Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Regional Parks Committee

Wednesday, October 27, 2021 | **10:00 AM** | **6th Floor Boardroom, 625 Fisgard St., Victoria, BC V8W 1R7**

R. Mersereau (Chair), G. Young (Vice Chair), G. Holman, B. Isitt, R. Martin, J. Olsen, J. Ranns, D. Screech, L. Seaton, M. Tait, N. Taylor, C. Plant (Board Chair, ex officio)

The Capital Regional District strives to be a place where inclusion is paramount and all people are treated with dignity. We pledge to make our meetings a place where all feel welcome and respected.

1. Territorial Acknowledgement

2. Approval of Agenda

3. Adoption of Minutes

3.1. 21-786 Minutes of the September 22, 2021 Regional Parks Committee Meeting

Recommendation: That the minutes of the Regional Parks Committee meeting of September 22, 2021 be adopted as circulated.

Attachments: Minutes - September 22, 2021

4. Chair's Remarks

5. Presentations/Delegations

Due to limited seating capacity, this meeting will be held by Live Webcast without the public present.

To participate electronically, complete the online application for "Addressing the Board" on our website. Alternatively, you may email the CRD Board at crdboard@crd.bc.ca.

6. Committee Business

6.1. 21-677 E&N Rail Trail - Humpback Connector

Recommendation: The Regional Parks Committee recommends to the Capital Regional District Board: That this report be received for information.

Attachments: Staff Report: E&N Rail Trail - Humpback Connector

Appendix A: Development Phasing Plan - Map

Appendix B: Detailed Status of E&N Rail Trail Development

6.2. 21-673 Ecological Values and Biodiversity in Regional Parks

Recommendation: The Regional Parks Committee recommends to the Capital Regional District Board:
That this report be received for information.

Attachments: Staff Report: Ecological Values and Biodiversity in Regional Parks
Appendix A: Draft Conservation Strategy Framework - March 2010

6.3. 21-801 Regional Trails Management Plan - Implementation Update

Recommendation: The Regional Parks Committee recommends to the Capital Regional District Board:
That this report be received for information.

Attachments: Staff Report: Regional Trails Mgmt Plan-Implementation Update
Appendix A: Regional Trails Management Plan
Appendix B: Regional Trails Map

6.4. 21-794 CRD Regional Parks - Mosquito Population Management and Control Program

Recommendation: The Regional Parks Committee recommends to the Capital Regional District Board:
1. That the Board authorize up to $15,000 of funding toward a feasibility study for the replacement of the Tsawout flapper gate; and
2. That staff undertake a drainage study for the ditches in Island View Beach Regional Park, share the results with the District of Central Saanich and Tsawout First Nation, and report back.

Attachments: Staff Report: Mosquito Population Mgmt and Control Program
Appendix A: Integrated Pest Management Plan
Appendix B: IVBRP – Mosquito Development Site Map
Appendix C: VectoBac 200G Larvicide Application
Appendix D: Aqua-Tex Ditch Maintenance Report
Appendix E: Letter from District of Central Saanich Council

7. Notice(s) of Motion

7.1. 21-755 Motion with Notice: Lighting and Trail Improvement/Widening Policy

Recommendation: That the Regional Parks Committee recommend to the Board:
That staff develop a Lighting and Trail Improvement/Widening Policy.

7.2. 21-756 Motion with Notice: Construction and Detour Policy

Recommendation: That the Regional Parks Committee recommend to the Board:
That staff develop a Construction and Detour Policy.

8. New Business

9. Adjournment

The next meeting is November 24, 2021.

To ensure quorum, please advise Tamara Pillipow (tpillipow@crd.bc.ca) if you or your alternate cannot attend.

Meeting Minutes

Regional Parks Committee

Wednesday, September 22, 2021 **10:00 AM** **6th Floor Boardroom**
625 Fisgard St.
Victoria, BC V8W 1R7

PRESENT
Directors: R. Mersereau (Chair), G. Young (Vice Chair), G. Holman, B. Isitt, R. Martin (EP), J. Ranns, D. Screech, L. Seaton, M. Tait, N. Taylor, C. Plant (Board Chair, ex officio)

Staff: R. Lapham, Chief Administrative Officer; N. Chan, Chief Financial Officer; L. Hutcheson, General Manager, Parks and Environmental Services; J. Leahy, Senior Manager, Regional Parks; M. Lagoa, Deputy Corporate Officer; T. Pillipow, Committee Clerk (Recorder)

EP - Electronic Participation

Regrets: Councillor J. Olsen

The meeting was called to order at 10:00 am.

1. Territorial Acknowledgement

Director Tait provided a Territorial Acknowledgement.

2. Approval of Agenda

MOVED by Director Tait, SECONDED by Director Screech,
That the agenda for the September 22, 2021 Regional Parks Committee meeting be approved.
CARRIED

3. Adoption of Minutes

3.1. 21-680 Minutes of the June 23, 2021 Regional Parks Committee Meeting

MOVED by Director Screech, SECONDED by Director Taylor,
That the minutes of the Regional Parks Committee meeting of June 23, 2021 be adopted as circulated.
CARRIED

4. Chair's Remarks

Chair Mersereau noted the volume of the agenda, and looked forward to the ensuing discussions.
The Chair thanked the Parks staff who have gone above and beyond for the past year and a half to ensure our residents' needs are met.

5. Presentations/Delegations

5.1. 21-702 Delegation - Corey Burger; Representing Capital Bike: Re: Agenda Item 6.3.: Regional Trails Widening and Lighting Project

C. Burger spoke in support of Items 6.2. thru 6.4.

5.2. 21-703 Delegation - Alastair Craighead; Resident of Victoria: Re: Agenda Item 6.5.: Ecological Values and Biodiversity in Regional Parks

A. Craighead spoke in support of Item 6.5.

5.3. 21-704 Delegation - Nitya Harris; Resident of Langford: Re: Agenda Item 6.5.: Ecological Values and Biodiversity in Regional Parks

N. Harris spoke of concerns with Item 6.5.

5.4. 21-705 Delegation - Alison Spriggs; Resident of Victoria: Re: Agenda Item 6.5.: Ecological Values and Biodiversity in Regional Parks

A. Spriggs spoke of concerns with Item 6.5.

6. Committee Business

6.1. 21-679 Regional Parks Land Acquisition and Infrastructure Financing Strategy

N. Chan introduced Item 6.1.

Discussion ensued on the following:
- quantifying the net savings
- applying this strategy to physical assets
- potential solutions for future land acquisitions
- implications of changing land values
- the impact to taxpayers
- annual debt servicing costs over the life of the loan
- developing guidelines to address spending concerns

MOVED by Director Isitt, SECONDED by Director Holman,
The Regional Parks Committee recommends the Committee of the Whole recommend to the Capital Regional District Board:
That the annual land acquisition levy be used to implement a debt financing strategy for future land acquisitions.
CARRIED
OPPOSED: Ranns

6.2. 21-684 2022 Service Planning - Parks & Natural Resource Management

L. Hutcheson spoke to Item 6.2.

Discussion ensued on the following:
- the anticipated rate of increase to staffing levels
- the need for a land acquisition planner
- next steps to advance ecological protection in our parks
- this service plan's net impact on the 2022 requisition

MOVED by Director Isitt, SECONDED by Director Tait,
The Regional Parks Committee recommends the Committee of the Whole recommend to the Capital Regional District Board:
That Appendix A, Community Need Summary - Parks & Natural Resource Management be approved as presented and form the basis of the 2022-2026 Financial Plan.

MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be amended to add the words "And ask staff to provided additional staffing information, including the staff establishment chart as part of the additional information, for the next meeting of the Committee of the Whole.".
CARRIED

The question was called on the main motion as amended.

MOVED by Director Isitt, SECONDED by Director Tait,
The Regional Parks Committee recommends the Committee of the Whole recommend to the Capital Regional District Board:
1. That Appendix A, Community Need Summary - Parks & Natural Resource Management be approved as presented and form the basis of the 2022-2026 Financial Plan; and
2. Ask staff to provided additional staffing information, including the staff establishment chart as part of the additional information, for the next meeting of the Committee of the Whole.
CARRIED

MOVED by Director Tait, SECONDED by Director Plant,
That agenda items 6.3. thru 6.5. be postponed until the next meeting of the Regional Parks Committee.

MOVED by Director Isitt, SECONDED by Director Taylor,
That the motion be amended to remove 6.3. from the postponement.
CARRIED

The question was called on the main motion as amended.

MOVED by Director Tait, SECONDED by Director Plant,
That agenda items 6.4. and 6.5. be postponed until the next meeting of the Regional Parks Committee.
CARRIED

6.3. 21-678 Regional Trails Widening and Lighting Project

Discussion ensued on the coordination of traffic plans.

MOVED by Director Screech, SECONDED by Director Isitt,
The Regional Parks Committee recommends to the Capital Regional District Board:
That staff be directed to actively develop partnerships and pursue grant funding opportunities, including submission to the federal Active Transportation Fund, to support implementation of the separated use pathway design with lighting.
CARRIED

6.4. 21-677 E&N Rail Trail - Humpback Connector

Postponed until the next meeting.

6.5. 21-673 Ecological Values and Biodiversity in Regional Parks

Postponed until the next meeting.

7. Notice(s) of Motion

Director Plant read the following Notice(s) of Motion into the record for consideration at the October 27, 2021 meeting.

That the Regional Parks Committee recommend to the Board:
That staff develop a Lighting and Trail Improvement/Widening Policy.

That the Regional Parks Committee recommend to the Board:
That staff develop a Construction and Detour Policy.

8. New Business

There was no new business.

9. Adjournment

MOVED by Director Screech, SECONDED by Director Taylor,
That the September 22, 2021 Regional Parks Committee meeting be adjourned at 11:53 am.
CARRIED

_____
Chair

_____
Recorder

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REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 22, 2021

SUBJECT **E&N Rail Trail – Humpback Connector**

ISSUE SUMMARY

This report provides an information update regarding the status of development of the E&N Rail Trail.

BACKGROUND

In October 2006, the Capital Regional District (CRD) Board initiated a project to develop a 17 kilometre long new regional trail largely within the E&N railway corridor and located beside the existing railway tracks. In 2007, due to the anticipated cost to develop the trail ($36 million), a decision was made to undertake the project in a phased approach (Appendix A). Construction was initiated in 2009.

This trail provides both recreation and active transportation opportunities. To date, three of the five phases have been completed, creating approximately 13 km of new regional trail. The trail currently runs continuously between Jacklin Road in the City of Langford to Esquimalt Road in the City of Victoria; and links the City of Langford, Town of View Royal, Esquimalt Nation, Songhees Nation, Township of Esquimalt and City of Victoria (Appendix A).

Contributions of approximately $21 million have been received from grant programs to assist in the development of the three completed trail phases. Additional funding to date has been provided through CRD Regional Parks' core budget and a CRD Board authorized loan.

Two remaining phases extend the trail by approximately 3.2 km in Langford between Jacklin Road and Humpback Road at the west end of the trail; and 0.7 km at the east end of the trail between Esquimalt Road and the Harbour Road overpass/Galloping Goose/Johnson Street Bridge end of the trail in conjunction with the City of Victoria (Appendix A).

A detailed status and explanation of the phases is provided in Appendix B.

IMPLICATIONS

Environmental & Climate Implications

This regional trail adds to the regional opportunities for active recreation and active transportation, both of which assist in reducing greenhouse gas emissions.

Intergovernmental Implications

The E&N Rail Trail – Humpback Connector route connects six communities: City of Langford, Town of View Royal, Esquimalt Nation, Songhees Nation, Township of Esquimalt and City of Victoria.

Social Implications

This regional trail furthers the goal of promoting active and healthy communities. The trail is largely along a former railway corridor and most of the trail route is relatively flat and suited to use by people of all ages and abilities.

Financial Implications

Capital grant funding is needed to complete Phase 5 of this regional trail and is currently identified as a total of $4 million in years 2024 and 2025 of the Regional Parks' five-year capital plan.

Service Delivery Implications

From a sustainable service delivery perspective, the remaining two sections of the trail will be developed using the same standards as the previous sections of trail (e.g., paved, minimum width 3m/preferred width 4m, standard regional trail signage) and, when complete, they will be incorporated into the asset management program as per other sections/other regional trails.

Alignment with Board & Corporate Priorities

In terms of alignment with Board priorities, this trail furthers the priority of Community Wellbeing – Transportation & Housing, as it provides additional regional multi-modal transportation opportunities to increase walking and cycling. It can also help reduce greenhouse gas emissions, which is a desired outcome under the Climate Action & Environmental Stewardship priority. The Esquimalt and Songhees Nations were involved in the planning of the trail sections in and around their communities, which aligns with the Board's priority relating to First Nations Reconciliation.

With respect to corporate priorities, the development of the E&N Rail Trail – Humpback Connector project aligns with the priorities of Fiscal Responsibility (approximately $19 million of grant funding has been received to assist in the development of this regional trail); Efficiency & Collaboration (collaboration with each of the four municipalities and two First Nations has occurred during planning and construction); and Customer Service (this project expands the regional trail system to respond to increasing interest in active transportation and active recreation by regional residents).

Alignment with Existing Plans & Strategies

The Regional Parks Strategic Plan 2012-2021 includes continuing construction of the E&N Rail Trail as a strategic action under Strategic Priority #2 (strategically plan for and open existing land banked regional parks and trails as resources are approved).

CONCLUSION

The E&N Rail Trail – Humpback Connector is well in progress, with approximately 13 of the 17 km route now complete. This newest regional trail connects the City of Victoria, Township of Esquimalt, Songhees Nation, Esquimalt Nation, Town of View Royal and City of Langford, expanding opportunities for active transportation and active recreation. Two remaining sections (Phase 4 and Phase 5) will extend the trail route in both directions, in the City of Victoria and the City of Langford. The CRD is moving forward, working with the City of Victoria, to begin

construction of Phase 4 in 2022, and Phase 5 will be scheduled once the route has been finalized and funding has been determined.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

That this report be received for information.

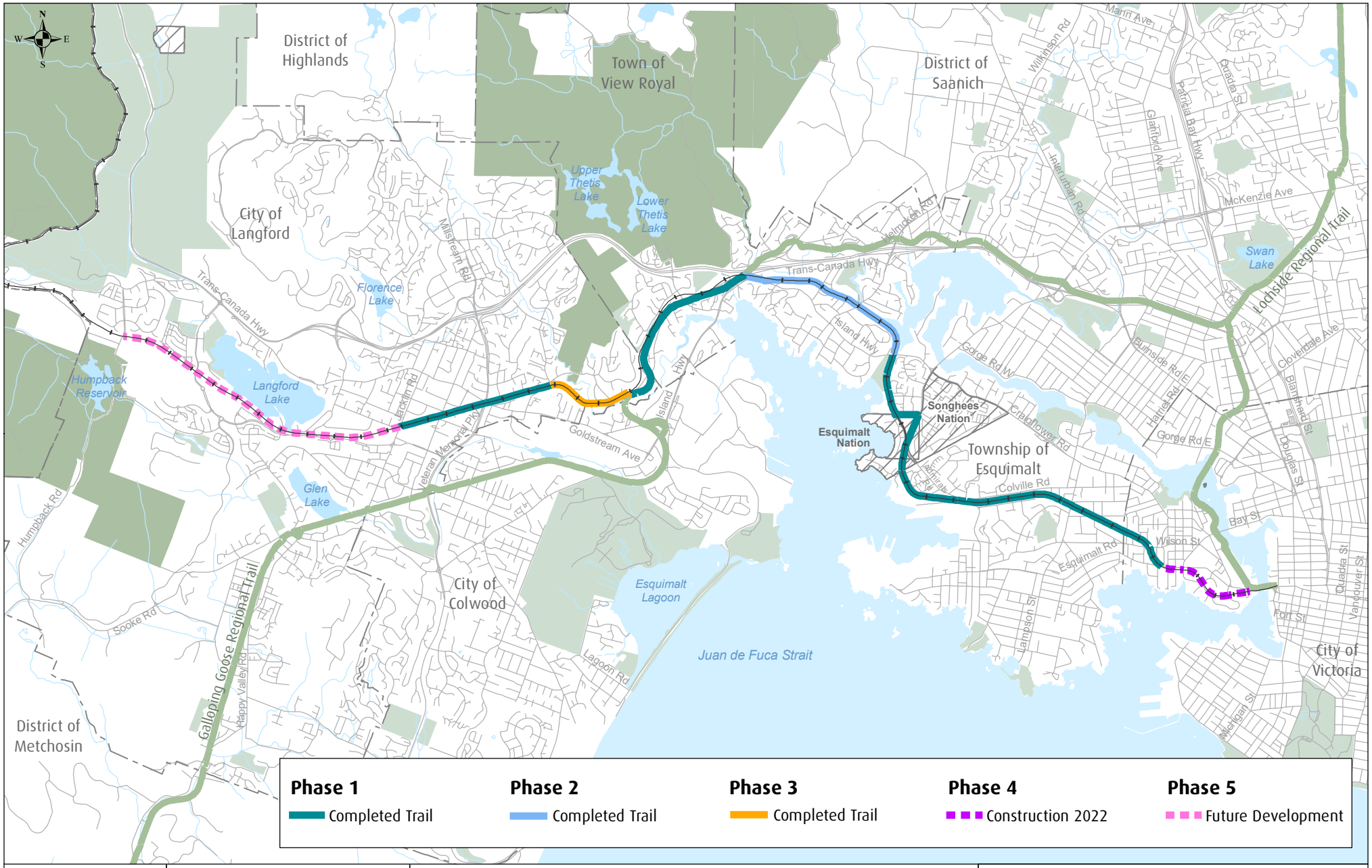
Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Development Phasing Plan – Map
Appendix B: Detailed Status of E&N Rail Trail Development

APPENDIX A

August 2021 | 2021-09-22-SR-RPC-ENRailTrailUpdate-AppendixA.mxd | dataservices@crd.bc.ca



Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Completed Trail	Completed Trail	Completed Trail	Construction 2022	Future Development

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Kilometres

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Projection: UTM ZONE 10N NAD 83

- Galloping Goose / Lochside Regional Trails
- E & N Rail Corridor
- Municipal / Electoral Area Boundary
- Regional Park
- Other Park
- First Nation Reserve
- Lake / Ocean

Appendix A

E & N Rail Trail - Humpback Connector Development Phasing Plan

Regional Parks Committee Staff Report
September 22, 2021

DETAILED STATUS OF E&N RAIL TRAIL DEVELOPMENT

September 2021

Phase 1 – Completed December 2018

The initial phase was split into seven different project areas and was built between 2009 and 2018. Just over 9 km of trail was created, spread over each of the communities, as follows:

- City of Langford: approximately 2 km of new trail was developed plus approximately 0.5 km of the overlapping E&N/Galloping Goose segment was paved.

