrections will be made to the extended totals and the Proposal Price as may be required. If an extended total is given but the unit price has been omitted, then the corresponding unit price will be calculated from the extended total and the estimated quantity, and inserted. If there is a discrepancy between the aggregate of prices in the Schedule of Quantities and Prices and the Proposal Price, then the aggregate of prices will be deemed to be correct and the Proposal Price adjusted accordingly.

6. Terms of Payment are provided in GC.5 of Appendix A – General Conditions (Construction) and Appendix E – Schedule of Quantities and Prices, to the Contract Documents.

7. Proponents should not submit unbalanced Proposal prices.

CONTRACTOR: **Spider Mountain Excavators Ltd. - Option #1**

Division	Title	Amount
01	General Requirements	$ 208,992.18
31	Earthwork	$ 140,058.49
	Tender Price	$ 349,050.66
	GST 5%	$ 17,452.53
	Tender Price plus GST	$ 366,503.20

Item #	Section	Payment Paragraph	Item Description	Unit	Quantity	Unit Price	Amount
	Division 01 - General Requirements					**Sub-Total Division 01**	$ 208,992.18
1.1	01 10 00SS	SP 4	Site Access	LS	1		$ 46,666.50
1.2	01 10 00SS	SP 10	Dewatering and Creek Diversion	LS	1		$ 82,724.28
1.3	01 33 01SS	1.8.2SS	Survey Layout and Project Record Documents	LS	1		$ 5,942.84
1.4	01 35 29SS	1.2.1SS	Project Safety Documentation	LS	1		$ 2,484.07
1.5	01 53 01SS	1.9.2SS	Temporary Facilities - Mobilization/Demobilization	LS	1		$ 17,234.71
1.6	01 55 00SS	1.5.2SS	Traffic Control, Vehicle Access, and Parking	LS	1		$ 7,333.92
1.7	01 57 01SS	1.6.2SS	Environmental Protection	LS	1		$ 45,659.55
1.8	01 58 01SS	1.3.2SS	Project Identification	LS	1		$ 946.31
	Division 31 - Earthwork					**Sub-Total Division 31**	$ 140,058.49
31.1	02 41 31SS	1.6.1SS	Demolition and Removal of Existing Concrete Cutoff Wall and Timber Facing	LS	1		$ 47,257.37
31.2	31 24 13SS	1.8.5SS	Common Excavation c/w Off-Site Disposal (Sediment Removal)	m^3	145		$ 461.75
31.3	31 24 13	1.8.9	Fine Grading of Channel Bottom	m^2	162		$ 36.10
31.4	N/A	SP 12	Environmental Restoration as directed by the Environmental Monitor (Provisional)	LS	1	$ 20,000.00	$ 20,000.00

CONTRACTOR: **Spider Mountain Excavators Ltd. - Option #2**

Division	Title	Amount
01	General Requirements	$ 206,831.81
31	Earthwork	$ 176,253.42
	Tender Price	$ 383,085.23
	GST 5%	$ 19,154.26
	Tender Price plus GST	$ 402,239.49

Item #	Section	Payment Paragraph	Item Description	Unit	Quantity	Unit Price	Amount
	Division 01 - General Requirements					**Sub-Total Division 01**	$ 206,831.81
1.1	01 10 00SS	SP 4	Site Access	LS	1		$ 43,945.85
1.2	01 10 00SS	SP 10	Dewatering and Creek Diversion	LS	1		$ 83,852.34
1.3	01 33 01SS	1.8.2SS	Survey Layout and Project Record Documents	LS	1		$ 5,942.84
1.4	01 35 29SS	1.2.1SS	Project Safety Documentation	LS	1		$ 2,484.07
1.5	01 53 01SS	1.9.2SS	Temporary Facilities - Mobilization/Demobilization	LS	1		$ 16,666.92
1.6	01 55 00SS	1.5.2SS	Traffic Control, Vehicle Access, and Parking	LS	1		$ 7,333.92
1.7	01 57 01SS	1.6.2SS	Environmental Protection	LS	1		$ 45,659.55
1.8	01 58 01SS	1.3.2SS	Project Identification	LS	1		$ 946.31
	Division 31 - Earthwork					**Sub-Total Division 31**	$ 176,253.42
31.1	02 41 31SS	1.6.1SS	Demolition and Removal of Existing Concrete Cutoff Wall and Timber Facing	LS	1		$ 58,610.90
31.2	31 24 13SS	1.8.5SS	Common Excavation c/w Off-Site Disposal (Sediment Removal)	m^3	145		$ 633.07
31.3	31 24 13	1.8.9	Fine Grading of Channel Bottom	m^2	162		$ 36.10
31.4	N/A	SP 12	Environmental Restoration as directed by the Environmental Monitor (Provisional)	LS	1	$ 20,000.00	$ 20,000.00

SCHEDULE 4 – SUBCONTRACTORS

The Proponent should identify any scope of work that will be subcontracted and complete and provide a separate table (using the table below) for each of its subcontractors.

The Proponent agrees that the Owner may contact any proposed subcontractor and agrees, for and on behalf of any proposed subcontractor, that the Owner may contact any reference.

Subcontracted Scope	Diversion Engineering	
Subcontractor	StoneCroft Engineering	
Contact (name, title, email, telephone no.)	Brian Peeters 250.670.7351 brian@stonecroftengineering.ca	
Approximate Percent of the work to be Subcontracted	5%	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	KVR Major Culvert Repair CW-064
	Client:	Recreation Sites and Trails BC
	Nature of work:	Hydrotechnical Engineering
	Value:	
	Client Contact:	Alex Sokup - Alex.Soukup@gov.bc.ca
	2. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	3. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	

SCHEDULE 4 – SUBCONTRACTORS

The Proponent should identify any scope of work that will be subcontracted and complete and provide a separate table (using the table below) for each of its subcontractors.

The Proponent agrees that the Owner may contact any proposed subcontractor and agrees, for and on behalf of any proposed subcontractor, that the Owner may contact any reference.

Subcontracted Scope	Environmental Protection	
Subcontractor	Terrawest	
Contact (name, title, email, telephone no.)	Derrick Nickel 250.216.4343 dnickel@terrawest.ca	
Approximate Percent of the work to be Subcontracted	10%	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	2. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	3. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	

SCHEDULE 4 – SUBCONTRACTORS

The Proponent should identify any scope of work that will be subcontracted and complete and provide a separate table (using the table below) for each of its subcontractors.

The Proponent agrees that the Owner may contact any proposed subcontractor and agrees, for and on behalf of any proposed subcontractor, that the Owner may contact any reference.

Subcontracted Scope	Trucking	
Subcontractor	Xtend Rentals and Safety	
Contact (name, title, email, telephone no.)	250-824-1592	
Approximate Percent of the work to be Subcontracted	10%	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	2. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	3. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	

SCHEDULE 4 – SUBCONTRACTORS

The Proponent should identify any scope of work that will be subcontracted and complete and provide a separate table (using the table below) for each of its subcontractors.

The Proponent agrees that the Owner may contact any proposed subcontractor and agrees, for and on behalf of any proposed subcontractor, that the Owner may contact any reference.

Subcontracted Scope	Surveying	
Subcontractor	Turner and Associates	
Contact (name, title, email, telephone no.)	Matt Turner (250)-753-9778, matt@turnersurveys.ca	
Approximate Percent of the work to be Subcontracted	5%	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	2. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	3. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	

SCHEDULE 6 – PROPOSED AMENDMENTS TO COMMERCIAL TERMS

The Proponent should list below any proposed amendments to the commercial terms for the final Contract as invited under Section 4.2 of the RFP (include the applicable section or GC reference and the rationale and the benefit to the Owner such as the amount of cost-savings), if any, for each proposed amendment). **Except as may be specifically listed below, the Proponent will be deemed to fully accept all the commercial terms for the final Contract as described by the Contract Documents.**

SECTION/GC	PROPOSED AMENDMENT	RATIONALE AND BENEFIT
	none	

SCHEDULE 7 – ALTERNATIVES

The Proponent should list below any proposed alternatives to the specifications or design or both as invited under Section 4.3 of the RFP (include the applicable specification or drawing reference and the rationale and the benefit to the Owner (such as the amount of cost-savings or superior performance), if any, for each proposed alternative). **Except as specifically listed below, the Proponent will be deemed to fully accept and to agree to fully comply with the specifications and design as described in the Contract Documents.**

SECTION/SP	PROPOSED ALTERNATIVE	RATIONALE AND BENEFIT
	none	

SME Mackie Dam Decommissioning
Site Access Plan - No. 2024-IS-05

Objective

When developing a site access plan for a project like the Mackie Dam Decommissioning, Spider Mountain Excavators (SME) aims to create an efficient, low-impact approach to earthworks in environmentally sensitive areas. SME understands the importance of retaining as much habitat as possible in riparian and public-use areas. SME brings experience, specialised skills, equipment, and techniques that other contractors cannot access to to deliver the finished product that the client envisions.

Please see attached 'Attachment A' listing our previous experience, client references and equipment / workforce capacity.

Equipment

Option 1

SME will use a spider excavator (photo 1) for all site access and instream works. The spider has the ability to narrow its chassis to under 2.4m; this, combined with our forestry attachments, allows SME to clear an extremely narrow pilot trail for site access. The spider has the ability to work on slopes up to and exceeding 45º, allowing access to any location without the need to build access roads. SME will handle material conveyance with an appropriately sized four-wheeled articulating dumper (photo 3). The narrow access road created by the spider will require the dumper to be sized accordingly. The spoil site will have a conventional excavator staged for material loading into highway trucks. This double handling of material will reduce the size requirements of the spoil site, likely using existing sites, and facilitate spoil removal immediately following excavation.

Option 2

SME would use a spider excavator for all site access and instream works. SME would handle material conveyance with a long-reach excavator (photo 3). The long-reach excavator could deliver materials for instream works and load the highway trucks with the excavated material.