- Town of View Royal: approximately 0.75 km of new trail was developed, approximately 2 km of the overlapping E&N/Galloping Goose segment was paved, and three bridges were developed (trail bridge over Helmcken Road and trail and rail bridges at Island Highway/4 Mile).

- Esquimalt Nation: approximately 0.75 km of new trail was built along Hallowell Road and Admirals Road.

- Songhees Nation: approximately 0.25 km of new trail was built between the Songhees and Esquimalt Nation boundary and Maplebank Road.

- Township of Esquimalt: approximately 3 km of new trail was developed from Maplebank Road to the Esquimalt/Victoria boundary by Hereward Road.

- City of Victoria: approximately 0.2 km of new trail was built from Esquimalt/Victoria boundary to Esquimalt Road.

The cost of developing this phase of the trail was covered through a mix of grants and CRD funding.

Phase 2 – Completed June 2015

This phase was initiated in 2013, with construction over 2014-2015. This phase added 2 km of new trail in the Town of View Royal, between Island Highway/Burnside Road West and Island Highway/4 Mile Bridge. It linked existing Phase 1 trail sections on either end.

The cost of developing this phase of the trail was covered through a mix of grants and CRD funding.

Phase 3 – Completed in July 2021

Phase 3 began in 2018. In considering environmental aspects, privacy for neighbours, technical aspects and costs, several design options were developed and reviewed before a final route plan was confirmed. Construction began in 2019 and was completed in July 2021.

This 1 km section connects existing Phase 1 sections of trail and creates a continuous 13 km route. All six communities are now connected (Langford, View Royal, Esquimalt Nation, Songhees

Nation, Esquimalt, and Victoria). This trail section is unique along the E&N Rail Trail in that it includes two underpasses, one by the east end to avoid Millstream Creek and one toward the west end to provide trail access to/from Westwind Drive.

Costs for Phase 3 were covered through a CRD loan and a $1 million Active Transportation grant from the Province.

Phase 4 – In Progress

CRD and City of Victoria staff are working together on the planning of this phase. In this phase, the CRD, through its E&N Rail Trail agreement with the Island Corridor Foundation, has authority/jurisdiction to develop the trail between Esquimalt Road and Catherine Street. East of Catherine Street, the City of Victoria and local developers have jurisdiction over the railway corridor and will be developing the route beyond Catherine Street.

In the immediate term, the City of Victoria is developing a two-way all ages and abilities bike lane along Kimta Road and improving an existing multi-use path by the Harbour Road overpass in Victoria. This will provide a continuous pedestrian (on sidewalks/trail) and cycling (on AAA cycle path) route for the E&N Rail Trail in the short term. In the longer term, the final trail route will be implemented through private development, as required by the City of Victoria through the development approvals.

All costs for the CRD's portion of Phase 4 is being covered through a CRD loan. The CRD has provided a letter of support to the City of Victoria for a grant application to assist with the City's section.

Phase 5 – Not Yet Scheduled or Funded

The last segment of trail, Phase 5, between Jacklin Road and Humpback Road in the City of Langford is not yet scheduled or funded. It will create approximately 3.5 km of new trail and complete the E&N Rail Trail – Humpback Connector.

CRD staff need to work with Langford staff to review the 2009 proposed route and determine if modifications are required due to development that has occurred along the route since 2009.

This last phase of the E&N Rail Trail – Humpback Connector is tentatively scheduled for 2024/2025 but is dependent on securing grant funding. Timing for the project will be finalized once the route has been determined and funding has been determined. A staff report outlining funding and timing proposals will be submitted for Board consideration in the future.

Humpback Road Link

Through the Regional Trails Management Plan (2016), the CRD Board supported extending the E&N Rail Trail - Humpback Connector trail to link with Sooke Hills Wilderness Regional Park and the Sooke Hills Wilderness Trail, which provides part of the route for the Trans Canada Trail in the CRD. The City of Langford, through a local trail planning initiative, also identified the value in this proposed link and has developed a path along Humpback Road between Irwin Road and the E&N railway line.

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REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, SEPTEMBER 22, 2021

SUBJECT **Ecological Values and Biodiversity in Regional Parks**

ISSUE SUMMARY

This report provides an information update on ecological values and biodiversity in Regional Parks in response to a Notice of Motion.

BACKGROUND

At the June 23, 2021 Regional Parks Committee meeting, the following Notice of Motion was introduced and carried:

> *Whereas one of the two goals of regional parks is "protecting the region's extraordinary biodiversity in perpetuity" and whereas the existing Regional Parks Acquisition Strategy prioritizes acquisition of park land to protect ecological values: therefore be it resolved that staff be directed to report on how ecological values and biodiversity are protected and monitored in regional parks and on the CRD's staffing and resource capacity to evaluate the effectiveness of ecological protection in the regional parks system, including consideration of wildlife habitat and disturbance, biodiversity, impacts of new infrastructure, and the CRD's declared climate emergency.*

At its meeting of July 14, 2021, the Capital Regional District (CRD) Board approved the Notice of Motion with an amendment that "mitigation of fire risks" also be considered in the staff report.

The Regional Park system is comprised of regionally significant landscapes, which are classified by management focus. Depending on its predominant characteristics and purpose, a regional park falls into one of four distinct management focus classifications: Recreation Area, Natural Area, Conservation Area, and Wilderness Area. These park classifications are supported by management planning documents that provide strategies to protect the natural environment and define appropriate levels of activity.

In 2009-2010, as a precursor to the development of a conservation strategy, staff worked with consultants to review ecological and organizational literature, analyze ecological information, identify key factors (known as stressors) impacting native species and ecosystems, and outline strategic approaches to address those factors.

In 2010, the draft *Conservation Strategy for Capital Regional District – Regional Parks: Providing strategic direction for parkland stewardship* was prepared. A companion framework document that summarizes the larger document is attached (Appendix A).

The draft conservation strategy outlines a practical, science-based approach to reduce negative impacts to ecological values within regional parks. The draft conservation strategy was meant to initiate the development of a program that would include developing more detailed action plans to address specific ecosystems, species, issues and/or parks.

The draft strategy was presented to the Regional Parks Committee in March and September 2010. Both times, the conservation strategy was referred back to staff for further work. In September 2010, staff addressed the five main points raised by the Regional Parks Committee in March 2010, which included the concerns: 1) that the conservation strategy could be used to exclude some recreational uses; 2) that additional funding would be required to implement the strategy and may not be available; 3) that more information was needed about strategic choices and about balancing recreation needs versus conservation needs; 4) that First Nations needed to be consulted; and 5) that some land acquisitions are not immediately available for public use.

In November 2010, as part of the General Manager's Report, it was determined that the conservation strategy would be revised but put on hold until the Regional Parks Strategic Plan was adopted. Although the Regional Parks Strategic Plan was adopted in March 2012, the conservation strategy was deferred with no specific deadline. The current Regional Parks Strategic Plan is set for an update and conservation and recreation strategies will be developed and included in the strategic plan.

The challenges of the conservation program that Regional Parks is currently facing are: 1) staffing and resources; 2) lack of conservation strategies pertaining to condition and monitoring of regional parks; and 3) the rapid increase in the size of the system in terms of area and visitation.

Regional Parks has one staff member dedicated to conservation. The Environmental Conservation Specialist (ECS) role and responsibilities include preparing and delivering conservation plans and projects, providing technical advice for planning and operations, terrestrial and aquatic ecosystem management, restoration and invasive species management, program administration, land acquisition and collaborating with community and partners. In addition, the ECS is often asked to address urgent requests from the public or CRD staff.

Regional Parks primarily protects ecological values through the application of various bylaws, policies, plans and other tools, including park management planning, policy and guideline development, best management practices, annual operating plans, park use permit conditions, park stewardship agreements, ecological restoration, habitat mapping, species surveys, interpretive and educational activities, and compliance and enforcement. Significant effort is also spent on invasive species removal, especially through volunteer and partner efforts. Regional Parks is also piloting an Impact Assessment process to evaluate management actions that may impact park values and to aid in identifying appropriate mitigation measures, if required.

Low intensity wildfires were once the dominant disturbance regime in the region and fire suppression over the past century has contributed to the loss of biodiversity and ecological values. Fire risk mitigation within the regional park system takes on two forms: prevention and suppression activities. Prevention activities reduce the risk of wildfire in regional parks and include strategies such as: prohibiting smoking in all regional parks; permitting campfires only in designated facilities (i.e., no open fires) and prohibiting all campfires when a provincial fire ban is in effect; limiting high-risk activities in accordance with the BC Wildfire Act requirements; and patrolling worksites to monitor for potential flare-ups. Regional Park rangers undertake wildfire patrols as conditions warrant as per the MOU between BC Wildfire Service and the CRD. In terms of suppression activities, Regional Parks trains staff in mop-up responsibilities to augment municipal fire departments and the BC Wildfire Service, who respectively have primary responsibility for initial attack and related fire suppression activities inside and outside of municipal fire protection areas.

Local climate models predict increases in temperatures, dry conditions, storms and sea levels that will impact ecological values. Ecosystems will likely shift toward more drought tolerant systems. Despite these changes, regional parks will continue to serve as critical natural assets for carbon storage and sequestration.

A systematic regional parks monitoring program does not currently exist. However, monitoring of specific species, such as the endangered contorted-pod evening primrose and invasive species such as carpet burweed, does occur. Development of a comprehensive monitoring program would benefit the environmental health of regional parks.

IMPLICATIONS

Environmental & Climate Implications

Improving the understanding of ecological values and biodiversity in regional parks will benefit overall ecological integrity and environmental health and contribute to climate change resiliency. The availability of data to identify sensitive or rare species and ecosystems and critical wildlife habitat is variable and often limited. When resources permit, studies are conducted but there are still gaps in the understanding of ecological values within the regional parks system.

Social Implications

The capital region is a unique part of Canada. The climate, influenced by wet and warm coastal air and the rain shadow from the mountain ranges, along with its complex geography spanning from sea level to mountaintops, means that a diverse range of ecosystems and species occur, many of which do not occur elsewhere in Canada. This combination of climate, geography and uniqueness also makes the CRD one of the fastest growing communities in Canada and a popular travel destination. Regional parks are part of a protected areas system that helps regulate our climate, purify the water, provide habitat for rare and endangered species and provide opportunities to engage in a wide range of recreational activities. Regional parks and trails continue to see significant growth in visitation, which puts pressures on the regional park system and can make protecting and monitoring regional park values and biodiversity challenging.

Financial Implications

Additional staff and resources would be required to allow for an ecological monitoring program. A proposal for service level adjustments in this area has been brought forward to this Parks Committee agenda as part of the 2022 Service Planning report.

Service Delivery Implications

In spring 2021, staff were asked to complete a comprehensive budget review exercise to identify staffing and resource needs that are required to meet core service levels. For the conservation program, this included identifying resources required to support the protection of ecological values and biodiversity in regional parks. Key gaps that were identified during the budget review process for the delivery of the conservation program included the need for a conservation strategy, improving understanding of the ecological values in regional parks through baseline inventories and a “state of the parks” assessment, and monitoring and action planning in all three major program areas (terrestrial ecosystem management, aquatic ecosystem management, and

restoration and invasive species management). The lack of an ecological monitoring program was also identified as a key gap in the delivery of core conservation program services.

Alignment with Board & Corporate Priorities

Strategic Board Priorities identified in the 2019-2022 Corporate Plan that apply to the Regional Parks conservation program include ensuring appropriate funding for parks and trails by updating the Regional Parks Strategic Plan with consideration of ecological, recreation and reconciliation principles, land acquisition capacity, and expanded partnerships with First Nations and park user groups.

Alignment with Existing Plans & Strategies

The 2012-2021 Regional Parks Strategic Plan includes a number of strategic goals that pertain to the conservation program, including protecting and conserving biological diversity; maintaining and restoring healthy, viable ecosystems in regional parks; and undertaking management activities that improve the understanding of park ecosystems and the ability to sustain them.

CONCLUSION

Increased size of regional parks and visitation over the years has outpaced Regional Parks' ability to comprehensively assess and monitor ecological values and conditions. Regional Parks utilizes its existing resources to protect known ecological values through the application of bylaws, strategies and other tools. Additional staffing and resources would enable Regional Parks to better manage ecological values and biodiversity, mitigate fire risks, address the impacts of new infrastructure, and respond to the CRD's declared climate emergency.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

That this report be received for information.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Draft Conservation Strategy Framework for Capital Regional District Regional Parks – March 2010

APPENDIX A

Conservation Strategy for Capital Regional District - Regional Parks

DRAFT

Providing strategic direction for parkland stewardship

March 17, 2010

F R A M E W O R K

MILL HILL REGIONAL PARK

Making a difference...together

CONSERVATION VISION

CRD Regional Parks are comprised of vibrant, functional ecosystems, with healthy populations of native species and a secure future for rare plants, animals, fungi, and other organisms. All of us—policy makers, parks staff, volunteers, visitors, and neighbours, and the general public—are aware of and respect the ecological values of CRD Regional Parks. Together, we steward regional parks and take care that our activities help the ecosystems, ecological communities, and species flourish for the long term.

Introduction

British Columbia's Capital Regional District (CRD), covering the southern tip of Vancouver Island and the southern Gulf Islands, encompasses a unique area in Canada, with a complex geography and climate and a diverse range of ecosystems dominated by Coastal Douglas-fir and Coastal Western Hemlock forests. Home to Coast Salish and Nuu-chah-nulth First Nations peoples for thousands of years, in recent times it has been increasingly settled and developed. The intersection of intense development and unique ecosystems has made the area one of Canada's focal points for conservation concerns. Protected areas, including lands set aside for conservation purposes by parks agencies and land trusts, are quickly becoming the only remaining areas of natural habitat within the developed landscape of the CRD. This fact underscores the critical importance of ongoing appropriate stewardship of acquired lands, to protect and restore native biodiversity over the long term.

The CRD Regional Parks system currently includes 28 parks and four regional trails ranging in size from 1.8 to over 4,000 hectares and totaling more than 11,500 hectares of land. Parklands help to protect a broad diversity of native ecosystems, ecological communities, and species, including dozens of species and ecological communities at risk of disappearing from the wild. Parklands also provide a range of critical ecosystem services, such as carbon storage, climate regulation, flood control, and many others. The *CRD Regional Parks Master Plan (2000)* states that the two primary purposes for CRD Regional Parks are:

1. **To establish and protect a network of regional parks in perpetuity that represent and help maintain the diverse range of natural environments in the Capital Regional District.**

2. **To provide opportunities for outdoor experiences and activities that foster appreciation and enjoyment of, and respect for, the region's natural environments.**

The Master Plan also affirms that protecting the natural environment is CRD Regional Parks' core value and primary responsibility, and that protecting the natural environment provides the means by which people can partake in the outdoor experiences that put them in close touch with nature. The Master Plan outlines a commitment to incorporate environmental conservation, defined as the careful protection, use, and planned management of living organisms and their vital processes, to prevent their depletion, exploitation, destruction or waste, into all aspects of park management and operation.

The *CRD Strategic Plan* similarly upholds the importance of protecting the natural environment by identifying environmental protection as one of the five priorities for 2009-2011. The Strategic Plan further identifies "effective stewardship of regional park lands and protected areas" as a desired outcome of this strategic priority. However, given intense pressures on the parks system from factors originating both within and without park boundaries, managing parks to protect and maintain the diverse range of ecosystems, ecological communities, and species is an enormous challenge. This Conservation Strategy provides guidance for meeting that challenge.

MOUNT WELLS REGIONAL PARK PHOTO RICK EPPLER

Context

The ecological values and conditions within the CRD Regional Parks system include:

- Representation of two biogeoclimatic zones, the Coastal Douglas-fir and the Coastal Western Hemlock, of the three that occur in the CRD, and three of 9 different subzone variants that occur within the CRD. All 3 of the variants, the Coastal Douglas-fir Moist Maritime and the Eastern and Western Very Dry Maritime Coastal Western Hemlock variants, are globally significant because of their limited distributions and unique ecosystems. Those variants not represented within regional parks are located west of the Sooke River, an area that to date does not include any regional parks.

- All nine different ecosystems of conservation significance mapped by the federal-provincial *East Vancouver Island and Gulf Islands Sensitive Ecosystems Inventory*.

- Forest cover dominating 85% of the land base within regional parks, interspersed with other ecosystems.

- Documented disruptions to natural disturbance regimes in all regional parks, most commonly logging history, and numerous developments such as roads, buildings, parking lots, and utility corridors.

- Many invasive exotic plants invading non-forested areas, and some species invading forested areas.

- One-third of regional parks having excellent or good connectivity with other natural areas, the remainder being more or less isolated "islands" of habitat within the greater landscape.

- Reported occurrences of 59 different nationally and/or provincially-listed plant species, 31 animal species, and 12 ecological communities at risk, distributed among 26 of the regional parks and trails. How many of these occurrences are extant is not currently known.

- Potential habitat for 9 different regionally significant wildlife species or species groups that require large areas of relatively undisturbed habitat and/or specific important habitat elements. Five native salmonid species are distributed among 10 different regional parks and trails.

Purpose of the Conservation Strategy

The Conservation Strategy outlines a practical, science-based approach to reduce key stressors, or factors than can negatively affect ecological values within CRD Regional Parks. It is system-wide in scope, and follows the analysis of ecological values, ecosystem stressors, and organizational context presented in *Towards a Conservation Strategy for Capital Regional District – Regional Parks: Situational Analysis*.

The Strategy develops the following series of logically-linked desired outcomes:

1. A **goal** statement for each stressor.

2. A list of target changes in **condition or state** associated with each stressor. These are changes that are aimed at the longer term and require significant changes in policies and practices, which must be achieved through shorter term changes in human behaviour.

3. For each change in ecological condition, a list of associated changes in human behaviour, described as **policies and practices required.** Often considered the "medium-term" outcomes, identifying these required changes in behaviour helps in the process of identifying appropriate short-term outcomes and outputs that will achieve the longer term change in condition.

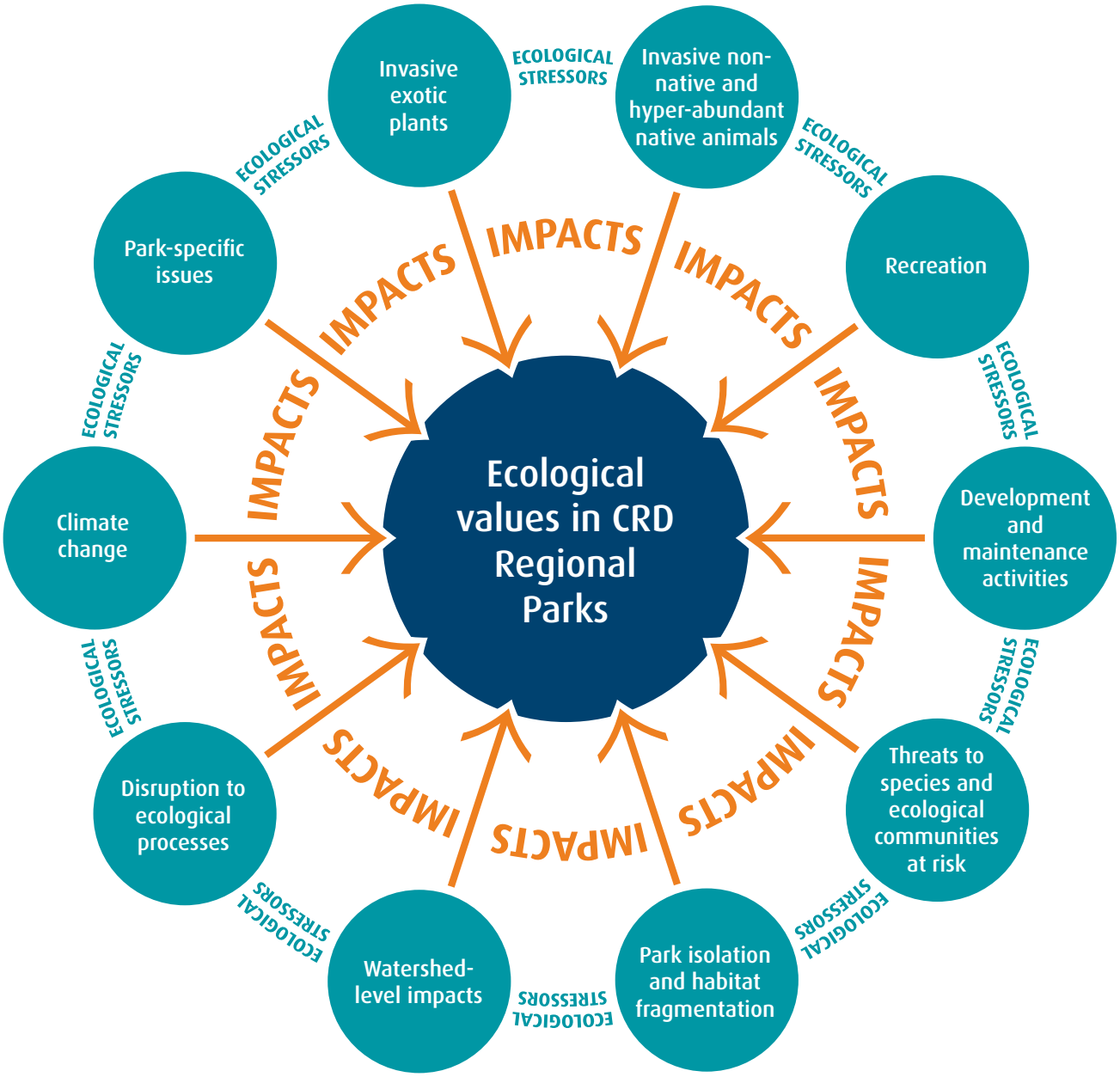
4. **Potential participants,** or groups of people who would likely have a role to play in achieving each of these changes in policies and practices.

5. The **information and understanding** the potential participants would need to have the motivation as well as the technical tools and capacity to participate.

ROUGH-SKINNED NEWT

Strategic Approaches

Ecological Stressors, goals and targets



The ecological stressors, their associated goals, and the target states and conditions outlined in the Strategy are:

1. Invasive exotic plants

Goal: The presence and impacts of invasive exotic plants are minimized.

- New invasions are prevented to the extent possible.
- Early invasions are eradicated ("early detection and rapid response").
- Select species of invasive exotic plants (including legally designated noxious weeds, species posing human health hazards, and other priority species) are eliminated from park lands.
- Select species of established invasive exotic plants are managed at priority sites.
- Regional Parks policies appropriately address the threat to ecosystems and species from invasive exotic plants.

JAPANESE KNOTWEED - INVASIVE EXOTIC PLANT

2. Invasive non-native and hyper-abundant native animals

Goal: The presence and impacts of invasive non-native and hyperabundant native animals are minimized.

- New invasions of non-native animals are prevented to the extent possible.
- Early invasions of non-native animals are eradicated where possible.
- Select species of established invasive non-native animals and hyperabundant native animals are managed at priority sites.
- Impacts of invasive non-native animals and hyperabundant native animals are mitigated.
- Regional Parks policies appropriately address the threat to ecosystems and species from invasive non-native and hyperabundant native animals.

3. Recreation

Goal: Recreational activities within CRD Regional Parks are compatible with protection of ecosystems and species.

- Recreational impacts are prevented to the extent possible.
- Impacted ecosystems are restored.
- Regional Parks policies appropriately address current and potential impacts to ecosystems and species from recreation.

4. Development and maintenance activities

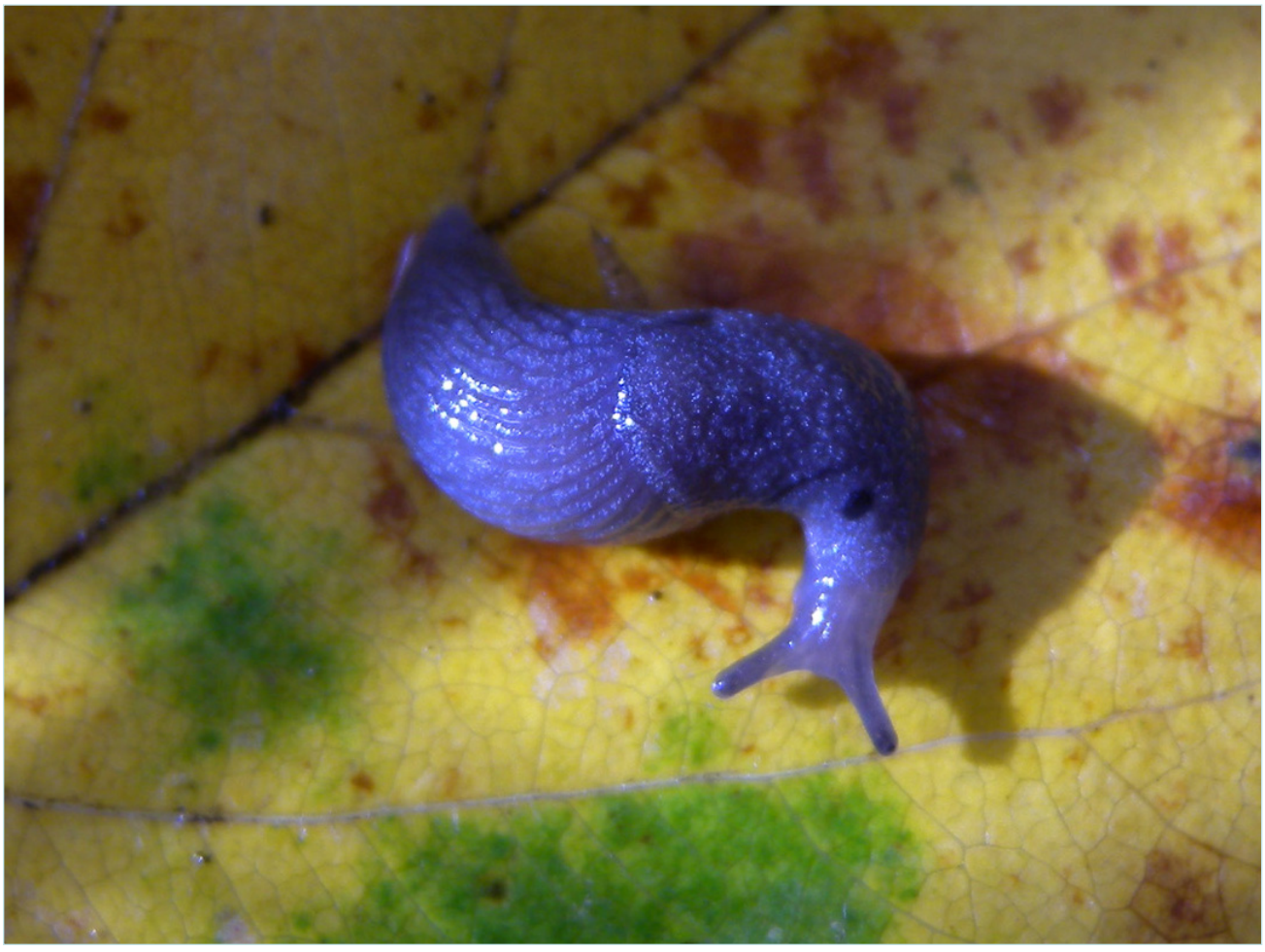
Goal: Development and maintenance activities within CRD Regional Parks are compatible with protection of ecosystems and species.

- Ecological impacts of development and maintenance activities are prevented or mitigated.
- Impacted ecosystems are restored.
- Regional Parks policies appropriately address current and potential impacts to ecosystems and species from development and maintenance activities.

5. Threats to species and ecological communities at risk

Goal: Species and ecological communities at risk thrive within CRD Regional Parks at current or improved population levels and/or distributions.

- Threats to species and ecological communities at risk are mitigated.
- Essential attributes of critical habitat for species at risk are protected and restored.
- Additional recovery actions are implemented.
- Regional Parks policies appropriately address protection and recovery of species and ecological communities at risk.



NATIONALLY ENDANGERED BLUE-GREY TAILDROPPER PHOTO KRISTIINA OVASKA

6. Park isolation and habitat fragmentation

Goal: The impacts of park isolation and habitat fragmentation are minimized.

- Within-park habitat fragmentation is minimized.
- Within-park habitat connectivity is restored where possible.
- Connectivity between parks and other natural areas is protected and enhanced.
- Habitat buffers surrounding parks are protected and enhanced.
- Activities of park neighbours do not compromise ecological values within parks.
- Regional Parks policies appropriately address impacts to ecosystems and species from park isolation and habitat fragmentation.

7. Watershed-level impacts

Goal: Healthy aquatic ecosystems exist in CRD Regional Parks, with excellent water quality and water flows within natural ranges.

- Degradation of water quality from upland conditions and activities is reduced or eliminated.
- Disruptions to water flow from upland conditions and activities is reduced or eliminated.
- An interconnected network of aquatic and riparian ecosystems is protected and restored.
- Regional Parks policies appropriately address watershed-level impacts to aquatic and riparian ecosystems and species.

8. Disruptions to ecological processes

Goal: Natural ecological processes are protected and restored.

- Disruptions to ecological processes are prevented or minimized.
- Ecological processes that have been disrupted are restored or the impacts are mitigated.
- Regional Parks policies appropriately address protection and restoration of ecological processes.

9. Climate change

Goal: Ecosystems and species in CRD Regional Parks retain their natural potential to mitigate and are resilient to climate change.

- Carbon storage capacity of ecosystems is protected.
- Degraded carbon storage capacity of ecosystems is restored.
- Ecosystem and species diversity support ecosystem resilience to climate change.
- Protection of key ecological functions of species and species groups support ecosystem resilience to climate change.
- Land management interventions consider ecosystem resilience to climate change.
- Amelioration of all ecosystem stressors considers predicted changes from, and supports ecosystem resilience to, climate change.
- Regional Parks policies appropriately address climate change mitigation and adaptation.

DEAD AND DYING WESTERN REDCEDARS. PHOTO RICHARD HEBDA, FROM MITIGATING AND ADAPTING TO CLIMATE CHANGE THROUGH THE CONSERVATION OF NATURE IN BRITISH COLUMBIA, PUBLISHED BY LAND TRUST ALLIANCE OF BC, 2008.

10. Park-specific issues

Goal: Impacts on ecological values from park-specific stressors are minimized.

- Impacts on ecological values from unique proposed developments or activities are prevented to the extent possible.
- Impacts from former and current developments and activities are mitigated and/or sites are restored.
- Regional Parks policies appropriately address current and potential impacts to ecosystems and species from park-specific issues.

Next Steps

The next steps in developing a comprehensive conservation program will entail developing action plans outlining the outputs, consisting of activities, services, events, and products that would provide the information and understanding required by the potential participants, as defined in this Strategy, and thereby support the participants to make each of the designated changes in policies and practices.

The actions plans need to define objectives that are SMART – specific, measureable, achievable, realistic, and time-bound.

The conservation program outlined in this Strategy is an ambitious undertaking involving a wide range of participants and partners, and will require significant commitments of internal and external resources. A suggested initial sequence for Strategy implementation is:

1. Invasive exotic plants and threats to species and ecological communities at risk, based upon the immediacy of the conservation issues and the potential consequences of delaying action.
2. Recreation and development and maintenance activities, based upon the feasibility and likely effectiveness of implementation.

This implementation sequence should not be equated with overall priority. Most of the other stressors are more complex, yet likely the most important, to address, given their impacts on fundamental ecological attributes that structure and maintain ecosystems at the broadest scales. CRD Regional Parks will build as much capacity as possible to address the stressors in the coming years.

Resource challenges notwithstanding, this Conservation Strategy provides an important and innovative program for protecting and maintaining the regionally, provincially, nationally, and globally significant ecological values represented in CRD Regional Parks. The CRD has a tremendous responsibility to steward the natural resources under its jurisdiction and a critical role to play in protecting and restoring the ecological values so they can persist into the future. This comprehensive and integrated conservation program that systematically addresses all of the key risks to ecological values offers the best hope for success.

MATHESON LAKE REGIONAL PARK

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Making a difference...together

REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 27, 2021

SUBJECT **Regional Trails Management Plan – Implementation Update**

ISSUE SUMMARY

To provide an update on the implementation of the Regional Trails Management Plan.

BACKGROUND

The Regional Trails Management Plan (RTMP) was approved by the Capital Regional District (CRD) Board in November 2016 (Appendix A). The purpose of the RTMP is to guide development, operation and management of regional trails over a 15-year period. It covers the three existing regional trails and provides direction for future regional trails.

The 96 km of regional trails receive nearly four million visits per year (Appendix B). They provide opportunities for active recreation and active transportation across the region.

Galloping Goose Regional Trail

This 55 km trail was established in 1987 along a former railway corridor. The majority of the route is owned by the Province of BC and a lease allows the CRD to develop, operate and maintain a regional trail within the corridor. Approximately 1.6 km of the route, south of the Selkirk Trestle, is owned and managed by the City of Victoria.

Lochside Regional Trail

The 29 km Lochside Regional Trail (Lochside) was established in 2001 and runs mainly along a former railway corridor. Approximately 12 km of the route are off-street, while 17 km are located on roads. The former rail corridor is owned by the municipalities through which it runs. Some sections of the trail are located on lands owned by the Province.

E&N Rail Trail – Humpback Connector

The E&N rail corridor is owned by the Island Corridor Foundation (ICF), a consortium of municipalities and First Nations, and the CRD has an agreement with ICF allowing the development, operation and maintenance of a regional trail within the corridor. Construction of the 17 km E&N Rail Trail was initiated in 2009 and the trail has been developed in five phases, with all but phase 4 and phase 5 completed.

The RTMP outlines 28 actions to be undertaken across all regional trails in a phased approach. Most notably, the CRD has completed Todd Creek Trestle rehabilitation, resurfacing on the Swan and Brett trestles, and the Widening/Separation study for part of the Galloping Goose and Lochside regional trails.

IMPLICATIONS

Financial Implications

To advance RTMP action items, the staff rely on the Regional Parks capital budget, as well as support from other agencies with jurisdiction in the trail corridors. Staff will also be applying for grants through the BC Active Transportation Grant Program and the federal/provincial Investing in Canada Infrastructure Program. Innovative cost-sharing approaches have also been successful in supporting the implementation of the RTMP.