Proposed Methods for Site Access

Option 1

SME proposes accessing the Mackie Road Dam from the SW utilising the existing Arbour Heights development at the end of Colonia Drive (photos 4,5). This location was chosen as it has the least amount of existing infrastructure, requires very little mature tree removal, work can be facilitated in the dry before diversion, and has less impact on the public use of the trail system and the gentlest grade for accessing the creek. Utilising the existing trail for roughly 100m, SME would widen the trail as necessary, resulting in a width similar to the Heart Lake

Trail (roughly 2.6m). Upstream of the dam, there is a natural pool in the creek, which is roughly where the spur road would leave the trail following the gentle grade downstream towards the creek. The road would hug the bank of Holland Creek and enter the creek upstream, where the planned excavation begins. Due to the bedrock, some rock hammer work will be necessary, and possibly coarse aggregate will have to be used to support the outside edge of the road. Because the spider can access the creek prior to road establishment, it may be possible to utilise excavated fill from the creek for road grading.

Option 2

SME proposes a secondary option, utilising the Heart Lake Trail to access the site from the North bank of Holland Creek (photo 6,7). The spider excavator can access the dam and excavation site via the North bank, upstream of the dam, where there is a natural pool in the creek. Mature tree removal would be required on the North bank above the dam site to facilitate a pad for the long reach excavator and for clearance for the long reach excavator's boom and swing radius. The spider would perform the excavation and demolition of the dam. The long reach excavator would be used to scoop the material excavated by the spider and place it on the Heart Lake Trail to be loaded into conventional dump trucks. The conventional dump trucks could be loaded on the trail and material removed from the site. This would require closure of the trail during construction works.

Remediation

SME recognizes the significance of the project location to the public of Ladysmith and the value of retaining the aesthetics and natural beauty surrounding Holland Creek. Option 1 would require minor tree removal, rock hammer work and material grading to gain access to Holland Creek. The remediation would involve removing all imported and native materials used for the road surface. This would leave a narrow bench in the rock slope of the river that could be easily blocked with large riprap if required. The trail could be improved to match the specifications of the Heart Lake Trail or the vegetated material and coarse woody debris reused on the side of the trail to restore it back to the original width.

Option 2 requires the removal of mature trees on the North bank of Holland Creek as well as expansion of the current trail to facilitate a pad for the long reach excavator. This option will require very little remediation as most of the material conveyance will be on the already wide and levelled Holland Creek Trail. The mature trees removed could be replanted at the ToL's request.

Summary

SME prefers **option 1** because material conveyance in and out of the creek becomes clean and efficient once road access is established. An access road facilitates both the required removal of unattended equipment above the HWM (high water mark) and the refuelling of equipment away from the creek. It has been our experience while working in creeks that site conditions

can change quickly due to unpredictable weather events. Option 1 allows more options for passive diversion, which can be adjusted quickly and easily as site conditions change.

Photo 1 - Spider Excavator on 45º slope in Kicking Horse Canyon

Photo 2 - Small 4 Wheeled Articulated Dumper

Photo 3 - Long Reach Excavator

Photo 4 & 5 - South Bank Spur Road/ Access

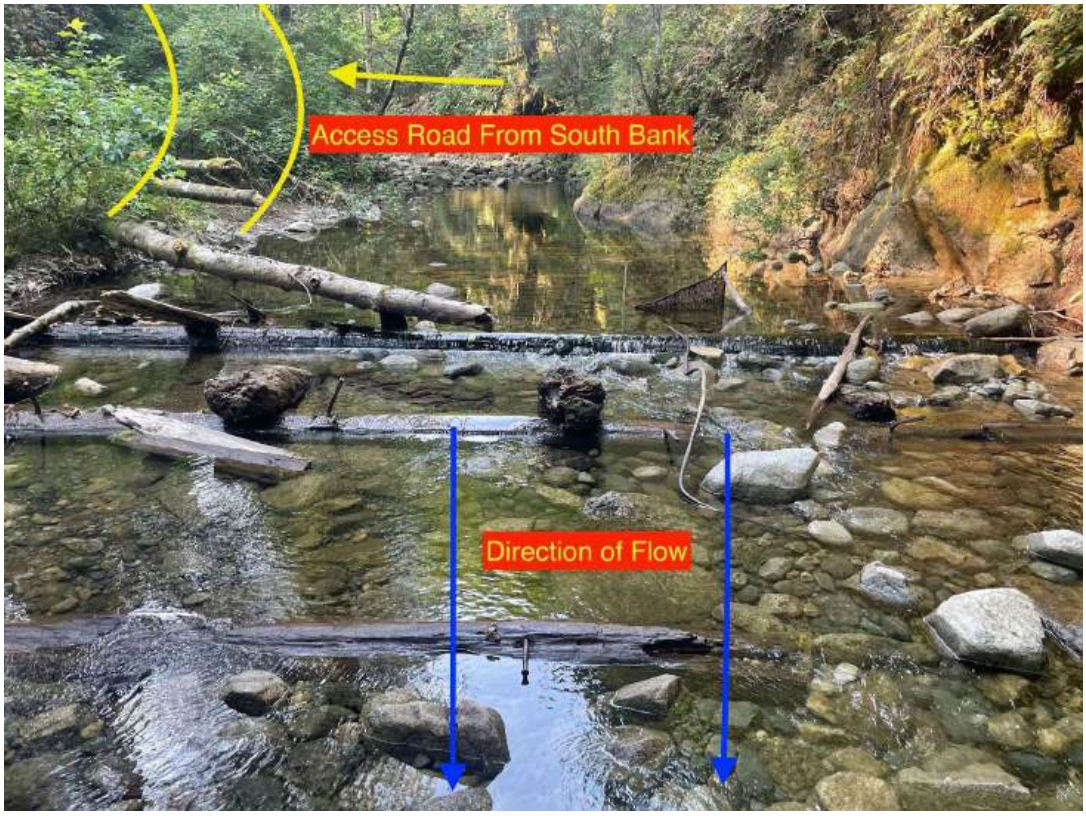


Photo 5:

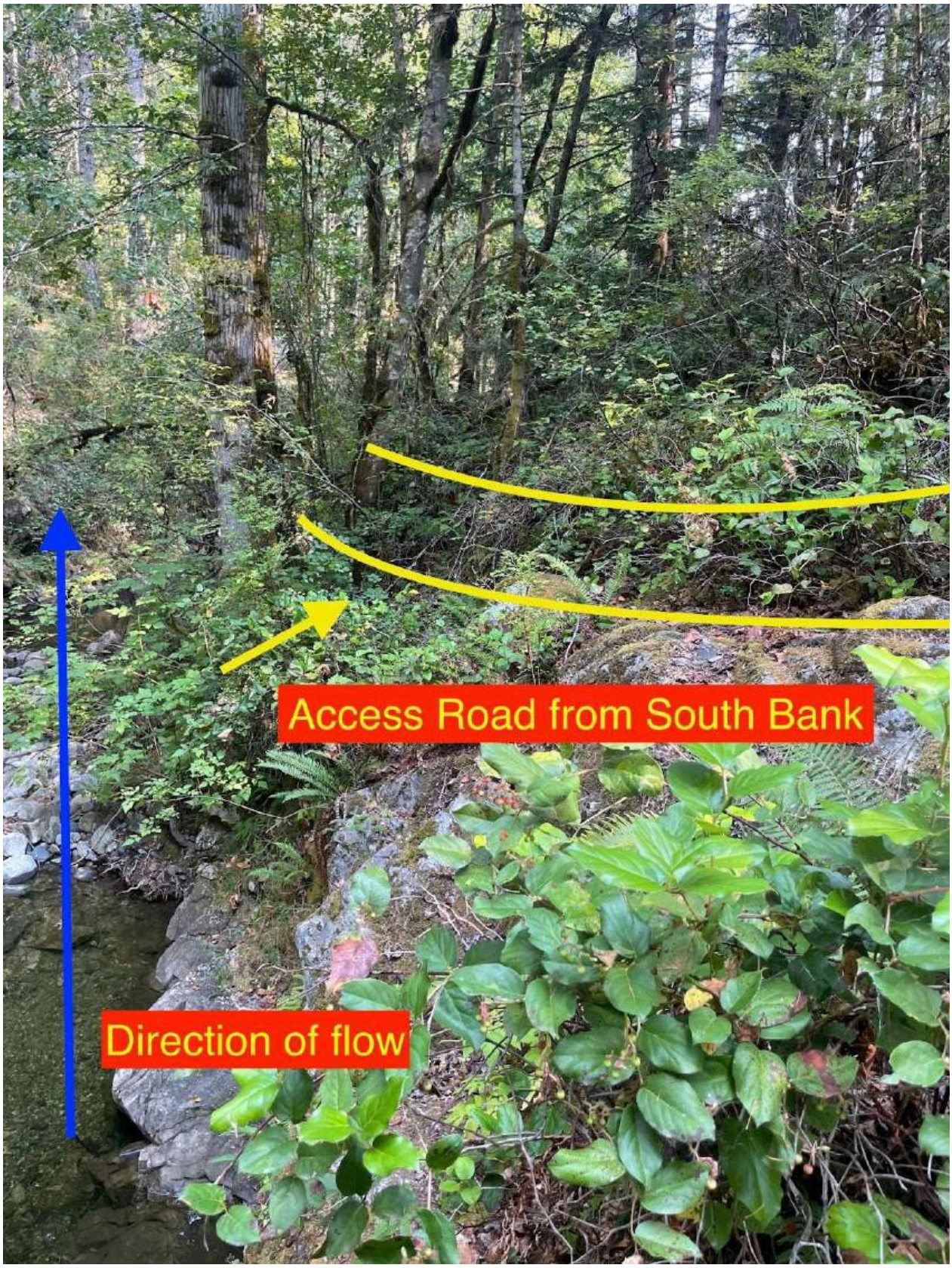


Photo 6 & 7 - North Bank Access and Excavator Pad

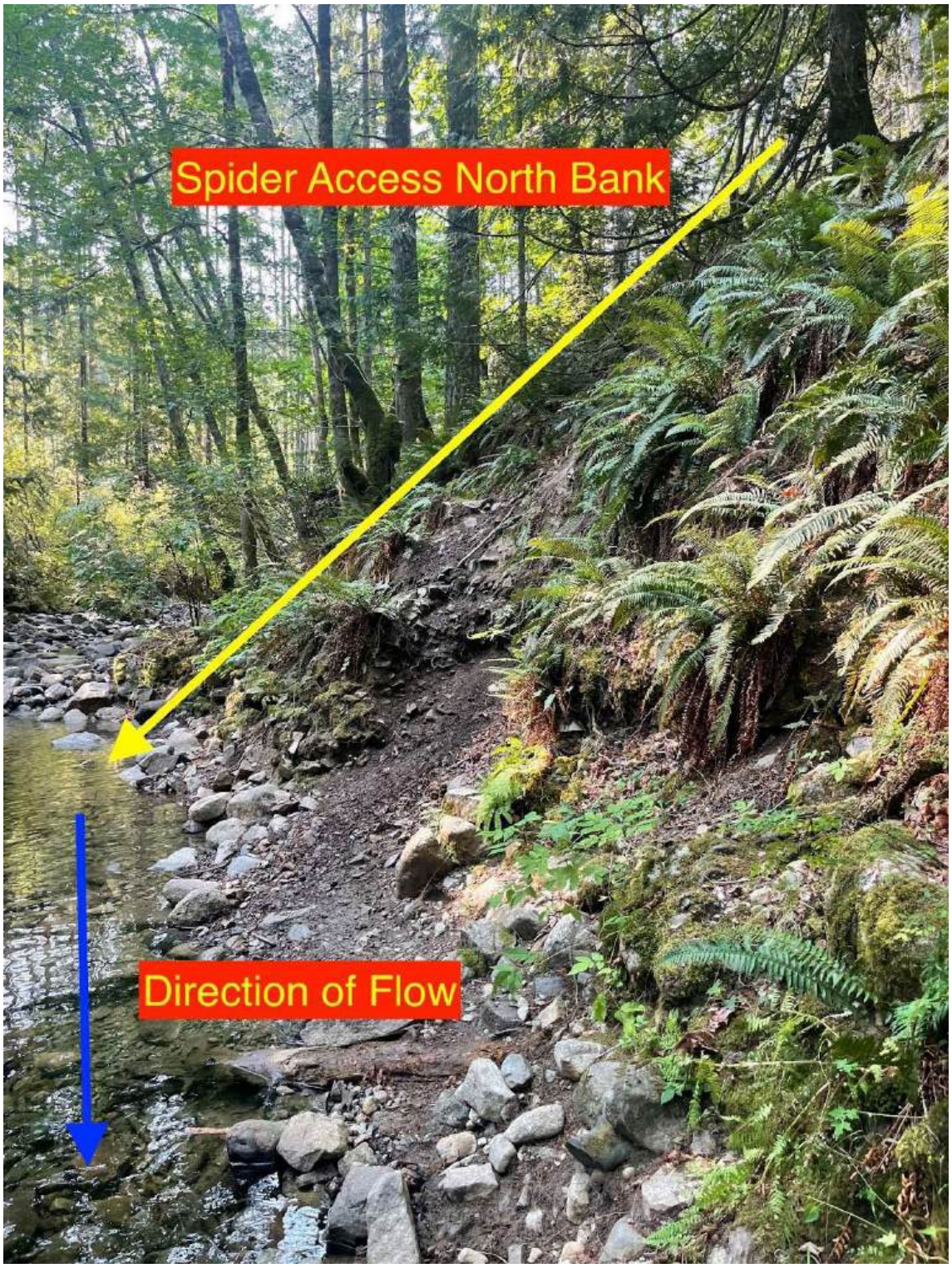
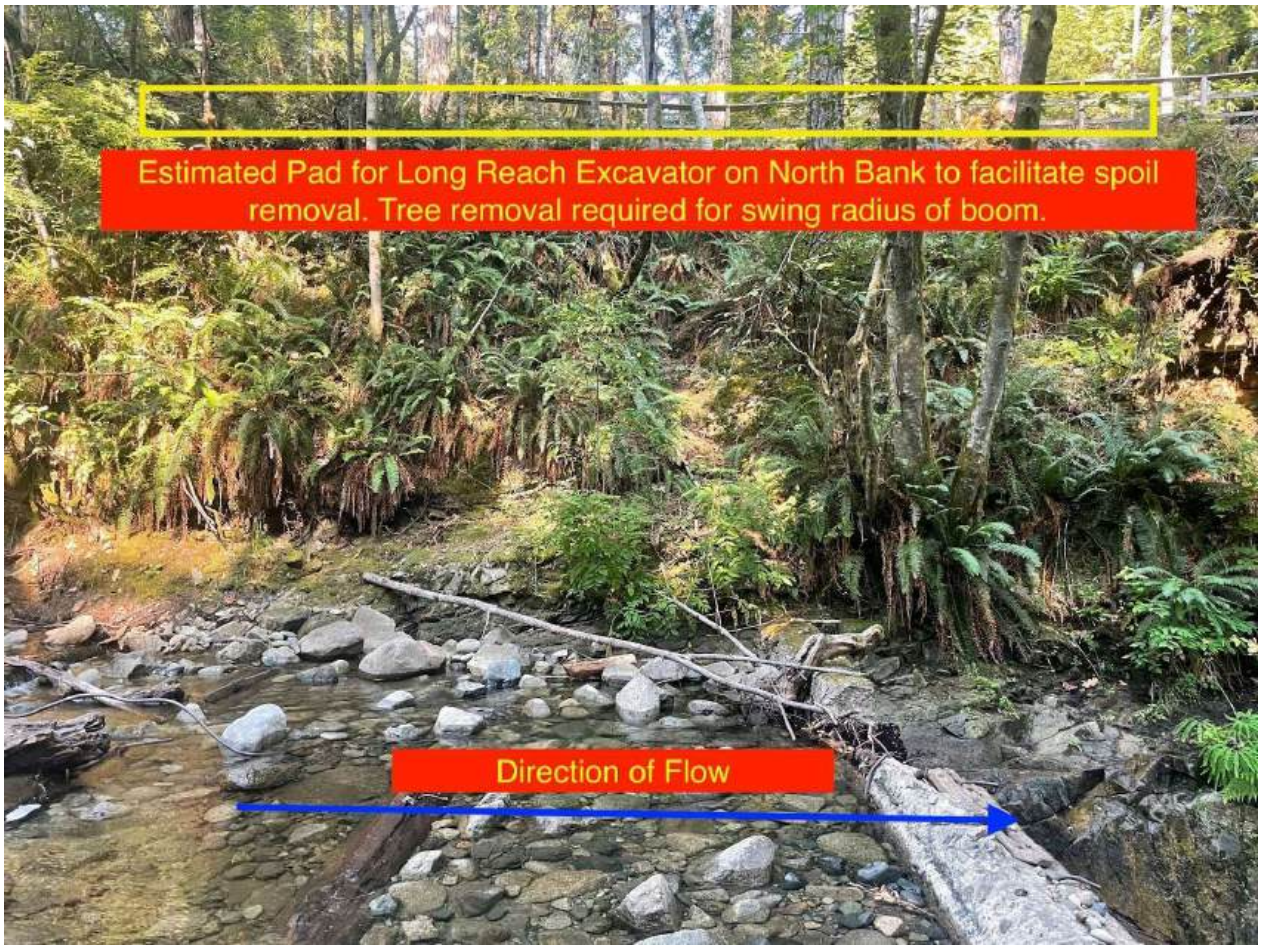


Photo 7:


Estimated Pad for Long Reach Excavator on North Bank to facilitate spoil removal. Tree removal required for swing radius of boom.
Direction of Flow

SME Mackie Dam Decommissioning
Diversion Plan - No. 2024-IS-05

Objective

Spider Mountain Excavators (SME) goal, when developing a diversion and site isolation plan for a project like the Mackie Dam Decommissioning, is to create a simple, passive, cost effective diversion solution that adheres to the DFO standards and meets the clients goals and expectations. SME brings to the table experience, specialized skills, equipment and techniques other contractors do not have access to. SME has successfully employed the equipment, skills and techniques proposed for the Mackie Dam Decommissioning on previous passive diversion projects.

Equipment

Option 1

SME will be using a spider excavator (photo 1) for all site instream works. Unlike conventional excavators, the spider excavator has the ability to adapt its chassis to the existing ground conditions. The spider can safely operate on slopes up to and exceeding 45º allowing access to any location without the need to build access roads. The spider is also capable of working in water in depths of 2m. The spider will handle all instream works including; diversion installation, excavation, demolition of the dam concrete structure and removal of dam timber structures. SME will handle diversion material, removal of equipment above the high water mark and equipment conveyance with an appropriately sized four wheeled articulating dumper. 4" pumps with suction screens meeting DFO regulations will be available if dewatering or pumping of turbid water is required.

Option 2

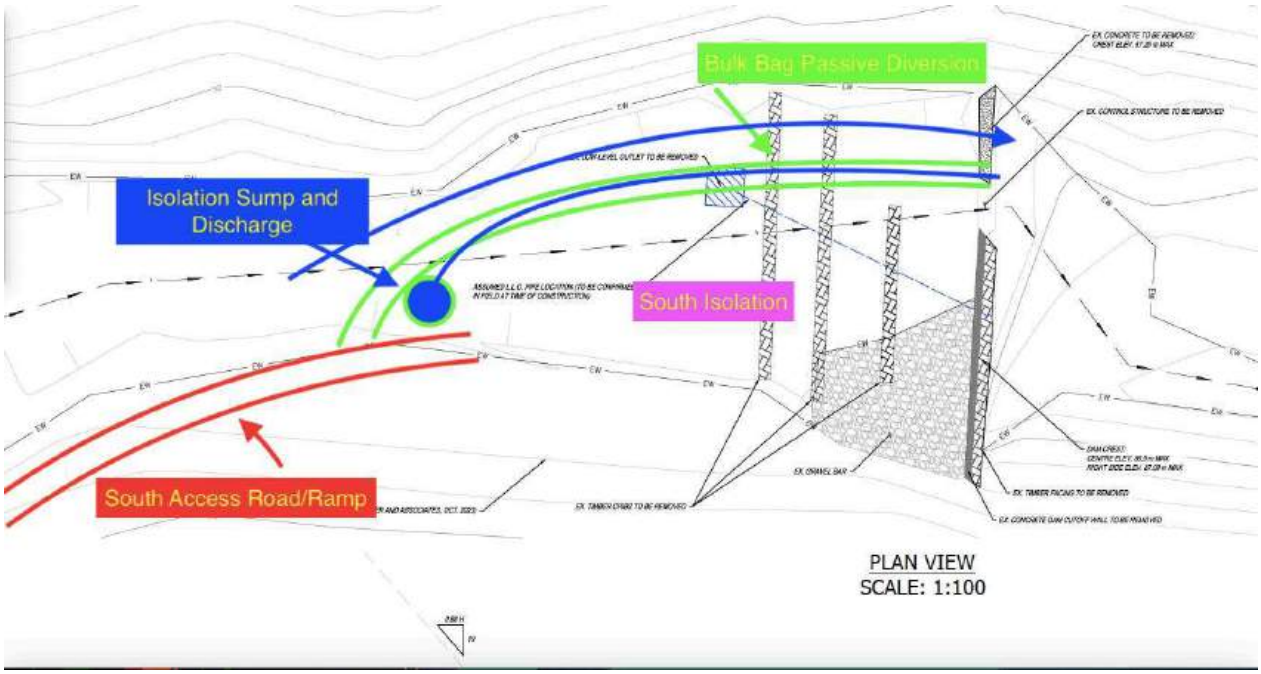
SME would use a spider excavator for all instream works. SME would handle diversion equipment and material conveyance with a long reach excavator. The long reach excavator could deliver materials and equipment for instream works to the spider for installation.