Social Implications

The RTMP was developed through a two-year public planning process. The plan provides strategic policy direction that applies to existing and future regional trails, as well as a management plan for each of the three existing regional trails. The regional trails are very popular for both recreation and active transportation, and further implementation of the RTMP will continue to support the increase in recreation and active transportation use by people of all ages and abilities.

Intergovernmental Implications

Regional trails exist in 11 municipalities and 1 electoral area. The RTMP was developed through a public planning process that included engagement opportunities for First Nations, municipalities/electoral areas, key stakeholders and the public. A municipal advisory committee provided input during the RTMP process. Liaison with the Ministry of Transportation & Infrastructure, the Island Corridor Foundation and several of the municipalities occurs regularly.

Environmental & Climate Implications

The regional trails provide opportunities for the public to undertake active recreation and active transportation, which assists in reducing greenhouse gas emissions. The regional trails create greenway corridors that protect natural vegetation buffers and enable wildlife movement. Environmental implications are considered when undertaking actions on the regional trails.

Alignment with Board & Corporate Priorities

The implementation of the RTMP aligns with the Board's Climate Action & Environmental Stewardship priority. The RTMP also aligns with the corporate priority of parks and natural area protection and support for recreational access to inter-municipal trails.

Alignment with Existing Plans & Strategies

The CRD Board declared a climate emergency in 2019, and Board Priorities for 2019-2022 identify green and affordable multi-modal transportation and reduced greenhouse gas emissions as desired outcomes. The RTMP aligns with these priorities and with the Regional Climate Action Strategy, Regional Transportation Plan and Regional Growth Strategy, and with policies from other agencies, such as the National Active Transportation Strategy; Clean BC; B.C.'s Active Transportation Strategy – Move, Commute, Connect; and the South Island Transportation Strategy.

CONCLUSION

The Regional Trails Management Plan (RTMP) guides the development, operation and management of regional trails over a 15-year period. Staff have been implementing actions identified in the RTMP and will be researching opportunities to increase access to alternative funding streams.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:
That this report be received for information.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Regional Trails Management Plan
Appendix B: Regional Trails Map

APPENDIX A

Regional Trails Management Plan

Capital Regional District | **October 2016**

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Acknowledgements

CRD Regional Parks would like to gratefully acknowledge the following people for their contributions to the planning process.

Municipal/Provincial/CRD Advisory Group

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Karl Erskine, Central Saanich
Ryan Evanoff, Ministry of Transportation and Infrastructure
Mike Goldsworthy, District of Saanich
Dan Green, Ministry of Transportation and Infrastructure
Ron Hamilton, CRD, Juan de Fuca Electoral Area
John Hicks, CRD, Regional Planning and Protective Services
Kevin House, Ministry of Transportation and Infrastructure
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Baohua Duan, District of North Saanich
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Leigh Sifton, City of Victoria
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Janice Rose, Esquimalt Nation
Christine Clarke, Songhees Nation
Ken Cossey, Songhees Nation
Gwen Underwood, Tsawout Nation
Jennifer Claxton, Tsawout Nation
Israyelle Claxton, Tsawout Nation
Tsawout community members that provided comments
Michelle Thut, T'Sou-ke Nation
Karen George, T'Sou-ke Nation
Christine George, T'Sou-ke Nation

Cover photo: Galloping Goose Regional Trail, Selkirk Trestle, Victoria

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Mike Walton, Senior Manager, Regional Parks
Jeff Ward, Manager of Planning, Resource Management, and Development, Regional Parks
Sarah Webb, Active Transportation Program Manager, Regional Planning and Protective Services

Public

Our thanks also go to the public who participated in developing this Management Plan.

Galloping Goose Regional Trail, Metchosin

Executive Summary

The Capital Regional District (CRD) has prepared a management plan to guide development, operations and management decision-making for Regional Trails.

The Regional Trails Management Plan includes overarching guidance and policies for regional trails as a whole, as well as specific policies and priority management actions for three Regional Trails—the Galloping Goose, the Lochside, and the E&N Rail Trail-Humpback Connector. These trails are an important part of the cycling and walking network and provide transportation and recreation opportunities for visitors and residents alike.

The public participation program used in developing the management plan included a 2013 Regional Trails Survey, a Municipal/Provincial/CRD Advisory Group; liaison with First Nations that have lands adjacent to the three trails, on-line and in-person public participation opportunities, and municipal presentations. Input was sought from at the beginning of the project, before the plan was drafted. Themes and ideas raised through the initial participation processes were considered in developing the plan. A second round of participation was undertaken once the Draft Regional Trails Management Plan was prepared. This included on-line and in-person public participation opportunities and referrals of the draft plan to local governments and First Nations. Comments received through the second participation process were considered before finalizing the Regional Trails Management Plan.

The Vision for Regional Trails is:
"As the Regional Trails system grows and matures, a network of interconnected trails emerges. The trails connect the Capital Region's communities and facilitate access to key destinations within and beyond the region. The network facilitates active, healthy lifestyles for people of all ages and abilities by providing opportunities for both recreation and active transportation. We work together to create and maintain regional trails as greenway corridors that accommodate a diversity of users. The Capital Regional District promotes respect among users and supports positive experiences for all."

Section 2 of the plan provides strategic policies that relate to management of and decision-making for all regional trails. The policies cover topics including trail use and safety, planning and development, trail operations and maintenance, enforcement, and partnering opportunities. Strategic actions are also identified. Sections 3, 4 and 5 provide management plans for each of the regional trails, including further background about the trail, the mission of the trail, a development concept, and priority actions. Section 6 outlines plan implementation, monitoring and evaluation.

Some of the priority actions for implementation include:

- work with municipalities to improve safety at road-trail crossings and where trails are on-street,

and to create links between the regional trails and key regional destinations;

- develop a trail-related public awareness and outreach program regarding safety, trail rules and respectful trail practices;
- assess feasibility of separating trail uses or widening the Galloping Goose to 5-6 m between the Selkirk Trestle and the Switch Bridge and the Lochside between Switch Bridge and McKenzie Avenue;
- complete development of the E&N Rail Trail; and
- complete a regional trail plan for the Southern Gulf Islands and Salt Spring Island.

The Regional Trails Management Plan will be used to assist in setting regional trail priorities and planning for the overall management of the regional trails. It becomes effective upon adoption by the CRD Board. At least ten years will be needed to implement the actions proposed in the Regional Trails Management Plan and implementation is subject to the availability of staff and budget resources, as supported by CRD-wide strategic priorities.

Periodic reviews will be undertaken to assess progress on plan implementation. If substantive changes in direction are required, due to significant issues or new information, an amendment or plan update process will be initiated. A review of the Plan and its implementation should occur after 10 years.

Lochside Regional Trail, Saanich Photo: John Luton

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List of Maps and Tables

Appendices

E&N Rail Trail – Humpback Connector, Langford

1 Introduction and Context

The Capital Regional District (CRD), though Regional Parks, has been developing and managing regional trails for more than 25 years. Management Plans have been developed in the past for the Galloping Goose Regional Park Corridor (1989) and for the Lochside Regional Trail (2001). The Regional Trails Management Plan (RTMP) provides strategic direction for all regional trails and management plans for the Galloping Goose Regional Trail (Galloping Goose), Lochside Regional Trail (Lochside) and E&N Rail Trail – Humpback Connector (E&N Rail Trail).

The RTMP is consistent with CRD's Regional Parks Strategic Plan (2012) and has been developed with consideration given to the CRD's Regional Transportation Plan (2014), including the Pedestrian and Cycling Master Plan. The RTMP provides more specific direction and will guide decision-making relating to the planning, development, management, and operation of the regional trails system.

A glossary of terms is included in Appendix 1 to aid the reader in understanding acronyms and technical wording used in this management plan.

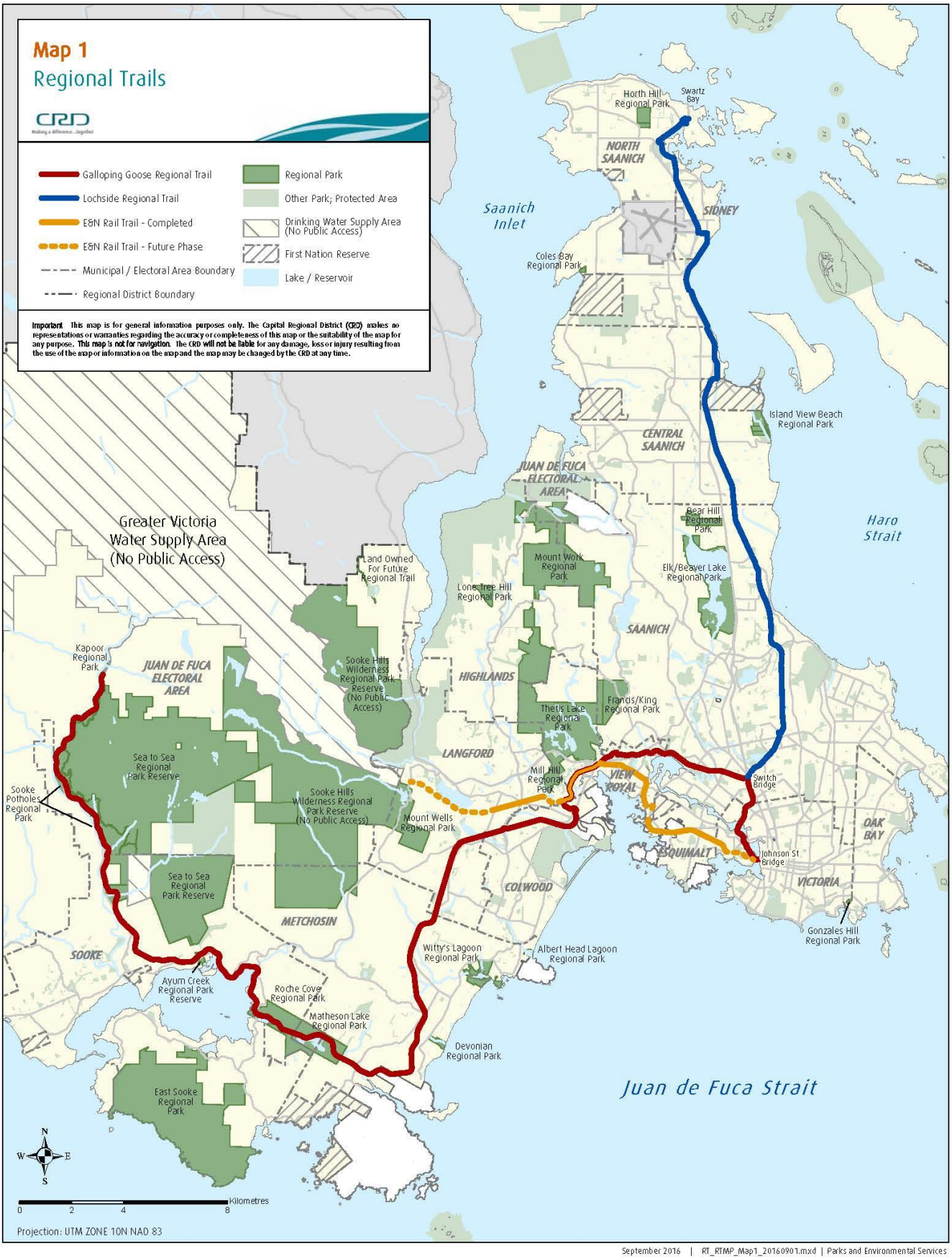
1.1 Purpose of the Plan

The purpose of the plan is threefold:

1. to provide strategic direction for regional trails, including a vision for the regional trail system, management principles, overarching policies, and key strategic actions;
2. to provide specific policy direction and priority actions for each of the three existing regional trails — Galloping Goose, Lochside, and E&N Rail Trail; and
3. to identify an implementation strategy for regional trail priorities to assist the CRD in its priority setting and budget planning processes.

1.2 Description of the Current Regional Trails

The three regional trails addressed specifically in the RTMP are the Galloping Goose, Lochside, and E&N Rail Trail (Map 1). The following provides a short description of the regional trails.


Map 1
Regional Trails
CRD
Galloping Goose Regional Trail
Lochside Regional Trail
E&N Rail Trail - Completed
E&N Rail Trail - Future Phase
Municipal / Electoral Area Boundary
Regional District Boundary
Regional Park
Other Park; Protected Area
Drinking Water Supply Area (No Public Access)
First Nation Reserve
Lake / Reservoir
Important This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.
Horth Hill Regional Park
Swartz Bay
NORTH SAANICH
SIDNEY
Saanich Inlet
Coles Bay Regional Park
Island View Beach Regional Park
CENTRAL SAANICH
JUAN DE FUCA ELECTORAL AREA
Bear Hill Regional Park
Haro Strait
Greater Victoria Water Supply Area (No Public Access)
Land Owned For Future Regional Trail
Mount Work Regional Park
Elk/Beaver Lake Regional Park
Lone Tree Hill Regional Park
SAANICH
Kapoor Regional Park
JUAN DE FUCA ELECTORAL AREA
Sooke Hills Wilderness Regional Park Reserve (No Public Access)
HIGHLANDS
Thetis Lake Regional Park
Francis/King Regional Park
LANGFORD
Sea to Sea Regional Park Reserve
Mill Hill Regional Park
VIEW ROYAL
Switch Bridge
Sooke Potholes Regional Park
Sooke Hills Wilderness Regional Park Reserve (No Public Access)
Mount Wells Regional Park
OAK BAY
ESQUIMALT
Johnson St Bridge
Sea to Sea Regional Park Reserve
COLWOOD
VICTORIA
METCHOSIN
Gonzales Hill Regional Park
Witty's Lagoon Regional Park
Albert Head Lagoon Regional Park
SOOKE
Ayum Creek Regional Park Reserve
Roche Cove Regional Park
Matheson Lake Regional Park
Devonian Regional Park
East Sooke Regional Park
Juan de Fuca Strait
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Kilometres
Projection: UTM ZONE 10N NAD 83
September 2016 | RT_RTMP_Map1_20160901.mxd | Parks and Environmental Services

Galloping Goose Regional Trail

This 55 km trail was established in 1987 along a former railway corridor. The majority of the route is owned by the Province of BC and a lease allows the CRD to develop, operate and maintain a regional trail within the corridor. Approximately 1.6 km of the route, south of the Selkirk Trestle to the Johson Street bridge, is owned and managed by the City of Victoria and the CRD liaises with the City on this section of trail.

Starting in the City of Victoria and ending at Kapoor Regional Park in the Juan de Fuca Electoral Area, the Galloping Goose Regional Trail (Galloping Goose) has both urban (20 km) and rural (35 km) sections. Horseback riding, cycling and pedestrian uses are permitted in the rural section, which is classified in the Regional Parks Strategic Plan as a Multiple Use Trail; cycling and pedestrian uses are permitted in the urban section, which is classified as a Bike and Pedestrian Trail. In 2015, the trail had nearly 2 million visits (CRD Regional Parks).

Lochside Regional Trail

The 29 km Lochside Regional Trail (Lochside) was established in 2001 and runs mainly along a former railway corridor. Approximately 12 km of the route are off-street while 17 km are located on roads. The former rail corridor is owned by the municipalities through which it runs. Some sections of the trail are located on lands within the Patricia Bay Highway corridor owned by the Province. Agreements with the municipalities and the Province permit the CRD to establish and operate a regional trail within the corridor and set out roles and responsibilities for maintenance of the trail and corridor.

Starting at the "Switch Bridge" on the Galloping Goose in Saanich and ending at the Swartz Bay ferry terminal in North Saanich, the Lochside travels through both urban and rural areas. This trail is classified in the Regional Parks Strategic Plan as a Bike and Pedestrian Trail. As of 2015, it receives approximately 1 million visits per year (CRD Regional Parks).

E&N Rail Trail – Humpback Connector

The E&N rail corridor is owned by the Island Corridor Foundation (ICF), a consortium of municipalities and First Nations and is identified by the federal government as an active railway. The CRD has an agreement with ICF allowing the development, operation and maintenance of a regional trail within the rail corridor, making this the only 'rail with trail' in the CRD. Construction of the 17 km E&N Rail Trail was initiated in 2009 and the trail is being developed in five phases. This urban trail is classified in the Regional Parks Strategic Plan as a Bike and Pedestrian Trail and will run from the Johnson Street bridge in Victoria to the City of Langford. The intention is to extend/link the trail to the Humpback Reservoir area in Sooke Hills Wilderness Regional Park Reserve.

1.3 Links to Other Plans

The CRD Board sets overarching priorities for the CRD through the Regional Growth Strategy and the Board's Corporate Plan (2014-2018). Flowing from these, the various departments develop strategic documents to guide their work. Regional trails play a role in both the Regional Parks (recreation) function and in the Regional Planning & Protective Services (transportation) function. A brief discussion is provided below relating to the links between the Regional Parks Strategic Plan (RPSP), the Regional Transportation Plan (RTP) and the Regional Trails Management Plan (RTMP).

Regional Parks Strategic Plan (2012-2021)

The RPSP, which was approved by the CRD Board in 2012, sets out strategic direction for both regional parks and regional trails. The RPSP provides an overarching vision for a regional system of parks and trails, management goals, a trail classification system, and initial implementation priorities. Regional park and trail management plans must be consistent with the RPSP.

The vision in the Regional Parks Strategic Plan is:

> Capital Regional District (CRD) parks and trails secure the region's ecology and quality of life by establishing, in perpetuity, an interconnected system of natural lands. Parks protect and restore our region's biodiversity, offer compatible outdoor recreation and education opportunities and accessible, nourishing, joyful connection with the natural world and our cultural heritage. Regional trails connect communities and provide many outdoor recreation opportunities and an alternate non-motorized transportation network. Parks and trails support the health of our region, its inhabitants and the planet as a whole. In this century, regional parks and trails will become part of a larger, integrated and connected system of natural areas. Subscribing to the idea that "nature needs half", policies and action are explored through sustainability planning to significantly enhance the system of natural areas in the region in order to sustain life supporting ecological processes. By conserving at least half of the Capital Region's land and water base for nature, residents may live and work in harmony with the environment.