Proposed Method for Passive Diversion

Option 1 - South Isolation and Diversion

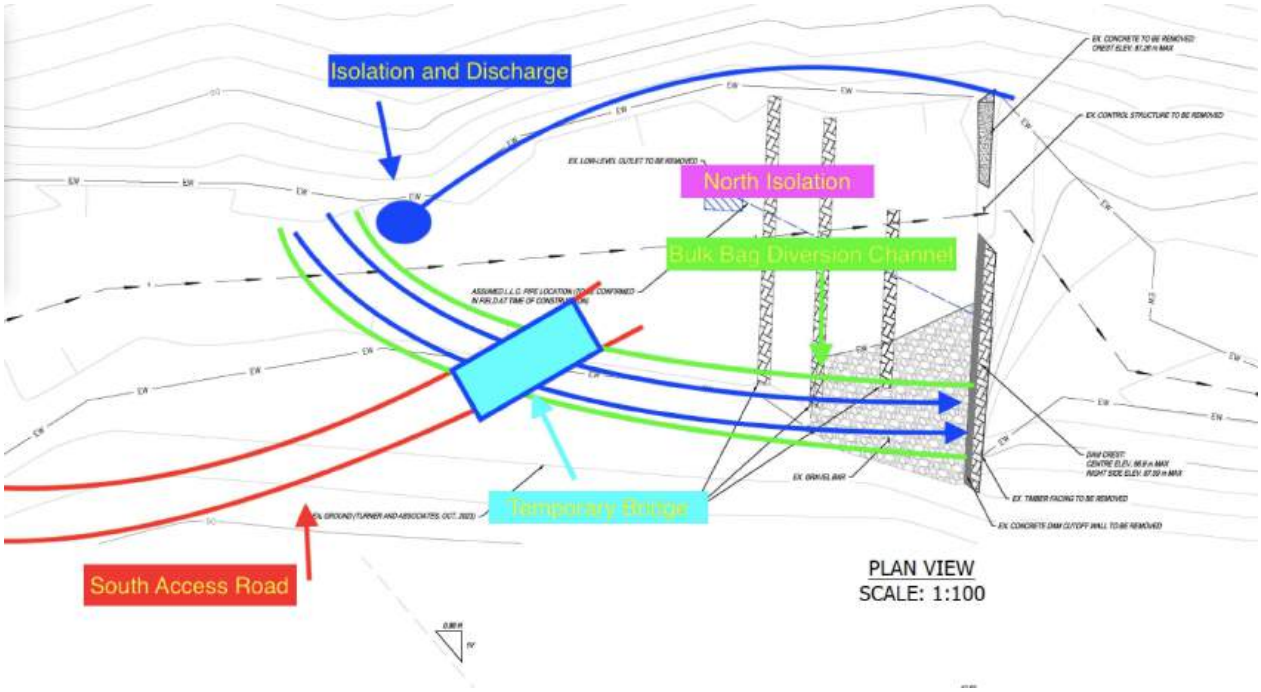
As discussed in the site access plan, **option 1** proposes accessing Holland Creek from the South Bank utilizing a pre-built access road. The access road will facilitate all material handling for the instream passive diversion. SME plans on a combination of bulk bags (pre-filled with pea gravel), sand bags and poly to create a site isolation, starting with the South (river right) side of Holland Creek. The goal of the passive diversion being to push the flow of Holland Creek to the North Bank (river left) which would create the largest site isolation possible to facilitate the majority of the instream excavation and dam decommissioning. SME will first use the spider to perform an initial 'grading' of the creek bed where the diversion is to take place, this is required

to create a smooth foundation for the bulk bags to seal on the creek floor. The bulk bags will then be delivered to the spider via the dumper and placed in the creek working upstream to downstream. The bulk bags will be placed on top of a poly liner which will wrap around the top and bottom of the bulk bag to help seal water out of the isolation. Inevitably once the isolation is in place, some water will still enter the isolation, this will be managed via a sump with 4" pump placed upstream of the excavations and or if required an in-isolation diversion channel. Please see the drawing of the proposed South Isolation and Diversion below.



Option 1 - North Isolation and Diversion

Upon completion of the South Diversion excavation, the diversion will need to be removed and shifted to facilitate the dam decommissioning, as well as excavation and spoiling of the remaining material near the North bank. This will require the bulk bags to be moved and placed in the excavated channel along the South bank (river right). In order to facilitate material conveyance a temporary bridge may be required for the articulated dumper to access the North isolation (this would depend on water levels and the discretion of the QEP). Optimally the isolation could be configured so the spider will be able to reach over the isolation and diversion channel and place the excavated material and removed dam materials into the dumper. Inevitably once the isolation is in place, some water will still enter the isolation, this will be managed via a sump with 4" pump placed upstream of the excavations and or if required an in-isolation diversion channel. Please see the drawing of the proposed North Diversion and Isolation below.



Option 2

In **option 2**, the diversion plan remains the same as option 1 but material conveyance will be via the long reach excavator rather than using the access road and articulated dumper.

Summary

SME has proposed the described passive diversion and site isolation plan for the following reasons.

1.) The project requirement of maintaining flow for fish passage. SME's diversion plan always allows for flow around the site isolation.
2.) The ability to design a diversion to meet flow requirements of a Q10 event during the months of construction.
3.) Installation of diversion equipment and materials and removal of excavated materials is productive with the access road.
4.) Removal of equipment above High Water Mark. With the site access road, excavators and pumps can be moved above HWM daily.
5.) Refueling of equipment can be easily done away from the water course.
6.) Work facilitated in the dry. By accessing and isolating the south bank, the majority of the excavation and decommissioning required (70% est) can be performed immediately and in the dry.
7.) Simple, transportable and readily available materials used in diversion.
8.) Very little pumping required, it is anticipated that pumps will only be used for turbid water and seepage past isolation

9.) Minimal turbidity and equipment in the active channel. SME's isolation plan keeps the excavation and conveyance equipment out of the active flow.

Photo 1 - Spider Excavator Installing Site isolation and Diversion in the aptly named 'Crazy Creek'

August 14, 2024

Town of Ladysmith
410 Esplanade Ave
Ladysmith, BC V9G 1A2

Attn: Michele Gill

Re:	Spider Mountain Excavators Ltd. Bonding Prequalification Letter - Mackie Road Dam Decommissioning RFP

Dear Madame,

As contract surety brokers for Spider Mountain Excavators Ltd., we are pleased to confirm that they presently have a bonding facility in good standing with Trisura Guarantee Insurance Company. Spider Mountain Excavators Ltd. has been a valued client of our firm since 2020, during which time they have completed all bonded projects without any surety involvement. Spider Mountain Excavators Ltd. has received surety support on numerous occasions at the $2,500,000 level for single projects, and currently have an aggregate bonding capacity of $5,000,000.

We believe our client is financially and technically qualified to complete projects in a timely and satisfactory manner. We are prepared to consider favourably the issuance of surety bonds (10% Bid Bond, Consent of Surety, Performance and Labour & Material Payment Bonds) as required, provided all underwriting factors, financial and contractual, and are deemed acceptable at the time any surety bonds are requested.

Should you require additional information on this firm, please do not hesitate to contact the writer.

Yours truly,

Patrick Russell
Vice President, Surety

Attachment A:

Company Overview, Experience and Capacity

Company Overview

Spider Mountain Excavators (SME) is a Golden BC-based excavation company with a history of undertaking remote access and challenging construction projects. More recently, SME has applied these skills to demanding instream and environmentally sensitive projects in complex work environments. Our company was founded on our Spider Excavators, which are purpose built for working on steep grades, in standing water and providing low impact alternatives to conventional equipment. Building on that mentality, SME has added additional low impact equipment for material handling in environmentally sensitive and aquatic working environments.

Due to the demand for SME's unique equipment and skill set, our company has had the privilege of being involved in some of Western Canada's mega projects, including the Site C Dam, Trans Mountain Pipeline, and Coastal Gas Link. SME has used the experience from working on these projects to move from subcontracting to general contracting with clients such as Parks Canada, BC MoTI, and Recreation Sites and Trails BC.

Related Projects - General Contractor

BC MoTI Major Works - Crazy Creek Bridge Scour Remediation
Value: $790,000
SME was awarded the Crazy Creek Scour Remediation Project for the BC MoTI in September 2023. The project involved repairing a concrete bridge abutment and excavating 450m3 of material to facilitate the installation of 600m3 of 500kg riprap. This required SME to develop and install two instream flow isolations, one at each bridge abutment to facilitate excavations, concrete pours and riprap armouring. The project was challenging due to; the aptly named 'Crazy Creek', a late award date, precipitation events, Crazy Creek feeding a salmon bearing river, traffic from Highway, extremely low overhead height of bridge, and a rocky/bouldery substrate. Please see photos below.

Parks Canada, Glacier National Park - East Gate Landslide
Value $1,300,000
SME was awarded the East Gate Landslide stabilization project in Glacier National Park (GNP) in June 2022. The project involved slope stabilization, erosion control, excavation, erecting five massive log crib check dam structures, rip rap armouring, site isolation, flow diversion, pioneering site access trails, and conveyance of material up 30º slopes in an active debris flow channel. The project challenges are numerous, and SME is still working with Parks Canada on future check dam installations and the annual maintenance of existing infrastructure.

Recreation Sites and Trails BC Major Works - Rail Trail Major Culvert Repair
Value $1,200,000
SME has been awarded a project for the Recreation Sites and Trails BC in the fall of 2024 to repair a 105 year old KVR (Kettle Valley Rail) culvert in Greenwood, BC. The project involves repairing the eroded concrete floor of a historic 65 m-long stone arch culvert with over 1500 m3 of riprap armouring. The project challenges include; the installation of a cofferdam, installation of 200m of 36" HDPE pipe for a passive instream site isolation, a 70m3 concrete repair to the floor of the existing culvert and 1000kg riprap armouring.

Crazy Creek Scour Remediation - Trans Canada Highway

East Gate Landslide - GNP

Principles of best values

SME has read and understood the Town of Ladysmith Purchasing Policy and Principles of “Best Value.” We believe the following policies directly apply to the proposed Holland Creek Dam Decommissioning project.

Protection of the environment
SME has always applied a 'light hand on the land' approach to heavy civil construction. Our equipment is all geared toward low impact and limited access projects. Our machines are equipped with bio oil to work in aquatic and environmentally sensitive environments. SME prioritizes assisting clients achieve their expectations, while limiting the removal of natural habitat within construction zones. SME understands the importance of quality management and has worked with both client supplied and subcontracted Quality Environmental Professionals and Quality Control Managers on previous instream projects.

Economy
SME is a BC-based company, and most of our staff are located in the province's interior. However, SME intends to hire local tradespeople to assist it in any work outside its company's specialized scope. When possible, local First Nations businesses will be prioritized for subcontracting.

SME is not a local Vancouver Island company and would require lodging, food, fuel, and the support of local businesses to support our staff and company during the construction process. It is SMEs policy to utilize local First Nations businesses for accommodations, fuel, and other living expenses while living away from home.

Living wages for the local area will be paid to all SME employees.

Public Spaces
SME recognizes the fact that the Holland Creek Dam access will be via a local recreational trail and will commit to the following:

- Limit the amount of clearing and grubbing required for site access and material conveyance
- Avoid damaging any trees and infrastructure not being removed for site access
- Leave the site access in a better condition than it was found
- Perform remediation to the construction site and site access as outlined in the CEMP
- Limit the impacts to the public use of the construction site area

Environment
SME is well versed in the environmental standards and expectations for the Holland Creek Dam Project. SME has a track record of working with QEPs and stakeholders to reduce construction's impact on the environment and implement preventative measures for erosion and sediment control, turbidity and spill potential. SME understands the requirements for instream works to ensure the project has little or no effect on the surrounding and downstream environments. Working as a General Contractor for PC and MoTI, SME has had first hand experience engaging with QEP's, EM's and scheduling clearing and instream works around environmental timing windows.

First Nations
SME understands the importance of communication with stakeholders and recognizes the project is situated on land associated with the Hul'qumi'num Treaty Group and Snuneymuxm First Nations. SME will approach and engage with stakeholders affected by the project's footprint prior to construction. SME has past experience engaging and working with the OKIB and Splatsin First Nations in EM roles on The Crazy Creek Scour Remediation Project.

References

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Ministry of Transportation & Infrastructure

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Project Supervisor
Parks Canada

Richard Singer
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Project Manager
McElhanney

Richard Oszust
roszust@kickinghorseresort.com
Operations Manager
RCR KHMR

John Thornton
john.thornton@banffnorquay.com
Operations Manager
Mt Norquay

Certifications include:

WorkSafe BC COR certification
SAFE company from the BC Safety Council
ISN certified

See below for Safety Certifications

COR

WORK SAFE BC

Certificate of Recognition Program
Mailing address: PO Box 5350 Stn Terminal, Vancouver BC V6B 5L5
Phone 604.244.6164 | 1.866.644.6164 | Fax 604.214.5499 | worksafebc.com

June 2, 2023

SPIDER MOUNTAIN EXCAVATORS LTD.
418 RIVERGLEN
PO BOX 1512
GOLDEN, BC V0A1H0

Subject: 2022 Certificate of Recognition Incentive – WorkSafeBC Account #200339856

Dear Sir or Madam:

We have determined that SPIDER MOUNTAIN EXCAVATORS LTD. met the eligibility criteria for COR in 2022. As a result, the COR incentive amount will be credited to your WorkSafeBC assessment account in recognition of your voluntary commitment to implementation and maintenance of an effective Occupational Health and Safety Management System.

Facts & Evidence

I have reviewed WorkSafeBC's records and determined the following:

- Your firm had a 2022 COR audit reported to WorkSafeBC by BCFSC.
- Your firm's 2022 COR is considered valid and eligible for incentive.
- Your firm had no exceptions to financial incentive eligibility for 2022.

Reasons & Decision

An employer with a valid COR is eligible to receive a financial incentive for each year they hold a COR where none of the exceptions to COR financial incentive eligibility apply. As your firm's 2022 COR is considered valid and eligible, an incentive amount will be credited to your WorkSafeBC assessment account. Incentive details for 2022:

Certifying Partner: BCFSC
COR type(s): OHS
Incentive amount: $1,184.45

A Certificate of Recognition Program financial incentive is calculated using 10% of the employer's base assessment premiums for each classification unit included in the employer's COR. A change to any factor in an employer's assessment premium (e.g., reported payroll, base rate, net rate...) may result in a consequential recalculation of the financial incentive.

Incentive eligibility for each year is determined independently of other years. If your firm had either a workplace incident, injury or inspection, and officers from WorkSafeBC's Prevention

BC SAFETY COUNCIL

SPIDER
EXCAVATORS.COM

Your Steep Slope Solution

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250.344.3508


SPIDER
M545x


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OUR MACHINES

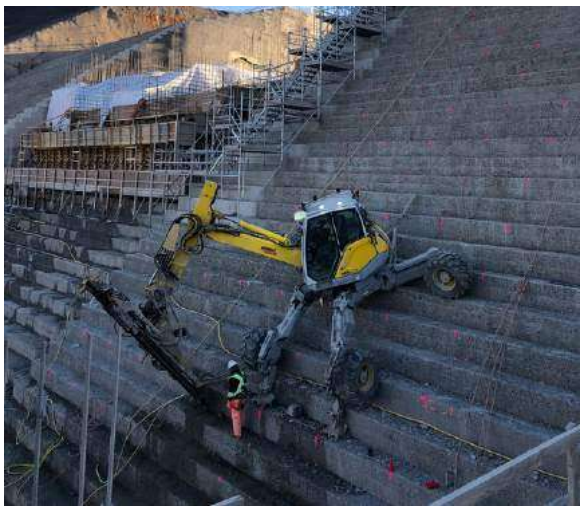
SpiderExcavators owns four Menzi Muck, 4x4 Plus excavators: Specially designed for civil construction, drilling and forestry work. These machines excel in extreme terrain while creating very little ground disturbance. A brand new M545X has just arrived, directly from the Menzi Muck manufacturer in Switzerland.

There are few Spider companies in BC and none with our 4x4 system and this impressive list of attachments. (See below)

The machine is road legal with four equally sized rubber tires enabling it to drive at a maximum speed of 15km/hr on smooth surfaces and giving it an incredibly light footprint off-road.

Off-road, the machines easily operate on slopes exceeding 100%.

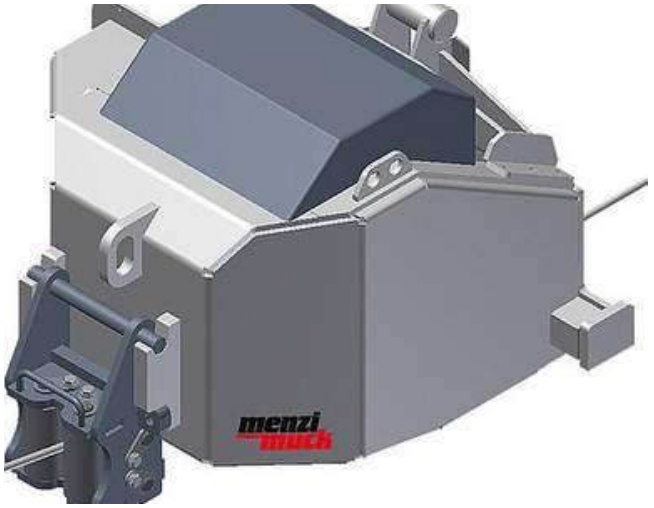
Our excavators are fitted with an onboard winch system which extends their capabilities even further. Conventional excavators adapt the terrain to level the machine. These machines adapt their chassis to match the terrain. This eliminates the need for roadbuilding to access work sites. In rocky conditions or bedrock, the rubber tires excel far beyond the capabilities of tracked excavators.



WINCHING SYSTEMS

FORESTRY WINCH

This winch allows for both the securing of the machine and yarding of logs and other materials. 100m of 14mm cable makes for maximum flexibility of anchor locations and long-distance yarding. The cable powers on and off the drum, achieving perfect wrapping of the cable on the drum. When used to secure the machine, the winch enables the machine to work safely on slopes exceeding 100%



ECOFOREST T- WINCH

The versatile ecoforest T-WINCH is an anchor point for tether machines on steep slopes. In addition to improving site safety, the T-WINCH system has a low fuel consumption rate, representing an environmentally conscious approach. The tracked system and remote control allow for safe access to steep terrain. The plate in the front part of the machine provides stability in rough terrain. Ground damage can be drastically reduced with the T-WINCH, standing times after lousy weather can be shortened, and the use of belts and chains can be reduced.