The RPSP sets out the following strategic priorities related to regional trails:

- Complete and update trail management plans for priority parks and trails;
- Continue construction of the E&N Rail Trail;
- In partnership with other public agencies, local government and private landowners, initiate planning for the regional trails system on Salt Spring Islands and the Southern Gulf Islands.
- Integrate First Nations interests into planning for and management and stewardship of regional trails;
- Undertake a visitor use survey;
- Partner with other levels of government and health agencies to promote the health benefits to the community of regional trails; and
- Provide more accessible opportunities for people of all ages and abilities to connect with nature.
- Complete the E&N Rail Trail – Humpback Connector and connect it to the Trans Canada Trail (TCT); and
- Plan for a network of regional trails in the Southern Gulf Islands and on Salt Spring Island.

Regional Transportation Plan (RTP)

Active transportation (cycling and walking) is promoted by the CRD and is facilitated by having a regional trail system connecting our communities. The Regional Transportation Plan (RTP) and the Pedestrian and Cycling Master Plan (PCMP) also provide guidance that is applicable to regional trails. The RTP discusses transportation challenges and opportunities, outlines a vision and principles to guide transportation actions, proposes regional outcome statements, and identifies actions and strategies to implement those actions.

The RTP vision is:

> A future where transportation is sustainable, offers choice, enables smart growth, and makes livable communities possible.

Flowing from the RTP vision, the following states are desired over time:

- A multi-modal and integrated approach to transportation exists;
- Cycling is an appealing, safe and viable transportation option for residents and visitors of all skill and confidence levels;
- Walking is an increasingly popular and desirable mode of transportation that is supported by safe, convenient, and accessible pedestrian infrastructure; and
- Existing regional trails are enhanced and funding exists for expansions of the regional trail system.

Pedestrian and Cycling Master Plan (PCMP)

The Regional Pedestrian and Cycling Master Plan (PCMP) was approved as part of the Regional Transportation Plan. It lays out a broad plan of action for achieving a significant shift in patterns and modes of transportation throughout the region. It sets out numerous objectives and covers topics including engineering, education, enforcement, encouragement, and evaluation. The PCMP identifies a primary inter-community cycling network and pedestrian priority areas, both of which include the regional trails.

The PCMP vision is:

> The Capital Region will be a truly livable and environmentally sustainable community, where walking and cycling are key components of an innovative and integrated transportation system. Citizens of all ages in all parts of the region will find active travel irresistible on a seamless network of Class 1 on and off-street facilities appropriate for users of all abilities. In 2038 CRD will be lauded for its 25% mode share for cycling in urban centers and 15% region wide, as well as 15% mode share for pedestrian travel for all trip purposes.

Some of the points raised in the PCMP include:

- Within the region a concerted effort is needed to shift new trips and portions of existing trips from motor vehicles to walking, cycling and transit;
- It is important to establish a cycling network that is safe and comfortable for all – not just the courageous and intrepid cyclist; and
- CRD will manage a multi-use regional trail system that provides regionally significant pedestrian corridors.

The Regional PCMP does not provide specific direction for a trail network in the southern Gulf Islands. In 2013, a Salt Spring Island pedestrian and cycling master plan was developed and in 2017, Regional Parks will take the next step and develop a Regional Trail Plan for the Southern Gulf Islands and Salt Spring Island (Appendix 6).

Based on direction provided in these strategic plans, creating linkages from regional trails to key regional destinations is important future trail planning work. The CRD will also advocate for linkages to be developed by other agencies or municipalities that will further the trail network envisioned within the region as illustrated in the Regional Parks Strategic Plan.

2 Regional Trails Strategic Direction

2.1 Vision for Regional Trails

This vision for regional trails illustrates the desired state that the CRD is working toward. It outlines what CRD hopes to achieve over the life of this plan, and beyond.

> As the Regional Trails system grows and matures, a network of interconnected trails emerges. The trails connect the Capital Region's communities and facilitate access to key destinations within and beyond the region. The network facilitates active, healthy lifestyles for people of all ages and abilities by providing opportunities for recreation and active transportation. We work together to create and maintain regional trails as greenway corridors that accommodate a diversity of users. The Capital Regional District promotes respect among users and supports positive experiences for all.

2.2 Management Principles

Management principles are sometimes referred to as the values or basic understandings we hold. The following ten principles provide an overarching philosophy to guide management and decision-making over the next ten years.

1. **Consider Vision in Decision-making** - The vision for regional trails should be considered in all decision-making.
2. **Provide Opportunities for Both Active Transportation and Active Recreation** - Active transportation and active recreation opportunities are equally important for a healthy region and the regional trails system should accommodate both. Generally, the trails allow for non-motorized uses only.
3. **Consider All Ages and Abilities** – While every trail may not be suited to all ages and abilities, the overall trail system should provide opportunities for a diversity of non-motorized uses for people of all ages and abilities.
4. **Working Together is Essential** - Liaison and cooperation with local and provincial authorities is critical to creating an integrated trail system and the CRD should promote partnership opportunities in areas of mutual interest.
5. **First Nations Relationships are Important** - Developing and maintaining relationships with First Nations with lands close to the trails is important and the CRD should promote partnership opportunities in areas of mutual interest.

6. **Public Awareness and Education are Important** - public awareness and education should be considered an integral part of all projects to help ensure effective trail management and positive user experiences.
7. **Adjacent Land Use and Development Should Enhance the Trail System** – land uses and new development should not negatively impact the specific trail corridor and, where possible and appropriate, liaison with developers and local governments should aim to enhance the corridor.
8. **Respect for nature is important** – maintenance of the greenway character is important and, where possible and appropriate, natural buffer vegetation should be maintained or enhanced. Environmental implications will be considered in decision-making.
9. **Consistent with Management Plan** - Any new uses being considered must be consistent with the policies of this Regional Trails Management Plan and other CRD strategic direction.
10. **Use Adaptive Management** – Adaptive management should be used to address changing needs or information, recognizing that any substantive changes will require a plan amendment.

2.3 Outcome Statements

The following statements set the main 'outcomes', or 'intentions' that the CRD will work toward over the next ten years. These targets flow from the vision and reinforce the long term direction in the plan. They will be used to document and evaluate progress when the management plan is reviewed in the future.

A network of interconnected trails connects the Capital Region's communities.
The regional trail system facilitates access to key destinations within and beyond the region.
The regional trail system facilitates active, healthy lifestyles by providing opportunities for active (non-motorized) transportation and active recreation.
The regional trail system accommodates multiple uses and people of all ages and abilities.
The CRD works collaboratively with municipal and provincial governments to ensure an integrated trail system is created within the region.
The regional trails provide greenway corridors within the region.
Regional trail management promotes and supports respect among trail users and positive experiences for all.
The public is aware of, supports, and is satisfied with management of, the regional trail system.

Lochside Regional Trail, Central Saanich Photo: John Luton

2.4 Overarching Policies for Regional Trails

The following policies are broken down into categories that relate to management issues or needs that were identified during the development of the management plan.

2.4.1 General

1. Each regional trail will be classified as per the classification system in the Regional Parks Strategic Plan, or other appropriate approved strategic document. Information regarding the trail classification will be noted on the CRD's website.
2. Generally, the regional trail system allows for active transportation and active recreation uses, as follows:
   - Bike and Pedestrian Trails allow for cycling, walking, running, skateboarding, and rollerblading;
   - Multiple Use Trails allow for cycling, walking, running, and horseback riding;
   - Hiking and Walking Trails allow for walking, hiking and running.
   - In the future, additional single use trails may be added to the system (e.g., cycle-only, pedestrian-only, or equestrian-only).

- Regional trails that allow bicycle use will accommodate bicycle trailers up to a maximum width of 1.2 m;
- Motor-assist cycles, as defined by the *Motor Vehicle Act*, are permitted on regional trails that allow bicycle use;
- Generally, motorized wheelchairs and mobility scooters (used by mobility-challenged individuals) are permitted on regional trails, though not all trails will be suitable for these;
- For the safety of trail users, their pets, and wildlife, all pets must be on-leash at all times while on regional trails (see Appendix 2 for designated municipal off-leash and leash-optional areas within the CRD). Pet owners or guardians should ensure that their pets remain both on the trail and on the proper side of the trail; and
- Trail management plans may further clarify and/or restrict the types of permitted uses and locations of uses based on considerations such as geography, sensitive ecosystems, site capacity, and public input.

3. The regional trail system as a whole will be managed to accommodate users of different ages and abilities, although not all sections or trails will necessarily accommodate people of all ages and abilities.
4. The CRD will use a variety of communication tools to inform the public about key initiatives, safety, trail rules, and trail etiquette.
5. The CRD will collaborate with trail corridor landowners to establish and maintain necessary agreements regarding trail development, operations, and maintenance responsibilities.
6. A CRD Park Use Permit will be required in advance for any event or special use planned on or along a regional trail.
7. The CRD supports municipalities and the Ministry of Transportation and Infrastructure (MOTI) establishing and maintaining murals and public art on municipal and MOTI lands/structures along the regional trail routes. The CRD may support other art opportunities along a trail corridor where it is felt that such an opportunity will significantly improve the character of the trail route, will deter graffiti, and will not cause undue maintenance requirements.

2.4.2 Trail Use & Safety

1. Users are responsible for their own safety.
2. For safety reasons and recognizing the multiple uses on regional trails, the CRD highly recommends, and will promote, that:
   - cyclists, skateboarders, rollerbladers, and equestrians wear helmets at all times when using regional trails;
   - all trail users should use lights that provide adequate visibility (both to see and to be seen) and wear light coloured and/or reflective clothing if they are using trails after sunset, before sunrise, and/or in poor weather conditions;

- cyclists slow down when pedestrians or horses are in the vicinity;
- when using off-street sections of regional trails, all users keep right except to pass other users;
- parents and pet owners ensure their children and pets remain on the right hand side of the trail;
- when using on-street sections, the applicable rules of the road be followed;
- all users should only pass other users when there is adequate space to do so in a safe manner;
- cyclists notify other users before passing (by bell or voice);
- all trail users move to the right if stopping.

3. People using regional trails during or after inclement weather should do so with extra caution.
4. The CRD supports regionally-consistent practices where possible, and will advocate for municipalities to:
   - develop local bylaws or implement appropriate signage, as per the *Motor Vehicle Act* requirements, to allow cyclists to cycle across crosswalks where they join two sections of a regional trail route;
   - mark all road-regional trail crossings and provide advance warning of the trail crossing to road vehicles (e.g. crosswalks and advance warning signs);
   - work with the CRD to identify and maintain acceptable sight lines for road and trail users where regional trails cross public roads; and
   - work with the CRD, MOTI, and interest groups to explain trail-road crossing rights-of-way and to promote safe practices to trail and road users.
5. The CRD will promote respect among users and fair and practical trail etiquette practices to facilitate positive, enjoyable experiences for all trail users.
6. The CRD will encourage municipalities to close/remove any road-trail crossings that are unnecessary.
7. The CRD will regularly collect data and monitor types and levels of use on regional trails.

2.4.3 Trail Planning and Development

1. Priority will be given to developing regional trails as off-street facilities, where feasible. Preference for routing along road or railway corridors will be used where possible and practical. In some cases, on-street sections will exist. The CRD will recommend that municipalities/MOTI incorporate road calming and/or road sharing measures for cyclists (e.g. reduced speed limits, bike lanes, sharrows) and walking space for pedestrians (sidewalks, wide road shoulders) where on-road sections of regional trails exist.
2. Where feasible, regional trails will interlink in order to connect the region's communities and to create loop-route opportunities. In some cases, regional trails will provide a "spine" that connects key areas and to which other trails connect.

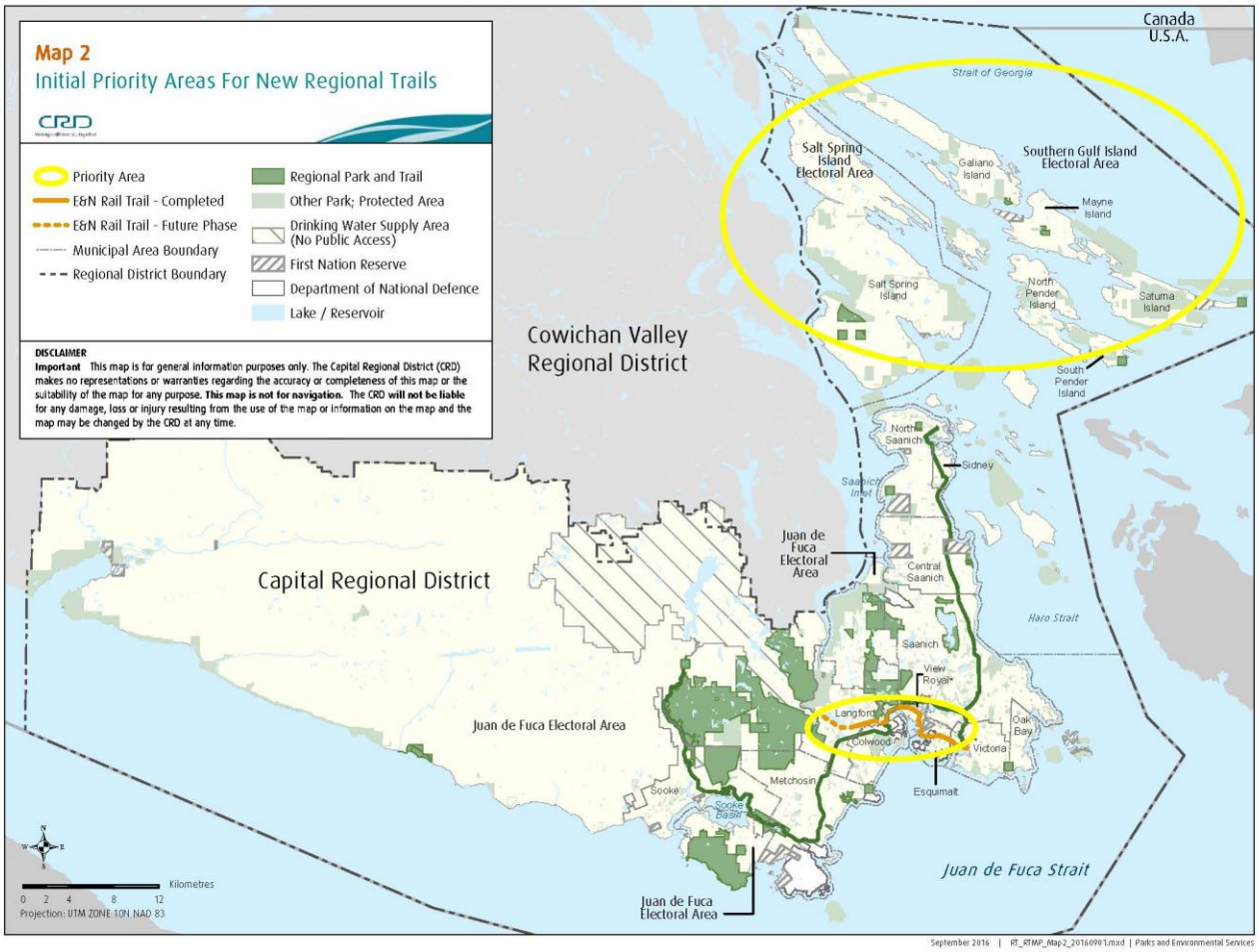
3. Where feasible, regional trails should provide access to, or link with, other key transportation routes that provide access to regionally significant areas (e.g. key parks, regional employment centers, colleges/universities, regional commercial hubs, regional tourism attractions, and transportation hubs).
4. Although both transportation and recreation needs will be considered in trail planning, in high-use urban areas the transportation role of trails will be given first consideration in planning and management. In wilderness, rural and low-use urban areas, the recreation role will be given first consideration in planning and management.
5. Universal accessibility will be considered in trail planning. Trails that are universally accessible will be noted in public information. Where significant hills exist along trails that generally provide universal accessibility, they will be highlighted.
6. The trail development guidelines in Appendix 3 will guide regional trail development. Additional or revised guidance may be developed, from time to time, to augment or update these guidelines without requiring an amendment to the RTMP.
7. The CRD will consider widening trails or separating trails based on consideration of criteria, including:
    - public feedback;
    - volume of each type of use;
    - accidents/near misses reported to the CRD;
    - feasibility based on corridor width and characteristics;
    - environmental impacts;
    - cost;
    - opportunities through adjacent development projects; and
    - other potential options/solutions.
8. Generally, visitor facilities will be located at key access points. Where feasible, affordable, and needed, vehicle parking, toilets, drinking water, benches, bike racks, information kiosks, and garbage containers will be combined at these locations. Outside of key accesses, facilities may be considered, as follows:
    - vehicle parking - where there is a significant need or potential for a 'park and ride' facility and/or partnership opportunities exist;
    - toilet facilities – where there is significant need, limited alternate opportunities, and/or partnership opportunities exist;
    - drinking water - where there is a significant need, limited alternate opportunities, a cost-effective option, and/or partnership opportunities exist;
    - benches - where there is a significant change in elevation or a scenic vista;
    - bike racks – where there is a significant transit hub along the trail that may provide combined bike and transit commuting opportunities or at trail locations proximate to key regional destinations;

- information kiosks – at other key locations where there is significant need for welcoming, interpretive and regulatory information; and
- garbage containers – where there is a significant need, easy access for maintenance, and limited alternate opportunities.