THE CREW

SpiderExcavators is one of the few Spider companies in North America that can manage large projects 24/7 with multiple machines. Spider Excavators has invested significantly in training operators who have all come to the company with specialized skills. Our team includes mountain guides, loggers, certified fallers, drillers, crane operators, mechanics and an engineer -
all of whom have devoted significant time learning to operate safely one of the most capable and complicated machines ever designed.

60” DRUM MULCHER

This attachment can mulch or chip trees and brush up to 12” in diameter. This powerful tool can clear large areas of brush and trees in a single shift. Two types of teeth allow for very efficient cutting and chipping or actually tilling the chipped material into the soil. The drum Mulcher differs from rotary munchers in that it allows for control over the “wash” of wood debris coming off the head. This control makes work close to traffic on highways and other structures and assets possible.

TRAXXON ROCK DRILL

SpiderExcavators recently purchased a custom-built drill package from Traxxon Rock Drills, the Trex 1500.

Traxxon combined its Trex 1000 drill mast with its larger THX590 hammer, creating a nimble, robust, powerful drill attachment. The Trex 1500 is mounted to a 360-tilter rotator, which, combined with the versatility of the Menzi Muck chassis, creates an extremely adaptable drill attachment with complex geometry capabilities.

Features and Specifications:

**Menzi Muck equipped with power line pump for high flow rates to drill attachment

**Wireless Remote control

**Air or water-based drilling capabilities

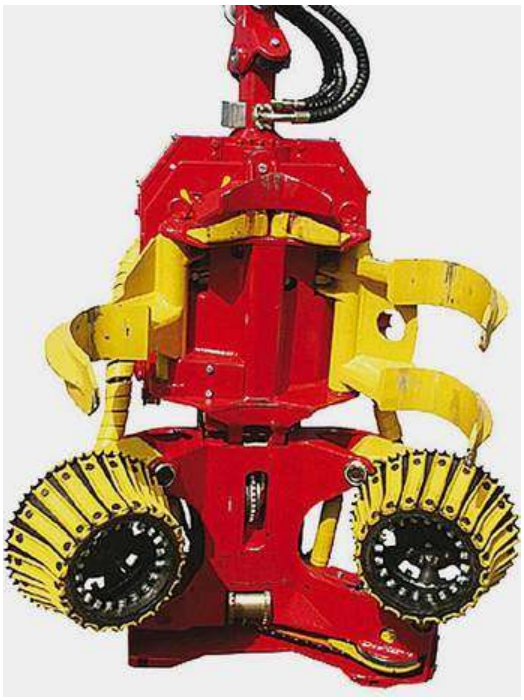
**Hydraulic rod clamper/Oil lubricated hammer for added cooling and extended life Drill

*Rod Length: 10ftMast Extension: 2ft Hole diameter capabilities: 2”-4.5” Drill Steel: R32, T38, or T45rt

KONRAD WOODY 50

The Woody 50 is a dangle head processor that fells trees up 24'' in diameter, strips branches and cuts trees to length. When felling trees, "positive control" is achieved with this head. Even trees that lean towards assets can be safely felled in the desired direction. The grapple can handle wood over 36'' in diameter thanks to the extra-wide opening of the grapple.

This head is unique in the industry because the processor end folds up and out of the way when not needed. This allows for efficient grapple operations when "hoe chucking" and even loading trucks. Also, the head excels at building brush piles for burning.



The design of the grapple limits soil contaminating the pile. The ability to buck the material into short lengths builds tall, clean, tidy burning piles at a high production level. The head can be "stowed" completely, grabbing the working foot.

With the head secured, the working foot is used to push, pull and lift the machine in extreme terrain. No other dangle head processor on any machine achieves this level of mobility and diversity of applications.

POWER CLAM GRAPPLE

The spider can be fit with one of two power clam grapples. This powerful tool can load logs, pile brush, build rock walls or place large riprap. Any job that requires grabbing and accurately placing material is easy and highly productive with this all in one tool. Like all of our attachments, we can quickly switch to the power clam grapple with our R4 rototilt.

1500MM GRADING BUCKET

This bucket can be used for grading, loading and all manner of soft material excavating. Combining the grading bucket with our R4 rototilt greatly increases fine grading capabilities.

600MM TOOTHED BUCKET

This bucket is used for ditching, hard material excavating and trenching. Adding our R4 rototilt to a conventional toothed bucket greatly expands its use and adjustability.

G600/55 26.5 FORESTRY TIRES & CHAINS

The large, low-impact tires are an asset in sensitive ground conditions. The large rubber tires are at home on pavement, grass, boulders, bedrock and forestry settings.

The machine is equipped with aggressive chains during winter operations or prolonged forestry work.

R4 TILT ROTATOR WITH QUICK ATTACH

The R4 rototilt adds a high degree of adjustability to all our attachments. With 360 degrees of endless rotation and 40 degrees of tilt, the rototilt increases our Spider's productivity by decreasing chassis manipulation in tight working environments. This adjustability is combined with a hydraulic quick attach, enabling attachment changes without leaving the operator's cab. The quick attach increases productivity by allowing the operator, with a click of a button, to change to the right tool for the job.

SHEARFORCE SM15 HYDRAULIC BREAKER

The SM Series Hammers are essential excavator attachments on both large and small construction sites in a wide range of industries. These units are specifically designed to withstand the toughest working environment

SHEARFORCE SVP17

ShearForce compactor vibratory plate attachments offer exceptional value for your construction projects. ShearForce compactors are reliable and durable for the toughest compacting, trenching, slope stabilizing, post-pounding, and pile-driving jobs

DIGGA 13DDS AUGER DRIVE

An invaluable attachment for many projects, this premium auger drive cuts through the surface material and lifts the dirt and rock out, leaving a clean hole. Drilling depths can be maximizing using the extension system.

MIDLAND ENDDUMP TRAILER

This Midland tandem axle dump trailer enables us to quickly move materials on and off-site as required.

READY TO GO

The company operates a heavy spec tandem axle Kenworth tractor with a 53’ tri-axle step deck trailer. Mounted on the trailer is a 10x8’ shipping container outfitted as a mechanical shop and spare parts storage. Mounted on the truck is a diesel welder and a hot water pressure washer. This equipment can be moved quickly anywhere, anytime. SpiderExcavators is dedicated to completing the most difficult projects safely, timely and on budget.

ATTACHMENT B

Mackie Dam Decommissioning- Preliminary Construction Schedule					**Schedule is based on permit approvals and timing windows. With in-stream extensions, the schedule could shift finishing mid October. Estimated duration is 3-4 weeks from date of mobilization.
Revision 1.0					
Operation	**Completetion Date**	**Hold Point**	**Witness Point**	**Critical Path**	**Notes**
Award Date	Aug 24, 2024				**Estimated
Permit Approvals	Aug 24, 2024				**Estimated
Notice of Work to Residents	Aug 26, 2024				
Mobilization	Sept 1, 2024				Begin Mobilization from Golden
Installation of Temporary Fencing etc	Sept 3, 2024				
Survey Layout	Sept 2, 2024				
Clearing and Grubbing	Sept 5, 2024				
Complete Access Road	Sept 7, 2024				
Dewatering South	Sept 10, 2024				
Excavation and Decomission South	Sept 15, 2024				
Dewatering North	Sept 17, 2024				
Excavation and Decomission North	Sept 21, 2024				
Removal of Diversion	Sept 23, 2024				
Site Restoration	Sept 30, 2024				
Demobilization	Oct 1, 2024				

August 22, 2024 Ecora File No.: 230237

The Town of Ladysmith
330 6th Avenue PO Box 220
Ladysmith, BC V9G 1A2

Attention: **The Town of Ladysmith**

Reference: **2024-IS-05-A – Mackie Road Dam Decommissioning – RFP Recommendation**

Ecora Engineering and Environmental Ltd. (Ecora) was requested to undertake a review of the proponents' submitted proposals in response to the Request for Proposal (RFP) "Mackie Road Dam Decommissioning" which closed August 15, 2024, at 2:00 pm. As part of the proposal review, Ecora was to provide a recommendation for the selection of a Preferred Proponent. Four (4) contractors were invited to submit proposals, and three (3) proposals were received. The following proponents submitted proposals:

- Hazelwood Construction Services Inc.
- IWC Excavation Ltd.
- Spider Mountain Excavators Ltd.

The proposals were reviewed to check for conformance to the MMCD 2019 RFP Edition and all Contract Documents, and were then graded against the Evaluation Criteria in Attachment A of the RFP. In Ecora's opinion, the Preferred Proponent is **Spider Mountain Excavators Ltd.** as they achieved the highest overall score, which included scoring the highest in "Methodology, workplan, schedule", "Price, including costs to be incurred by the Owner", and "Sustainability". Spider Mountain Excavators Ltd. submitted two (2) potential options for site access and creek dewatering, and each option contained its own Schedule of Quantities and Prices (Schedule 2). Ecora recommends that the Town proceed with **Option #2** as it will be less impactful on the existing trails and natural environment surrounding the Site. The submitted price for Option #2 is $402,239.49 (including GST).

A minor mathematical error was found in Spider Mountain Excavators Ltd.'s Schedule of Quantities and Prices. The "Unit Price" column should be filled out alongside the "Amount" column and have the values rechecked prior to contract execution.

We trust this information meets your present requirements. If you have any questions or comments, please contact the undersigned.

Sincerely

Ecora Engineering & Environmental Ltd.

Jordan Bokla, AScT
Intermediate Civil Technologist
Direct Line: 519.807.2293
jordan.bokla@ecora.ca

c: Michele Gill – mgill@ladysmith.ca
Tim Tanton – ttanton@ladysmith.ca
Ryan Bouma – rbouma@ladysmith.ca
Adam Kerkhecker – adam.kerkhecker@ecora.ca

Ecora Engineering & Environmental Ltd.
200 - 2045 Enterprise Way, Kelowna, BC V1Y 9T5
| P: 250.469.9757 | F: 250.469.9757
www.ecora.ca

TOWN OF LADYSMITH

BYLAW NO. 2188

A Bylaw to Regulate the Marketing of Short-Term Rentals in Ladysmith

WHEREAS the Council of the Town of Ladysmith deems it expedient to regulate the operation and marketing of Short-Term Rental businesses in Ladysmith**;**

AND WHEREAS the Council of the Town of Ladysmith wishes to prevent unlawful and unlicensed Short-Term Rentals from operating in Ladysmith, particularly unlawful and unlicensed Short-Term Rental businesses that remove homes from the long-term housing market**;**

NOW THEREFORE the Council of the Town of Ladysmith, in open meeting assembled**, ENACTS AS FOLLOWS**:

Definitions:

1. In this bylaw:
   "*Business License*" means a valid and subsisting business licence issued pursuant to "Business License Bylaw No. 1513, 2003" as amended or replaced from time to time;

   "*Business License Number*" means the number assigned to a *Business License* by the Town.