9. The CRD will promote that bike charging stations be provided at key regional destinations that are close to the trail, such as regional employment centers and regional shopping centers.
10. Public engagement will be undertaken if significant changes are proposed to this Regional Trails Management Plan (e.g. amendment or update) or if significant projects not identified in the Management Plan are proposed.
11. Initial priorities for new regional trail development will include (see Map 2):
    - completion of the E&N Rail Trail – Humpback Connector including a link to Sooke Hills Wilderness Regional Park Reserve; and
    - planning for a network of regional trails in the Southern Gulf Islands and Salt Spring Island Electoral Areas (see Appendix 6).
12. Emergency and maintenance access needs will be considered in trail planning.
13. Regional Trails will be named by the CRD using the following criteria:
    - Trail location, geographic feature, or historical reference and
    - "Regional Trail" will be included in the official name of all regional trails.

2.4.4 Trail Maintenance

1. The CRD will conduct a formal annual maintenance inspection of each trail to identify possible hazards and maintenance requirements. Requirements will be prioritized for action, subject to the existing maintenance budget and staff resources.
2. The public is encouraged to notify the CRD regarding maintenance and public safety issues on the trails. New maintenance needs identified throughout the year will be assessed and, as appropriate, be added to the maintenance list.
3. Trail maintenance is conducted during regular CRD work hours.
4. Extra-ordinary maintenance requirements, such as tree blow down removal or ice management, are assessed following significant weather events.
5. The CRD will develop an assessment and replacement strategy for significant trail structures and facilities through an asset management program. A key focus will be trail trestles and bridges.
6. The CRD will work with municipalities and adjacent businesses, as needed, regarding municipal infrastructure and garbage along the trails.



2.4.5 Signs

1. The CRD will use standardized signs for welcoming, trail etiquette, wayfinding, caution, and regulatory needs. Each trail will have a separate identifier that will be incorporated into or with trail route wayfinding signs. The sign guidelines in Appendix 4 will guide development of regional trail signage. Additional signs may be developed, from time to time, to augment or update these guidelines without requiring an amendment to the RTMP.
2. The CRD will develop a Sign Plan for each regional trail, will review the Sign Plan at least every ten years, and update as necessary.
3. Wayfinding methods such as signage, maps, and pavement markings may be used to help users orient themselves, make route decisions, and identify destinations that may be accessible from the trail.
4. The CRD will work with local municipalities to improve wayfinding between regional trails, local active transportation routes, and key regional destinations.

5. Where multiple trails are co-located along a single route, the CRD will work with the appropriate organization to ensure wayfinding for each trail is addressed in some way (e.g. Trans Canada Trail).

2.4.6 Enforcement

1. The CRD will work cooperatively with police and municipal bylaw enforcement services for enforcement needs on regional trails.
2. The public should contact police directly if criminal activities are noted on the trails.
3. The CRD will, and the public should, notify the appropriate municipality if local bylaw issues are noted on the trails.
4. The CRD will notify the owners of the trail corridor (municipalities, MOTI, ICF) when significant encroachments from adjacent land uses are noted within the corridor. If the encroachment directly affects trail infrastructure, the CRD may take further action.

2.4.7 Adjacent Land Use

1. The CRD will work with municipalities and developers to ensure that adjacent developments enhance the trail corridor and/or do not negatively impact the trail corridor.
    - The following criteria, along with comments specific development, will be used to advise landowners, developers and municipalities about regional trail interests relating to development proposals on lands adjacent to the regional trails:
    - Where regional trail corridors are owned by others (e.g. the Province, municipalities, Island Corridor Foundation), the CRD will recommend that the proponent also contact the corridor landowner regarding the proposed project;
    - In the interests of public safety, no new road crossings of existing regional trails should be permitted;
    - No negative drainage impacts or new drainage flows should be directed onto or be created within the trail corridor;
    - Temporary property boundary fencing should be required prior to any construction occurring;
    - During construction, no encroachments on the trail corridor should occur without prior written approval and permitting from the CRD and closure of the trail will not typically be permitted.
    - No permanent encroachments on the trail corridor should occur without written approval and/or appropriate tenure from the trail corridor owner.
    - Consideration should be given to whether the development provides opportunities to expand or enhance the regional trail system;
    - No individual residential or commercial accesses should be developed to the trail without prior written approval of the trail corridor landowner and the CRD;

- Natural vegetative buffers on the adjacent lands should be maintained wherever possible. Where this is not possible, native vegetation or fencing along the property line should be required to maintain the greenway character of the trail corridor or to minimize potential for creation of individual accesses to the trail corridor;
- A CRD park use permit is required in advance if any work needs to be undertaken from/within the trail corridor; and

2.4.8 Environmental

1. The CRD will assess invasive plant management needs along regional trail corridors, as part of a larger ecological management program, based on ecological risk.
2. The CRD will notify and work with the trail corridor landowner if species at risk are documented along the regional trail corridors.
3. The greenway character of trail corridors will be maintained wherever possible, giving consideration to public safety.

2.4.9 Partnering Opportunities

1. The CRD supports public involvement through donations and partnering opportunities and will identify potential projects.
2. Partnering proposals will be considered based on:
   - need;
   - fit with the character of the trail;
   - environmental considerations;
   - project costs to be covered by the CRD;
   - on-going maintenance costs; and
   - other considerations raised in reviewing the proposal.
3. The CRD will build relationships with, and work cooperatively with municipalities, First Nations, tourism organizations, and others to facilitate partnering opportunities for trail-related projects of mutual interest and benefit.
4. The CRD will provide regional trail-related volunteer opportunities as part of a larger regional volunteer program.

View from the Galloping Goose Regional Trail, Sooke

2.5 Strategic Actions

The following actions relate to more than one specific trail, relate to overall aims and interests, or address some of the broad management issues raised through the management planning process:

1. Develop and implement a public outreach program including but not limited to:
    - road/trail crossing priority;
    - trail safety;
    - trail rules; and
    - respectful trail use practices (Appendix 5 outlines some key etiquette messages).
2. Work with the municipalities and/or the MOTI on:
    - road/trail crossings including, but not limited, to consideration of the following:
        - assessing traffic volumes and priority;
        - addressing sightlines and signage needs;
        - adequately marking and lighting road-trail crossings; and
        - improving crossings where needed.
    - allowing cycling across trail-related crosswalks, through bylaws or signage, as per the *Motor Vehicle Act* requirements;
    - improving on-street portions of trails, trail accesses, and high use/high conflict areas;

- establishing, mapping, and signing (wayfinding) links between regional trails and key regional destinations and active transportation routes; and
- partnering on public outreach regarding safe and respectful trail use practices.

3. Identify and develop needed agreements, policy, procedures, guidelines, and standards for regional trails.
4. Map the locations of CRD visitor facilities along the regional trails and incorporate the data into the CRD's Asset Management system.
5. Continue regional trail planning for the Southern Gulf Islands and for Salt Spring Island.
6. Undertake a trail lighting study. The study should include, but not be limited to, assessment of:
   - crime prevention through environmental design (CPTED) considerations;
   - where lighting should or should not be provided;
   - feasibility of using various types and styles of lighting (e.g. solar, electric, motion-sensing; low to ground, street light style, brightness);
   - environmental considerations;
   - impacts on neighbours;
   - costs to implement and maintain trail lighting; and
   - other potential options to increase visibility and user comfort after dark and in poor weather.
7. Establish a cooperative enforcement patrol program and enforcement protocols for regional trails with area police and bylaw enforcement services.
8. Improve the CRD's web-based data and mapping and develop mobile applications to provide increased trip planning capabilities and customizable trail information for the public.
9. Collaborate with interested First Nations along the trails to establish welcome signs identifying traditional First Nations territories and potential themes/cultural heritage messages for possible interpretation along regional trails.
10. Identify trail-related needs that can be undertaken and/or maintained through donations and partnerships.
11. Regional Parks and Regional Planning will collaborate on pedestrian and cycling data collection and use monitoring programs.
12. CRD will review the use of bollards on trails to determine if changes are needed for safety of people riding bicycles.

3 Galloping Goose Regional Trail Management Plan

3.1 Background and Context

The railway corridor within which the Galloping Goose Regional Trail is built was established between 1911 and 1924 by the Canadian Northern Pacific Railway (CNPR) and subsequently, the Canadian National Railway (CNR). It traversed 177 km (73 miles) between Victoria and Youbou, on Cowichan Lake. This rail line was largely used for transporting logs and freight, though some passenger service was provided. The passenger car was a gas-powered vehicle known as the "Galloping Goose". Between 1930 and the 1970s, rail use steadily declined, and in 1979 the rail line was abandoned. The railway corridor was taken over by the Province of British Columbia.

The initial concept of using the rail corridor for recreation and park purposes was studied in the early 1970s and the "Dogwood Provincial Parkway Proposal" recommended that the entire right-of-way from downtown Victoria to Cowichan Lake be established as a non-motorized Class "A" Provincial Park. The Provincial Park did not come to fruition; however, in 1987 the Province leased a 43 km portion of the corridor to the Capital Regional District for the purpose of a regional trail within a linear park. The lease provided the authority for the CRD to establish, manage and maintain the trail and park corridor from Atkins Avenue in View Royal to Leechtown, in the Juan de Fuca Electoral Area. In 1993, two additional sections of the former CNR corridor were leased to the CRD to extend the Galloping Goose trail and park corridor—from Atkins Road to Switch Bridge and from Switch Bridge to the south side of the Selkirk Trestle. In 2015, an updated and consolidated lease was signed between the Province and the Capital Regional District, for the trail from the Selkirk Trestle to Kapoor Regional Park (approximately 53.5 km). The section of the Galloping Goose Regional Trail south of the Selkirk Trestle to the Johnson Street bridge (approximately 1.5 km) is owned, operated and maintained by the City of Victoria. The Fortis Gas pipeline runs alongside, and in places beneath, the trail, for approximately 25 kms, largely between kilometer 15 and kilometer 40.

The Regional Parks Strategic Plan splits the Galloping Goose into two trail classifications. From Victoria to Luxton (Marwood Avenue in Langford), the trail is classified as a Bike and Pedestrian Trail. From Luxton to Leechtown (Kapoor Regional Park in the Juan de Fuca Electoral Area) it is classified as a Multiple Use Trail for pedestrians, cyclists and equestrians.

CRD statistics show that the Galloping Goose Regional Trail receives 2 million visits per year. Generally, the urban section is more heavily used on weekdays and the rural areas tend to see increased use on weekends. In recent years, the volume of cyclists using the urban section of the trail between 6-9am and 3-6pm has risen. The 2013 Regional Trails Survey found that 92% of respondents (2,068) indicated

they had used the Galloping Goose in the past 12 months and 55% of respondents (1,102) indicated the Galloping Goose Regional Trail was the regional trail they used most often.

3.2 The Mission of the Galloping Goose Regional Trail

The mission of a trail explains its role or function. The Galloping Goose is split into two trail classifications and each of the two sections has a slightly different mission, as noted below.

Victoria to Luxton (in Langford)

> As an urban Bike and Pedestrian Trail, the Galloping Goose Regional Trail provides a major route for active transportation and recreation. It provides access to key regional and local destinations within Victoria, Saanich, View Royal, Colwood and Langford for users of all ages and abilities. The trail links these communities together and, through connections with other trails and active transportation routes, provides access to places beyond the immediate area. The Galloping Goose Regional Trail supports an active, healthy community.

Luxton (in Langford) to Kapoor Regional Park (at Leechtown in the Juan de Fuca Electoral Area)

> As a rural Multiple Use Trail, the Galloping Goose Regional Trail provides active recreation and transportation opportunities for cyclists, pedestrians and equestrians. It facilitates use and enjoyment of the outdoors. The trail connects several regional parks and provides an off-street active transportation route from Langford to Sooke. The Galloping Goose Regional Trail supports an active, healthy community.

3.3 Management Goals and Direction Statement

3.3.1 Management Goals

- To provide a safe and enjoyable trail between Victoria and Kapoor Regional Park in the Juan de Fuca Electoral Area.
- To promote safe and respectful use practices on the trail to help ensure positive experiences for all users.
- To provide an arterial route within the larger active transportation and recreation network between Victoria and Luxton (in Langford).
- To provide a multi-use trail experience (pedestrians, cyclists and equestrians) between Luxton (Langford) and Kapoor Regional Park (in Juan de Fuca Electoral Area).
- To provide access to key regional destinations, such as regional parks.

3.3.2 Management Direction Statement

The vision, management principles, outcome statements, and strategic policies outlined in Chapter 2 apply to, and guide the management of, the Galloping Goose Regional Trail.

3.4 Development Concept

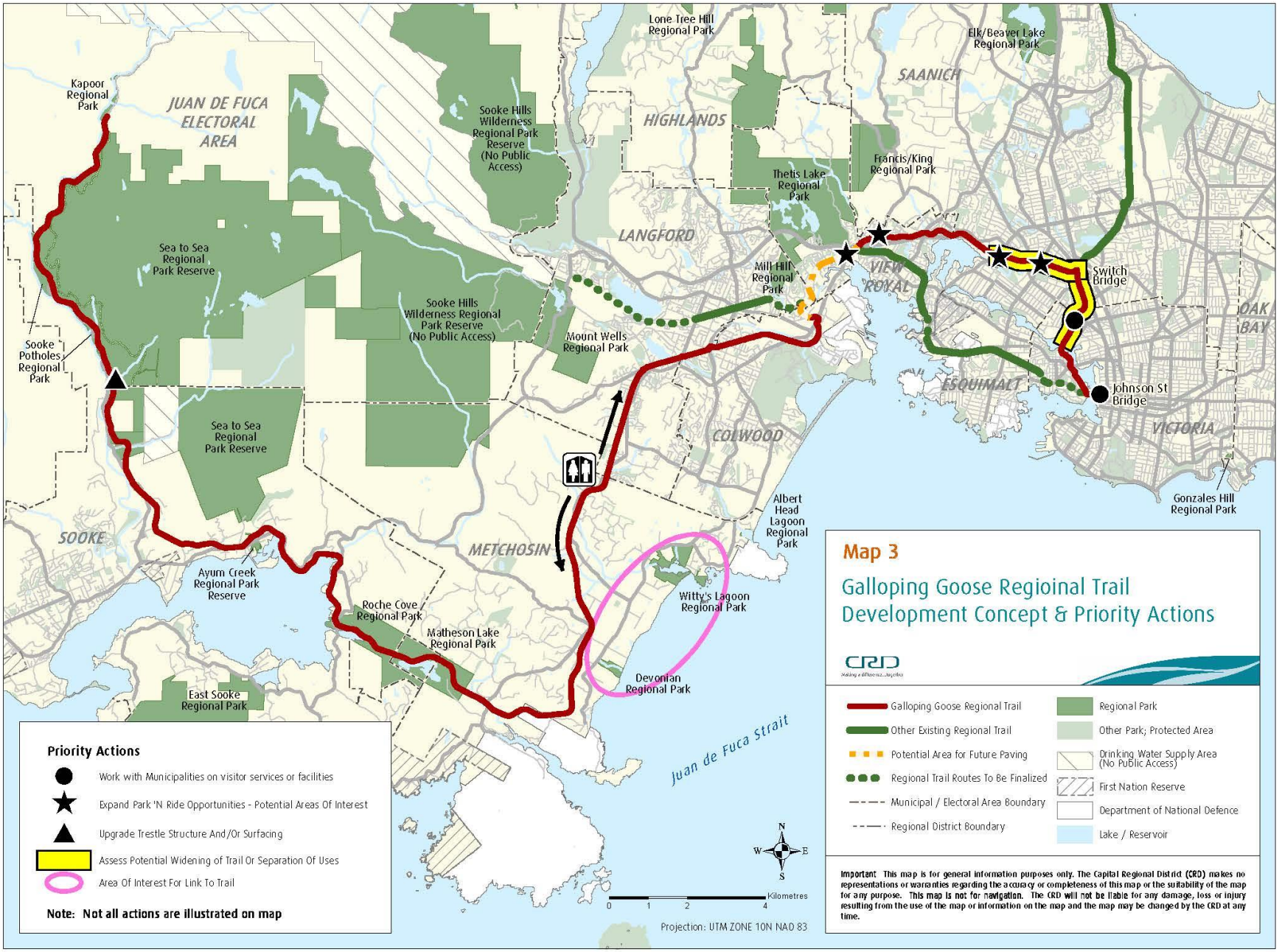
The Galloping Goose Regional Trail has existed for more than 25 years and use has increased significantly over the years. The focus during the timeline of this Management Plan will be to manage and improve the regional trail infrastructure, as needed. In the highest use urban sections of the trail, additional attention will be directed towards resolving conflicts between user groups. If patterns of use change over the timeframe of this management plan and paving of any gravel section within the Bike and Pedestrian Trail classification is proposed, consultation will be undertaken with stakeholders and neighbours.

Key aspects of the development concept and priority actions are illustrated on Map 3.

3.5 Priority Actions

1. Work with the municipalities and/or the MOTI as noted in Priority Action 2.5.2. Some key locations for consideration include:
   - Sooke Road (Hwy 14) at Glen Lake Road/Happy Valley Road in Langford;
   - Harriet Road in Saanich;
   - Rocky Point Road at Kangaroo Road in Metchosin; and
   - Gillespie Road in Sooke.
2. Develop an updated Sign Plan for the trail and update signage.
3. Conduct a comparative study to assess the engineering feasibility and costs/benefits of separating the trail into two adjacent dual-direction trails (one for pedestrian use, one for wheel uses) or widening the existing trail to 5-6 m between the Selkirk Trestle and McKenzie Avenue/Highway 1.
4. Undertake trestle and bridge structural upgrading and surfacing work, and upgrading of other major infrastructure as part of an on-going asset management program.
5. Negotiate agreements with landowners to formalize use of land for any sections of trail route that are outside of the MOTI lease area, as per Priority Action 2.5.3.
6. Work with BC Transit regarding the implications of transit development on the trail route and potential partnering opportunities.
7. Expand the Atkins Avenue parking lot or create an additional park and ride opportunity somewhere between Atkins Road (View Royal) and Tillicum Road (Saanich).
8. Work with the City of Victoria to communicate regional parks and trails information in the Cecelia Ravine and at the Johnson Street Bridge.
9. Work with the District of Metchosin to consider creating a pedestrian and cycling link/loop route from the Galloping Goose to Witty's Lagoon and/or Devonian Regional Parks.
10. Add a toilet facility at a suitable location between km 10 and km 32.
11. Consider paving the trail from east of Wale Road/Island Highway to Highway 14 at Royal Roads University (Colwood), subject to consultation with the City of Colwood and area residents in Colwood.