   "*emergency housing*" means emergency housing as defined under "Business Regulations and Licensing (Rental Units) Bylaw 2021, No. 2093

   "*market*" means to sell, offer for sale, promote, canvass, solicit, rent, advertise, book, arrange or facilitate rental, and includes placing, posting or erecting advertisements physically or online, but does not include the mere provision of a neutral space or location for such marketing in newspapers, bulletin boards or online;

   "*Short-Term Rental*" means the business of marketing or providing accommodation or lodging to paying guest and includes hotels, motels, hostels, bed and breakfasts, campgrounds, recreational vehicle parks, and vacation rentals, but does not include the rental of dwelling units for residential purposes for a month or more under the *Residential Tenancy Act* or *emergency housing*;

Marketing of Short-Term Rentals:

2. No person shall *market* or operate a *Short-Term Rental* in Ladysmith without a valid *Business Licence*.

3. No person shall *market* a *Short-Term Rental* without conspicuously posting a valid *Business License Number* in all marketing materials.

Review of Business License Applications

4. For certainty, all provisions of Business Licence Bylaw No. 1513, 2003, as amended or replaced from time to time, apply to Short-Term Rental businesses.

5. The following shall be included with all applications for a *Business License* for a *Short-Term Rental* or for the renewal of a *Business License* for a *Short-Term Rental*:
    a. A current title search of all the properties for which the applicant intends to operate as a *Short-Term Rental*;
    b. The written consent of all owners listed on the titles of all properties for which the applicant intends to operate as a *Short-Term Rental*;
    c. an accurate description of the layout, features and accommodation services proposed to be provided as part of the *Short-Term Rental*; and
    d. such other evidence that the proposed *Short-Term Rental* will comply with the Town's bylaws that the License Inspector may prescribe from time to time.

Right of Entry and Inspections

6. In accordance with Section 16 of the *Community Charter*, the License Inspector, a bylaw enforcement officer or other person employed by the Town and designated by the Inspector may enter onto and into property to inspect and determine whether all regulations, prohibitions, and requirements established by this Bylaw are being met.

Offences and Penalties

7. Any person who:
    a. carries on a *Short-Term Rental* business without holding a valid *Business License*;
    b. breaches any term or condition of a *Business License*;
    c. intentionally displays a false *Business License Number* in any marketing material advertising a *Short-Term Rental*;
    d. intentionally submits false information in conjunction with an application for a *Business License* for a *Short-Term Rental*; or
    e. violates any provision of this bylaw;

    commits an offence of this bylaw, and is liable on conviction to a fine or penalty of up to $5,000 for each offence.

8. For clarity, the License Inspector may suspend a *Business License* pursuant to the Business License Bylaw, upon being satisfied that a contravention of section 3 of this bylaw has occurred.

General

9. If any portion of this bylaw is found to be invalid by a court, the invalid portion may be severed and the remaining provisions shall continue to apply.

10. This bylaw comes into force on the day it is adopted.

Citation

11. This Bylaw may be cited for all purposes as “Short-Term Rental Bylaw, 2024, No. 2188”.

READ A FIRST TIME on the 6th day of August, 2022
READ A SECOND TIME on the 6th day of August, 2022
READ A THIRD TIME on the 6th day of August, 2022
ADOPTED on the _____ day of _____, 2022

_____
Mayor (A. Stone)

_____
Corporate Officer (Sue Bouma)

. **TOWN OF LADYSMITH**

BYLAW NO. 2187

A Bylaw to Amend "Town of Ladysmith Zoning Bylaw 2014, No. 1860"

The Council of the Town of Ladysmith in open meeting assembled enacts the following to effect changes to "Town of Ladysmith Zoning Bylaw 2014, No. 1860":

1. The definition of 'Access Strip' is added as follows:

"ACCESS STRIP: means, in the case of a panhandle lot, the part of a panhandle lot that provides access to a street."

2. The definition of 'Accommodation Unit' is deleted and replaced as follows:

"ACCOMMODATION UNIT: means one or more habitable rooms provided as part of a tourist accommodation use to provide temporary accommodation to the travelling public and may include a bathroom, kitchen facilities or a Kitchenette but does not include a Guest Room or a Dwelling Unit"

3. The definition of 'Bed and Breakfast' is deleted and replaced as follows:

"BED AND BREAKFAST: means the provision of *Guest Rooms*, in a *Single-Unit Dwelling* or an *Accessory Building*, for the temporary accommodation of paying guests, and may include meal service to those guests, but does not include the provision of *Accommodation Units* to paying guests"

4. The definition of 'Dwelling Unit' is amended to add the words "or Guest Room" after "Accommodation Unit"

5. The definition of 'Guest Room' is added as follows:

"GUEST ROOM: means a bedroom or similar room provided as part of a Bed and Breakfast use to provide sleeping facilities to the travelling public and may include an ensuite bathroom but does not include a room with Kitchen Facilities, a Kitchen, Kitchenette or cooking facilities of any kind, or an Accommodation Unit or Dwelling Unit."

6. The last sentence in the definition of 'Corner Parcel ' is deleted and replaced as follows:

"In the case of a Panhandle Parcel, the Front Parcel Line shall be the Parcel Line abutting the Parcel between the Street and the Panhandle Parcel."

7. The definition of 'Tourist Accommodation' is deleted and replaced as follows:

"TOURIST ACCOMMODATION: means the provision of one or more *Accommodation Units* for the temporary accommodation of the travelling public but does not include the rental of dwelling units for residential purposes for a month or more under a residential tenancy agreement pursuant to the *Residential Tenancy Act*."

8. Subsections 5.3(a) and (b) are deleted and replaced as follows:

" a) When Panhandle Parcels are created, the Parcel frontage requirement shall not be calculated for the panhandle portion of the access strip fronting on the Street, but for the front parcel line.

b) Where a *Parcel* is a *Panhandle Parcel*, the access strip shall not be included as part of the *Parcel Area* for the purpose of determining minimum *Parcel size*."

9. Add the following as subsections 5.3(c) and (d):

" c) An access strip shall have:

i) a minimum width of 6.0 meters;

ii) a maximum width of 9.0 meters;

iii) a maximum length of 30 meters;

iv) a maximum grade of 12%

d) A panhandle parcel shall not be created adjacent to another panhandle parcel."

10. Subsections 6.7(a) is deleted and replaced as follows:

" a) A Bed and Breakfast, where permitted in this Bylaw, shall satisfy all of the following conditions:

i. Shall be operated by an owner of the Single Unit Dwelling, who resides on the Parcel on which the Bed and Breakfast is located.

ii. Shall not alter the Principal Residential character or external appearance of the Dwelling.

iii. A Guest Room shall not be provided in an *Accessory Building* unless at least one Guest Room is provided in a Single Unit Dwelling.

iv. Shall be limited to a maximum of four (4) Guest Rooms, only one of which may be located in an Accessory Building.

v. For clarity, Guest Rooms shall not have Kitchen Facilities, Kitchenettes, or cooking facilites of any kind. :

vi. Shall be permitted to offer culinary services to guests, including cooking lessons, which are separate from meals included with accommodation.

vii. Shall not provide accommodation to the same person or persons more than 30 consecutive days, or more than 60 days within a single calendar year.

viii. Shall be prohibited on a Parcel where a Caretaker Dwelling, Secondary Suite, Coach House Dwelling, Two-unit Dwelling or Multi-unit Dwelling is located."

11. Table 8.1 is amended to change the parking requirement for Bed and Breakfast to replace the words "Accommodation Unit" with "Guest Room"

12. The minimum parcel size for the R-1-A zone under subsection 10.3.3(a) is reduced from 460 square meters to 300 square meters

13. The minimum parcel frontage for the R-1-A zone under subsection 10.3.3(b) is reduced from 13.5 meters to 10 meters.

14. Add 'Bed and Breakfast' as a permitted accessory use in the R-2 zone as section 10.8(2)(e)

15. Delete subsection Section 10.8(4)(b) of the R-2 zone and replace with the following: "Where more than four units are located on a *Parcel*, the maximum *Floor Space Ratio* shall be 1.3."

16. Add the following as section 10.8.6
    "6. Landscaping and Screening
    a) Landscaping and screening shall be provided in accordance with Part 7: Landscaping and Screening Regulations."

17. Add the following as section 10.8.8

"8. Other Regulations

a) Notwithstanding the permitted uses under subsection 10.4(1), the following uses are not permitted where five or more units are located on a parcel:
    i. *Coach House Dwelling*
    ii. Two-unit Dwelling
    iii. Single Unit Dwelling"

18. All section references, section numbers, table of contents and marginalia are updated accordingly.

Citation

19. This Bylaw may be cited for all purposes as "Town of Ladysmith Zoning Bylaw 2014, No. 1860 Amendment Bylaw No. 2187".

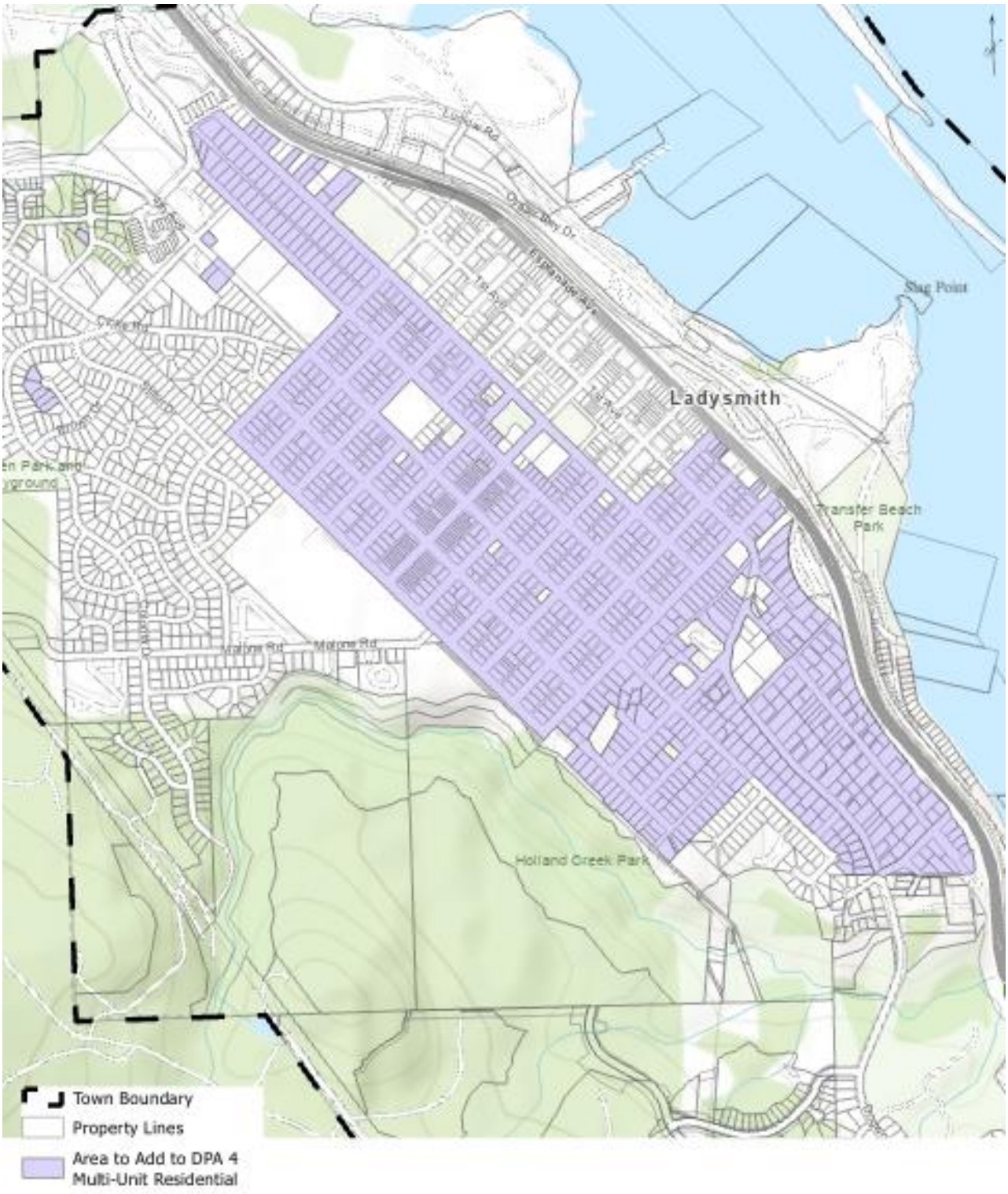
READ A FIRST TIME on the 16th day of July, 2024
READ A SECOND TIME on the 16th day of July, 2024
PUBLIC HEARING not held in accordance with section 464(2) of the *Local Government Act*
READ A THIRD TIME on the 16th day of July, 2024
APPROVED BY THE MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE on the 28th day of August, 2024

ADOPTED on the _____ day of _____, 2024

_____
Mayor (A. Stone)

_____
Corporate Officer (S. Bouma)

Schedule A


Ladysmith
Slag Point
Transfer Beach Park
Holland Creek Park
Town Boundary
Property Lines
Area to Add to DPA 4
Multi-Unit Residential

Citation

19. This Bylaw may be cited for all purposes as "Town of Ladysmith Zoning Bylaw 2014, No. 1860 Amendment Bylaw No. 2187".

READ A FIRST TIME on the 16th day of July, 2024
READ A SECOND TIME on the 16th day of July, 2024
PUBLIC HEARING not held in accordance with section 464(2) of the *Local Government Act*
READ A THIRD TIME on the 16th day of July, 2024
APPROVED BY THE MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE on the ___ day of _____, 2024

ADOPTED on the _____ day of _____, 2024

_____
Mayor (A. Stone)

_____
Corporate Officer (S. Bouma)

Approved pursuant to section 52(3)(a) of the *Transportation Act*
this 28th day of August 20, 24
Ministry of Transportation and Infrastructure

TOWN OF LADYSMITH

BYLAW NO. 2183

A Bylaw to Amend "Town of Ladysmith Subdivision and Development Servicing Bylaw 2013, No. 1834"

The Council of the Town of Ladysmith in open meeting assembled enacts the following to effect changes to "Town of Ladysmith Subdivision and Development Servicing Bylaw 2013, No. 1834":

1. The definition of "Access Strip" in Section 1.01 is deleted and replaced as follows: "Access Strip means an access strip as defined in the zoning bylaw";

2. The definition of "Panhandle Parcel" in Section 1.01 is deleted and replaced as follows: "Panhandle Parcel means a Panhandle Parcel as defined in the zoning bylaw"; and

3. Subsection 4.03(b) is deleted and subsequent sections are renumbered accordingly.

Citation

4. This Bylaw may be cited for all purposes as "Town of Ladysmith Subdivision and Development Servicing Bylaw 2013, No. 1834, Amendment Bylaw 2183".

READ A FIRST TIME on the 27th day of June, 2024
READ A SECOND TIME on the 27th day of June, 2024
READ A THIRD TIME on the 27th day of June, 2024
ADOPTED on the _____ day of _____, 2024

_____
Mayor (A. Stone)

_____
Corporate Officer (S. Bouma)

BYLAW STATUS SHEET
September 3rd, 2024

Bylaw #	Description	Status
2131	"Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 54) 2022, No. 2131" (10940 Westdowne Rd.). Changes zoning from Rural Residential (RU-1) to Manufactured Home Park (MHP-1).	First and second readings, December 20, 2022. Public Hearing and third reading December 19, 2023. MOTI approval received January 15, 2024. **Awaiting covenant.**
2133	"Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw (No. 56) 2023, No. 2133". Allows convenience store at 1132-1142 Rocky Creek Rd.	First and second readings, January 10, 2023. Public Hearing required. MOTI approval required. **Waiting on applicant to submit Development Permit per Council Resolution**
2161	"Official Community Plan Bylaw 2022, No. 2200, Amendment Bylaw 2023, No. 2161". To expand the mobile home park at 10940 Westdowne Road.	First and second readings, November 21, 2023. Second reading rescinded, second reading as amended, December 5, 2023. Public Hearing and third reading December 19, 2023. **Awaiting covenant.**
2167	"Town of Ladysmith Animal Control Bylaw 2024, No. 2167". To manage and regulate the keeping of animals in the Town.	First, second and third readings, May 21, 2024. Consequential amendments must be made to the Zoning Bylaw prior to approval. **Awaiting consequential amendments to the Zoning Bylaw.**
2170	"Official Community Plan Bylaw 2003, No. 1488, Amendment Bylaw 2024, No. 2170". To reallocate units for a portion of the Holland Creek neighbourhood to create a smaller development footprint, eliminate the need for a crossing over Heart Creek and adjust triggers for infrastructure construction.	First and second readings, May 7, 2024. Public Hearing held May 21, 2024. MOTI approval received May 27, 2024. **Awaiting covenant.**
2171	"Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw 2024, No. 2171". To reallocate units for a portion of the Holland Creek neighbourhood to create a smaller development footprint, eliminate the need for a crossing over Heart Creek and adjust triggers for infrastructure construction.	First and second readings, May 7, 2024. Public Hearing held May 21, 2024. MOTI approval received May 27, 2024. **Awaiting covenant.**
2185	"Official Community Plan Bylaw 2022, No. 2200, Amendment Bylaw No. 2185" (resulting from Small Scale Multi-Unit Housing Provincial legislation.)	First and second readings June 27, 2024. Public Hearing required.

2183	"Town of Ladysmith Subdivision and Development Servicing Bylaw 2013, No. 1834, Amendment Bylaw 2183". To amend "Town of Ladysmith Subdivision and Development Servicing Bylaw 2013, No. 1834" (resulting from Small Scale Multi-Unit Housing Provincial legislation.)	First, second and third readings June 27, 2024.
2187	"Town of Ladysmith Zoning Bylaw 2014, No. 1860, Amendment Bylaw No. 2187". To amend "Town of Ladysmith Zoning Bylaw 2014, No. 1860" (resulting from Small Scale Multi-Unit Housing Provincial legislation.)	First, second and third readings June 27, 2024. **MOTI approval received August 28, 2024.**
2188	"Short-Term Rental Bylaw, 2024, No. 2188". A Bylaw to Regulate the Marketing of Short-Term Rentals in Ladysmith.	First, second and third readings August 6, 2024. **Required published notice of final consideration on the Town website August 23, 2024 and in the Ladysmith Chronicle August 29, 2024.**

August 19, 2024

Thank you for your request to meet with Honourable Anne Kang during the 2024 Union of British Columbia Municipalities (UBCM) Convention.

Minister Kang received a great number of meeting requests for this year's Convention and regretfully she cannot accept them all. I am sorry to advise that she is unable to accommodate your request to meet during UBCM Convention this year.

Although Minister Kang is not available during the UBCM Convention, you may still make a request to meet with provincial ministries, agencies, commissions, and corporations (MACC) staff during UBCM Convention – including staff from the Ministry of Municipal Affairs. To do this, please complete the online request form at MACC Staff Meeting and submit it to the Ministry of Municipal Affairs by **August 21, 2024**. Staff will be available to meet with you from **Monday, September 16 to Thursday, September 19, 2024**.

Thank you.

Sincerely,

Katie Carrothers

Katie Carrothers
MUNI-UBCM Minister's Meeting Coordinator
Phone: 236 478-0537
Email: MUNI.UBCM.MeetingRequests@gov.bc.ca

cc: Sarah Staszkiel, MACC Staff Meeting Coordinator, Provincial Appointment Desk