Galloping Goose Regional Trail, Atkins Rest Stop, View Royal



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4 Lochside Regional Trail Management Plan

4.1 Background and Context

Beginning in 1917, the Canadian Northern Pacific Railway (CNPR) ran a daily train that transported up to 74 passengers and freight between Victoria and the steamship dock at Patricia Bay on the Saanich Peninsula, with connecting service to the Lower Mainland. Passenger service continued until the 1920s, when competition from cars, buses and other railways forced the CNPR into bankruptcy. The Canadian National Railway took over and operated freight trains on the line until the 1930s. Freight continued to be transported along a spur line past Swan Lake until 1990.

When the rail line was abandoned, it was turned over to the various municipalities along the route as a road allowance known as Lochside Drive. In some municipalities, the road was developed while in others, it remains unopened to motor vehicles.

The 1988 Official Regional Parks Plan included a proposal for a 225 km regional trail route from Swartz Bay (North Saanich) to Point-No-Point (Juan de Fuca Electoral Area), part of which included the 29 km that became the Lochside Regional Trail. At the time, the municipalities were asked to include the regional trail in their Official Community Plans and partnerships were envisioned for the purpose of developing and maintaining the trail. The CRD Parks Master Plan (2000), developed through an extensive three-year public consultation process, outlined in greater detail the vision, objectives and management direction for the regional trail system. At that time, the CRD's role was to advocate, coordinate and cooperate with public agencies, municipalities or private organizations to establish and operate the trail system. One of the strategic directions noted was to complete the Lochside Regional Trail and provide opportunities for outdoor recreation from Swartz Bay to the Galloping Goose Regional Trail. The various municipalities developed their respective sections of the Lochside Regional Trail, a Trail Management Plan was approved in 2001, and agreements were established allowing the CRD to operate the Lochside as a Regional Trail, working in cooperation with the municipalities and the MOTI.

The Lochside Regional Trail stretches from the Switch Bridge on the Galloping Goose Regional Trail to the Swartz Bay ferry terminal in North Saanich. The majority of the trail is along the former rail corridor, though some sections have been developed outside of that corridor, including sections within the Provincial Pat Bay Highway right-of-way and along McDonald Park Road. The following provides updated policy and management direction for the Lochside Regional Trail.

Lochside Regional Trail, Blenkinsop Trestle, Saanich Photo: John Luton

4.2 The Mission of the Lochside Regional Trail

In line with the Vision for Regional Trails, the mission of the Lochside Regional Trail is:

> As a Bike and Pedestrian Trail, the Lochside Regional Trail provides a major route for active transportation and recreation. It provides access to key regional and local destinations in Saanich, Central Saanich, North Saanich and Sidney for users of all ages and abilities. The trail links these communities together and, through connections with other trails and active transportation routes, provides access to places beyond the immediate area. The Lochside Regional Trail supports an active, healthy community.

4.3 Management Goals and Direction Statement

4.3.1 Management Goals

- To provide a safe and enjoyable trail between the Galloping Goose Regional Trail in Saanich and Swartz Bay in North Saanich.
- To promote safe and respectful use practices on the trail to help ensure positive experiences for all users.
- To allow continued equestrian use between Island View Road in Central Saanich and the Blenkinsop Greenway trail in Saanich.
- To provide access to key regional destinations, such as the Greater Victoria airport, ferries, and regional parks, along the trail and through links with other trails and active transportation routes.

4.3.2 Management Direction Statement

The vision, management principles, outcome statements, and strategic policies outlined in Chapter 2 apply to, and guide the management of, the Lochside Regional Trail.

4.4 Development Concept

The focus during the timeline of this Management Plan will be to update and improve the regional trail infrastructure, as needed. Cycling and pedestrian opportunities will be accommodated on the entire trail. Recognizing existing rural areas and on-going equestrian use between Island View Road in Central Saanich and Hunt Road in Saanich and between Royal Oak Avenue and the Blenkinsop Connector trail in Saanich, horseback riding will be accommodated between Island View Road and the Blenkinsop Greenway trail. If patterns of use change over the timeframe of this management plan and paving of any gravel area is proposed, consultation will be undertaken with stakeholders and neighbours to consider options to continue to accommodate equestrian use.

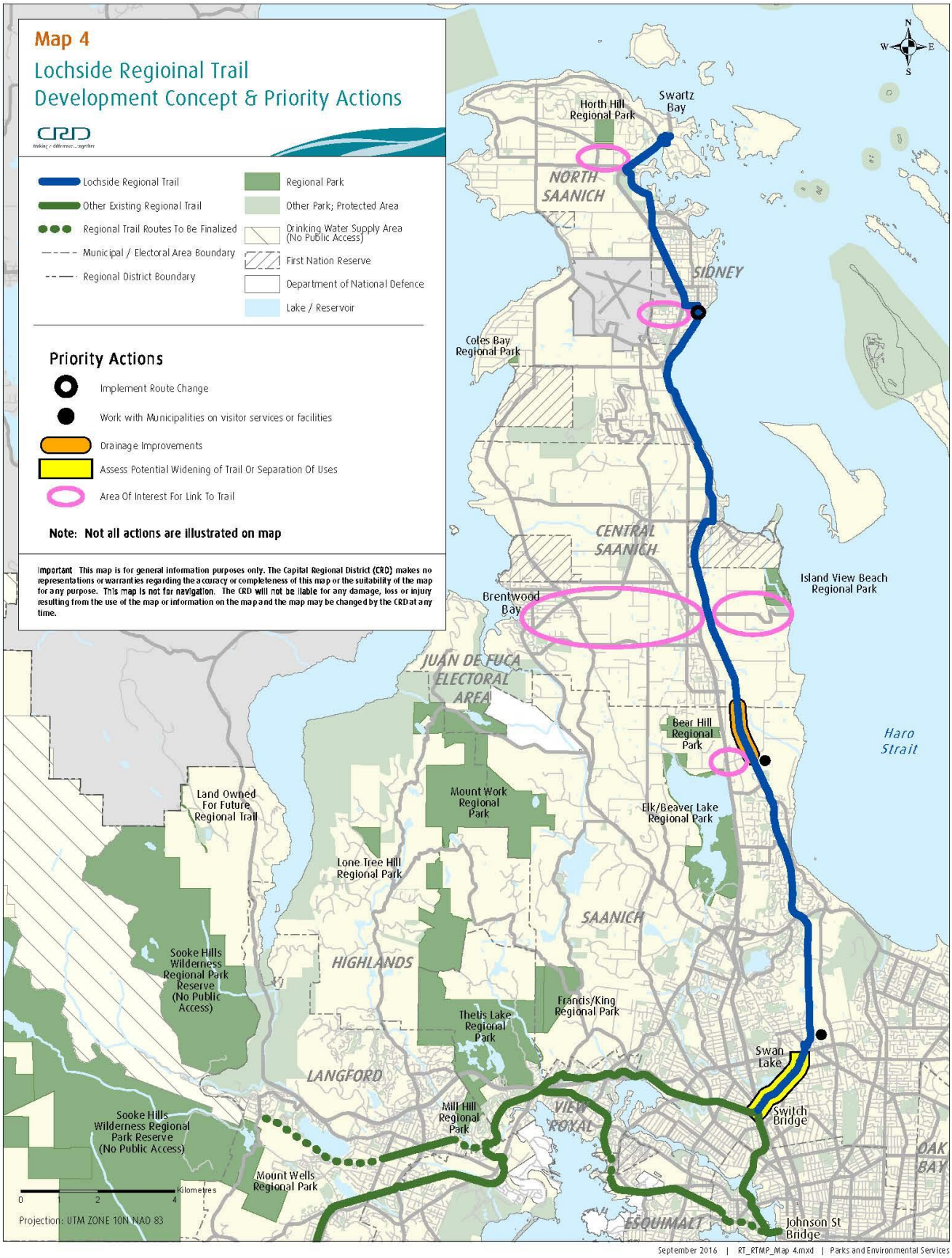
Key aspects of the development concept and priority actions are illustrated on Map 4

4.5 Priority Actions

1. Develop and implement an updated Sign Plan for the trail, including working cooperatively with key organizations to install a southbound trailhead information kiosk by the ferry.
2. Work with the municipalities and/or the MOTI as noted in Priority Action 2.5.2.

   Some potential links for consideration include between the regional trail and:
   - arterial roads with bike lanes and sidewalks;
   - regional parks (Elk/ Beaver Lake, Island View Beach and Horth Hill);
   - 'The Flight Path' trail around the Victoria International Airport;
   - Mt. Douglas Park and Swan Lake Nature Sanctuary in Saanich;
   - the Brentwood Bay and Sidney-Anacortes ferry terminals in Central Saanich and Sidney, respectively.

   Some high use/conflict areas for consideration include:
   - Lochside Park in Saanich and
   - some areas of Lochside Drive
3. Work with the Town of Sidney to implement a trail route change from Lochside Drive/Ocean Avenue to Weiler Avenue/MOTI highway right of way along Highway 17 to shift the route away from the Town's municipal works yard and to provide a connection to "The Flight Path" trail around Victoria International Airport via the existing highway overpass.
4. Assess the feasibility of widening the trail to 5-6 m from the Switch Bridge to McKenzie Avenue in Saanich.
5. Work with the District of Saanich to consider potential partnership projects such as:
   - Visitor facilities at Fowler Park (potentially including a toilet facility, drinking water fountain, bench, garbage can, and bike rack); and
   - A toilet facility in the vicinity of the Blenkinsop Greenway rest stop area or adjacent parking area.
6. Undertake trail drainage improvements in two low-lying locations between Hunt Road (Saanich) and Dooley Road (Central Saanich), subject to environmental considerations.
7. Negotiate agreements with landowners to formalize use of land for any sections of trail route that are outside of the Lochside Drive road allowance and/or former railway corridor, as per Priority Action 2.5.3.


Map 4
Lochside Regioinal Trail
Development Concept & Priority Actions
Lochside Regional Trail
Other Existing Regional Trail
Regional Trail Routes To Be Finalized
Municipal / Electoral Area Boundary
Regional District Boundary
Regional Park
Other Park; Protected Area
Drinking Water Supply Area (No Public Access)
First Nation Reserve
Department of National Defence
Lake / Reservoir
Priority Actions
Implement Route Change
Work with Municipalities on visitor services or facilities
Drainage Improvements
Assess Potential Widening of Trail Or Separation Of Uses
Area Of Interest For Link To Trail
Note: Not all actions are illustrated on map
Important This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.
N
W
E
S
Horth Hill Regional Park
Swartz Bay
NORTH SAANICH
SIDNEY
Cotes Bay Regional Park
CENTRAL SAANICH
Island View Beach Regional Park
Brentwood Bay
JUAN DE FUCA ELECTORAL AREA
Bear Hill Regional Park
Haro Strait
Land Owned For Future Regional Trail
Mount Work Regional Park
Elk/Beaver Lake Regional Park
Lone Tree Hill Regional Park
SAANICH
HIGHLANDS
Sooke Hills Wilderness Regional Park Reserve (No Public Access)
Francis/King Regional Park
Thetis Lake Regional Park
Swan Lake
LANGFORD
Mill Hill Regional Park
VIEW ROYAL
Switch Bridge
OAK BAY
Sooke Hills Wilderness Regional Park Reserve (No Public Access)
Mount Wells Regional Park
ESQUIMALT
Johnson St Bridge
0 1 2 4 Kilometres
Projection: UTM ZONE 10N NAD 83
September 2016 | RT_RTMP_Map 4.mxd | Parks and Environmental Services

5 E&N Rail Trail – Humpback Connector Management Plan

5.1 Background and Context

Incorporated in 1883 by Robert Dunsmuir, the Esquimalt and Nanaimo (E&N) Railway played a significant role in the Province's coal and lumber industry, and for the Royal Navy base in Esquimalt. The original rail line traversed 115 kms between Esquimalt and Nanaimo and was extended to the City of Victoria in 1888. Owned and operated at various times by the Canadian Pacific Railway, ViaRail, and Rail America, the E&N railway is now wholly owned by the Island Corridor Foundation (ICF), a partnership of First Nations and municipal governments along the corridor. The rail line is considered active and ICF is in the process of updating its infrastructure with the objective of eventually reinitiating passenger travel.

As far back as 2000, a proposal for a recreation trail along the E&N rail line had local support. The Township of Esquimalt proposed that a new 3m wide, 8km long trail be built along the E&N rail line in Victoria, Esquimalt and View Royal to create a 17km loop route with the Galloping Goose Regional Trail. The proposed trail was referred to as the West Side Rail Trail. It was felt that this new linear parkway would achieve many goals including:

- providing a safe alternative route for pedestrians currently walking along the tracks;
- making Greater Victoria a more cycle-friendly community;
- improving pedestrian and cycling access in Victoria, View Royal, Esquimalt and for the Songhees and Esquimalt First Nations;
- transforming a neglected industrial corridor;
- Reducing the risk of fire, criminal behavior, and graffiti issues along the rail line; and
- improving property values for lands adjacent to the rail line.

In 2006, the CRD became involved and took it on as a larger regional trail project – extending the proposed route through Langford to Humpback Road. In 2007, ICF, the owner of the railway corridor, agreed to provide the CRD with a licence allowing it to develop and operate a trail adjacent to the rail line—the first "Rail with Trail" in the region. CRD contracted preliminary designs for the trail and was successful in obtaining initial grant funding for Phase 1 of the project.

Phase 1 of the trail consisted of approximately 6.5 km of new trail spread over four municipalities (Langford, View Royal, Esquimalt and Victoria) and paving 2.5 km of the Galloping Goose Regional Trail route, where the two trails are co-located. Phase 1 construction was initiated in 2009. Phase 2 construction, a further 2km in View Royal, was initiated in 2014. Three additional phases (two in

Langford and one in Victoria) will be developed in the future subject to funding availability. There is intent to extend the trail along Humpback Road to Sooke Hills Wilderness Regional Park Reserve, where it will link with the Sooke Hills Wilderness Trail.

Once complete, the 17 km trail will connect Langford, View Royal, Esquimalt and Victoria and provide a largely off-street bicycle and pedestrian trail. Along with the Galloping Goose and Lochside Regional Trails, the E&N Rail Trail facilitates active transportation and recreation pursuits within the CRD.

E&N Rail Trail – Humpback Connector, Portage Park Rest Stop, View Royal

5.2 The Mission of the E&N Rail Trail – Humpback Connector

In line with the Vision for Regional Trails, the mission of the E&N Rail Trail – Humpback Connector is:

> As an urban Bike and Pedestrian Trail, the E&N Rail Trail – Humpback Connector provides a major route for active transportation and recreation. It provides access to key regional and local destinations within Victoria, Esquimalt, View Royal and Langford for users of all ages and abilities. The trail links these communities together and, through connections with other trails and active transportation routes, provides access to places beyond the immediate area. The E&N Rail Trail supports an active, healthy community.

5.3 Management Goal and Direction Statements

The E&N Rail Trail is notable as the first 'Rail with Trail' in the CRD. It is expected that, in the future, passenger rail service will occur on the tracks located beside the trail. This, along with the transportation and recreation roles of the trail itself, must be considered as the trail development and management continue.

5.3.1 Management Goals

- To provide a safe and enjoyable trail between Victoria and Langford.
- To promote safe and respectful use practices on the trail to help ensure positive experiences for all users.
- To provide an arterial route within a larger active transportation network.
- To provide access to key regional destinations, such as downtown Langford and the Department of National Defence base in Esquimalt.

5.3.2 Management Direction Statement

The vision, management principles, outcome statements, and strategic policies outlined in Chapter 2 apply to and guide the management of the E&N Rail Trail.

5.4 Development Concept

The focus during the timeline of this Management Plan will be to complete the development of the E&N Rail Trail – Humpback Connector from downtown Victoria to the Sooke Hills Wilderness Trail. Acquiring external funding is critical to achieving this goal.

Phase 1 (9 km) is scheduled to be completed by the end of 2017 and phase 2 (2 km) is complete. The next section to be developed, Phase 3 (1.15 km) in Langford, is a key link and, when completed, 12 km of continuous trail will exist. Two additional phases, one in Victoria (1.3 km) and one in Langford (3.6 km) need to be developed to complete the planned trail. To connect the E&N Rail Trail to the Sooke Hills Wilderness Trail an additional 700m trail extension along Humpback Road and through the regional park is required. This should be included in the planning for the project.

Visitor facilities will be developed at primary and secondary hubs along the trail, allowing opportunities for users of varying ages to find options that suit their abilities. As sections of the trail are completed, they will be opened for use.

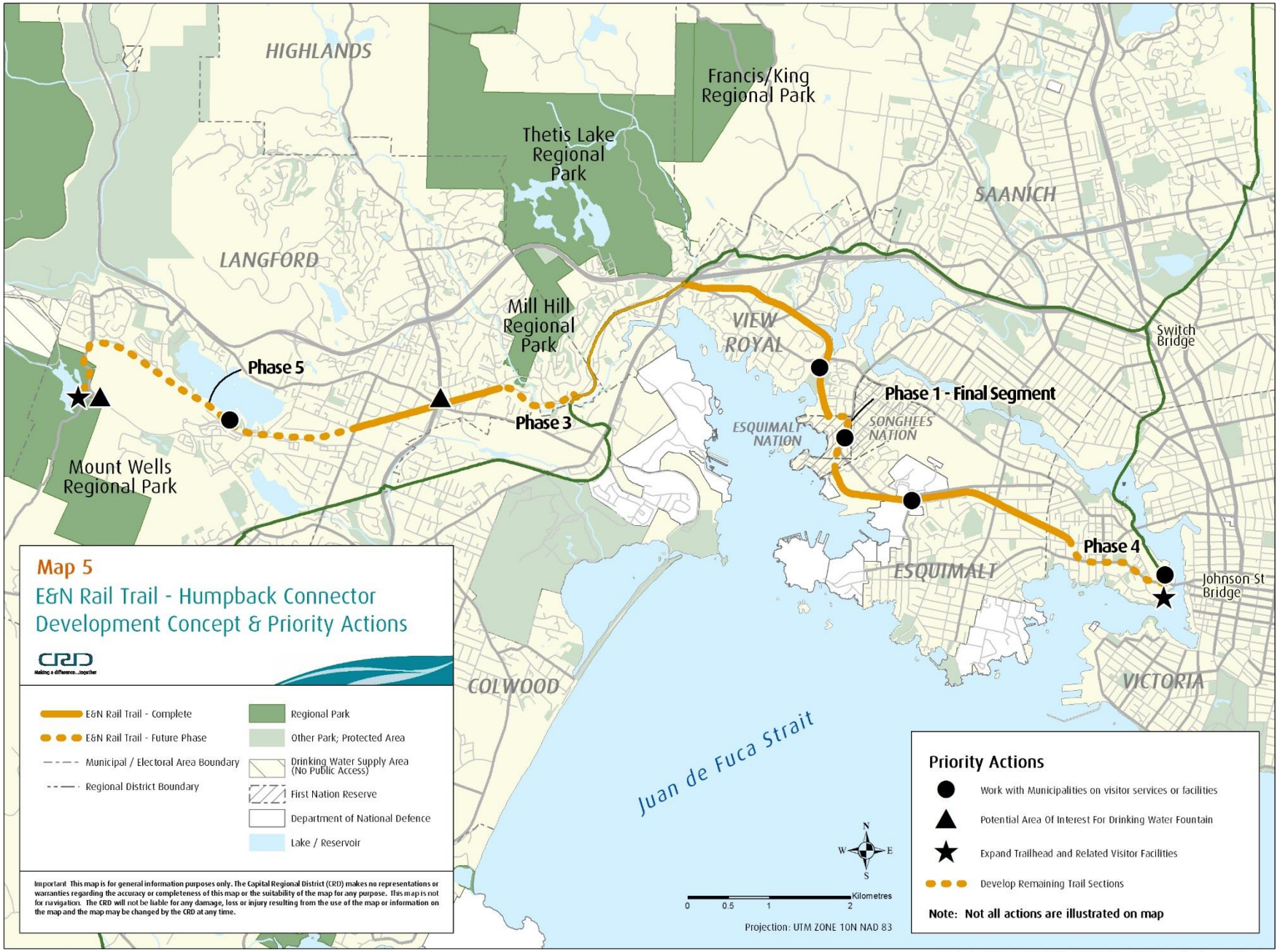
Key aspects of the development concept are illustrated on Map 5.

5.5 Priority Actions

1. Complete the trail development, including:
    - Hallowell Road in the Town of View Royal to Maplebank Road on the Songhees Nation Reserve (Phase 1);
    - Atkins Road to Savory School in the City of Langford (Phase 3);
    - Esquimalt Road to Johnson Street Bridge section in the City of Victoria (Phase 4);
    - Jacklin Road to Sooke Hills Wilderness Regional Park (Humpback Reservoir area) in Langford (Phase 5).

2. Work with the municipalities and/or the MOTI as noted in Priority Action 2.5.2. In particular, focus will be on allowing cycling across crosswalks along regional trail routes and public outreach.
3. Work with municipalities, First Nations and others to consider potential partnership projects such as:
    - E&N Rail Trail/Regional Parks and Trails information map at: Colville Park (with the Township of Esquimalt); Hereward Green (with City of Victoria); and Leigh Road Park (with the City of Langford);
    - a trailhead facility by the Johnson Street bridge (with the City of Victoria);
    - visitor facilities between Hallowell and Maplebank Roads (with Esquimalt and Songhees Nations and Department of National Defence);
    - toilet facility at Portage Park (with the Town of View Royal)
    - drinking water fountain(s) (with the City of Langford)

E&N Rail Trail – Humpback Connector, Esquimalt Road to Wilson Street, Victoria


HIGHLANDS
Francis/King Regional Park
Thetis Lake Regional Park
SAANICH
LANGFORD
Mill Hill Regional Park
VIEW ROYAL
Switch Bridge
Phase 5
Phase 3
Phase 1 - Final Segment
ESQUIMALT NATION
SONGHEES NATION
Mount Wells Regional Park
Phase 4
ESQUIMALT
Johnson St Bridge
COLWOOD
VICTORIA
Juan de Fuca Strait
Map 5
E&N Rail Trail - Humpback Connector
Development Concept & Priority Actions
E&N Rail Trail - Complete
E&N Rail Trail - Future Phase
Municipal / Electoral Area Boundary
Regional District Boundary
Regional Park
Other Park; Protected Area
Drinking Water Supply Area (No Public Access)
First Nation Reserve
Department of National Defence
Lake / Reservoir
Important This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.
Priority Actions
Work with Municipalities on visitor services or facilities
Potential Area Of Interest For Drinking Water Fountain
Expand Trailhead and Related Visitor Facilities
Develop Remaining Trail Sections
Note: Not all actions are illustrated on map
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0 0.5 1 2 Kilometres
Projection: UTM ZONE 10N NAD 83
September 2016 | RT_RTMP_Map5_20160901.mxd | Parks and Environmental Services

6 Implementation, Monitoring and Evaluation

6.1 Plan Implementation

The Regional Trails Management Plan (RTMP) comes into effect upon CRD Board approval and continues to apply until a new or updated plan is approved by the Board. The RTMP replaces the existing Galloping Goose Regional Park Corridor Management Plan (1998) and the Lochside Regional Trail Management Plan (2001), provides a management plan for the E&N Rail Trail, and management direction for all new regional trails. This RTMP is expected to guide management of the regional trails for at least a 10 year period.

Recommended priority management actions are provided in Table 1. These recommendations have been developed having given consideration to input received from the public, interested First Nations, and municipal, regional, and provincial staff. Many of these actions will require additional resourcing, beyond current core funding, prior to implementation. This list is provided to assist Regional Trail managers in priority setting and budget planning processes (e.g. Service Plan, budget and capital project planning, and work planning) and to guide and assist decision-makers. Detailed project scoping and budgeting will be required before implementation of management actions can occur. Management actions will be undertaken as resources are available.

Table 1: Recommended Implementation Priorities

The actions within this table are identified as short, medium and longer term priorities. Within these categories (e.g. short term priority), the proposed actions are not further ranked or prioritized. They are listed in order as noted in the Management Plan (Strategic actions, then Galloping Goose Regional Trail actions, followed by Lochside Regional Trail actions, finally E&N Rail Trail – Humpback Connector actions). Generally,

Action	Strategic or Trail Specific	Recommended Priority
Develop and implement a public outreach program, particularly relating to trail rules, etiquette, and safety.	Strategic	Short Term
Work with municipalities and/or the MOTI on: • road/trail crossings; • allowing cycling across trail-related crosswalks;	Strategic (Galloping Goose Lochside E&N Rail Trail)	Short Term

• improving on-street portions of trails, trail accesses, and high use/high conflict areas; • establishing, mapping and signing links between regional trails and key regional destinations and active transportation routes; • partnering on public outreach.		
Map the locations of CRD visitor facilities along the regional trails and incorporate the data into the CRD's Asset Management Program.	Strategic	Short Term
Continue regional trail planning for the Southern Gulf Islands and Salt Spring Islands.	Strategic	Short Term
Regional Parks and Regional Planning will collaborate on pedestrian and cycling data collection and use monitoring programs.	Strategic	Short Term
CRD will review the use of bollards on trails to determine if changes are needed.	Strategic	Short Term
Develop and implement an updated Sign Plan for the Galloping Goose and Lochside Regional Trails.	Galloping Goose & Lochside	Short Term
Assess the engineering feasibility and costs/benefits of separating the Galloping Goose into two adjacent dual-direction paved trails (one for pedestrians; one for cycling) or widening the existing trail to 5-6 m between the Selkirk Trestle and McKenzie Avenue at Highway 1 and of the Lochside between Switch Bridge and McKenzie Avenue.	Galloping Goose Lochside	Short Term
Undertake trestle/bridge upgrading and surface work and upgrading of other major infrastructure	Galloping Goose	Short Term
Work with City of Victoria to install regional parks/trails information at the Johnson Street Bridge and in Cecelia Ravine park.	Galloping Goose and E&N Rail Trail	Short Term (some may shift to Medium Term given E&N Rail Trail construction)

Work with the Town of Sidney to implement a trail route change from Lochside Dr/Ocean Ave to Weiler Ave/MOTI Highway 17 right of way.	Lochside	Short Term
Undertake trail drainage improvements in two low-lying areas between Hunt Road (Saanich) and Dooley Road (Central Saanich), subject to environmental considerations.	Lochside	Short Term
Develop E&N Rail Trail/Regional Parks information map for Colville Park (with Township of Esquimalt);	E&N Rail Trail	Short Term
Undertake a regional trail lighting study.	Strategic	Medium Term
Establish a cooperative enforcement patrol program and enforcement protocols for regional trails with area police and bylaw enforcement services.	Strategic	Medium Term
Improve CRD's web-based data and mapping and develop mobile applications to provide increased trip planning capabilities and customizable trail information for the public.	Strategic	Medium Term
Collaborate with interested First Nations along the trails to establish welcome signs identifying traditional First Nations territories and potential themes/cultural heritage messages for possible interpretation along regional trails.	Strategic	Medium Term
Identify CRD's trail-related needs that can be undertaken and/or maintained through donations and partnerships.	Strategic	Medium Term
Identify and develop needed agreements, policies, procedures, guidelines, and standards for regional trails. This includes formalizing any sections of the regional trails that are outside of the tenure areas.	Strategic	Medium Term
Work with BC Transit re: implications of transit development on the trail route and potential partnering opportunities.	Galloping Goose	Medium Term

Add a toilet facility at a suitable location between km 10 and km 30.	Galloping Goose	Medium Term
Work with municipalities, First Nations and others to consider potential partnership projects such as: • regional parks/trails map at Colville Park (Township of Esquimalt), Hereward Green (City of Victoria), Leigh Road Park (City of Langford) • trailhead facility by the Johnson Street bridge (City of Victoria) • potential visitor facilities between Hallowell and Maplebank Roads (Town of View Royal, Esquimalt Nation, Songhees Nation) • toilet facility at Portage Park (Town of View Royal) • drinking water fountain(s) (City of Langford)	E&N Rail Trail	Medium Term (some may shift to Longer Term based on construction timing)
Expand Atkins Rd parking lot or create an additional park and ride opportunity somewhere between Atkins Rd (View Royal) and Tillicum Rd (Saanich)	Galloping Goose	Longer Term
Work with the District of Metchosin to consider/create pedestrian and cycling link/loop route from the Galloping Goose to Witty's Lagoon and/or Devonian Regional Parks.	Galloping Goose	Longer Term
Consider paving the trail east of Wale Road/Island Highway to Highway 14 at Royal Roads University (Colwood), subject to consultation with the City of Colwood and area residents.	Galloping Goose	Longer Term
Work with the District of Saanich to consider potential partnership projects at Fowler Park, and by the Blenkinsop Greenway.	Lochside	Longer Term

Develop a Legacy Project (for public donations) for2 additional drinking water fountains along the E&N trail.	E&N Rail Trail	Longer Term
Complete the E&N Rail Trail – Humpback Connector, including an extension/link to Sooke Hills Wilderness Regional Park Reserve (Humpback Reservoir area).	E&N Rail Trail	Longer Term

6.2 Plan Monitoring and Evaluation

The RTMP will be reviewed regularly by the CRD to link the recommended management actions into CRD planning and approval processes, such as capital planning, service planning and the annual budget process. Regular reviews should be undertaken to assess progress on implementing the recommended actions.

If significant issues or new information arise over the lifespan of the Management Plan that require a substantive change in policy or management direction to address, a plan amendment may be considered. Amendments to the RTMP must be approved by the CRD Board.

Prior to initiating a full Management Plan update, an evaluation of the current plan will be undertaken. The Evaluation will consider:

- if the vision, management principles and management outcomes have been useful in guiding management of the regional trails;
- if the vision, management principles and management outcomes are still relevant;
- if the strategic policies covered all or most of the major issues and management considerations that arose over the span of the management plan timeframe;
- if the strategic policies still apply or require updating/modification;
- to what extent the outcome statements and recommended actions were implemented;
- to what extent each trail development concept was met or advanced;
- if the plan was used by/helpful to staff responsible for managing regional trails;
- if minor or major changes to the plan's direction are needed; and
- if the outstanding actions are still relevant and should be undertaken.

Appendix 1: Glossary of Terms

Active Transportation: Active transportation includes all human powered forms of transportation, in particular walking and cycling, but also skateboarding, rollerblading and the use of mobility aids such as wheelchairs. Generally throughout this plan, the term active transportation relates to purposeful travel between two or more locations for functional reasons, such as commuting, shopping, getting to appointments, rather than for recreation, exercise, or leisure.

Adaptive Management: Allows one to take action given available information, assess the action taken, and modify the action if needed given the post-implementation assessment or when further information is available.

Bike and Pedestrian Trail: Regional trails that are designated primarily to accommodate a high volume of users for recreational and commuting cycling, and for walking and running. Non-motorized vehicle transportation corridors for commuters, they are the arterial cycling trails in the region. These trails have a paved surface, except where this plan directs otherwise.

Classification System: A classification system is a tool used to distinguish the different roles that individual trails play in achieving the overall purpose of regional trails. Classifications provide basic tenants of the mission and management direction for the different trails.

Corridor: Refers to the entire area of land that is the subject of an agreement with the CRD allowing the CRD to build, operate, and maintain a regional trail. The width of the corridor may vary between trails and along individual trails. The trail corridor may be the same as or different from the trail surface width.

CRD: Acronym used for the Capital Regional District, which provides regional and sub-regional services for the 13 municipalities and three electoral (unincorporated) areas and is governed by a Board of Directors, made up of elected municipal and electoral area representatives. The CRD's administration is overseen by a Chief Administrative Officer and an Executive Leadership Team that are appointed by the Board as officers of the corporation.

E&N Rail Trail – Humpback Connector: A regional trail located largely within the E&N Railway corridor, through portions of Victoria, Esquimalt, View Royal and Langford. This is the first 'Rail with Trail' in the CRD and it is anticipated that the rail transportation will be reinstated along this rail line in the future. This trail is also referred to as the E&N or the E&N Rail Trail.

Encroachment: The placement of any building, structure, or material by a landowner, or their designate, on land that is not owned by that landowner.

First Nations: An organized aboriginal group or community, especially any of the bands officially recognized by the Canadian government.

GIS: Acronym used for a Geographical Information System, which is at tool to capture, display and analyze mapped information.

GPS: Acronym for Global Positioning System, which is a tool to digitally record locational information for mapping purposes.

Hiking & Walking Pathways: Regional trails that link regional and other parks into one continuous pathway system in the capital region. They are corridors used for walking, running, hiking, and where possible, horseback riding. These regional pathways are modelled on the pathway system found in Great Britain. Pathways provide natural greenway connections between parks through suburban land and other landscapes, such as farms and resource lands. Regional pathways, as a general rule, will be a single-track trail that may, at times, be embedded in and parallel to a regional trail. The can also exist on streets.

Invasive species: Non-native/introduced species of plants or animals that out-compete native species in a specific habitat.

Key Destinations: These generally refer to regional-level centres or hubs of activity such as ferry terminals, regional hubs of employment, education, or commercial activity, and regional attractions and parks.

MOTI: The provincial Ministry of Transportation and Infrastructure.

Motor-assist Cycle: a two or three-wheeled vehicle that meet the definition within British Columbia's *Motor Vehicle Act*, as updated from time to time. At the time of approval of this management plan, key requirements to meet the motor-assisted cycle definition include:

- Electric Motor rated at 500 watts or less.
- Functioning pedals: At start-up, the motor must not engage until the bike reaches speeds of 3 km/hour. In addition, the motor must disengage when the operator stops pedaling, releases the accelerator or applies the brake.
- The motor must not be capable of propelling the cycle faster than 32 km/hour on level ground, without pedaling.

- Have a manufacture label stating that it is a "power assisted bicycle".

Multiple Use Trails: Regional trails that are designed for biking, hiking and horseback riding. The surface of these trails will be improved with gravel and designed to prevent degradation of the natural surface area through erosion and runoff.

Pedestrian: A pedestrian includes a person walking, running, in a non-motorized or motorized wheelchair, a mobility-challenged person driving a mobility scooter, or a person in a wheeled toy or wheeled equipment that generally requires pulling/pushing (e.g. wagon, stroller).

Positive Visitor Experience: When users are satisfied that both their needs and their expectations have been met or exceeded.

Public Consultation/Public Participation: A process through which the public is informed about questions or proposals and invited to submit input and comments.

Regionally Significant Destinations: Areas that are regional in nature, such as regional employment centres, regional scale commercial facilities, universities/colleges, transit stations, major tourist venues, regional parks and trails.

Regional Parks Strategic Plan: A strategic document that is system-wide in scope. It provides a vision and purpose for regional parks and trails. It also gives direction for protecting the natural environment and providing opportunities for outdoor experiences and activities.

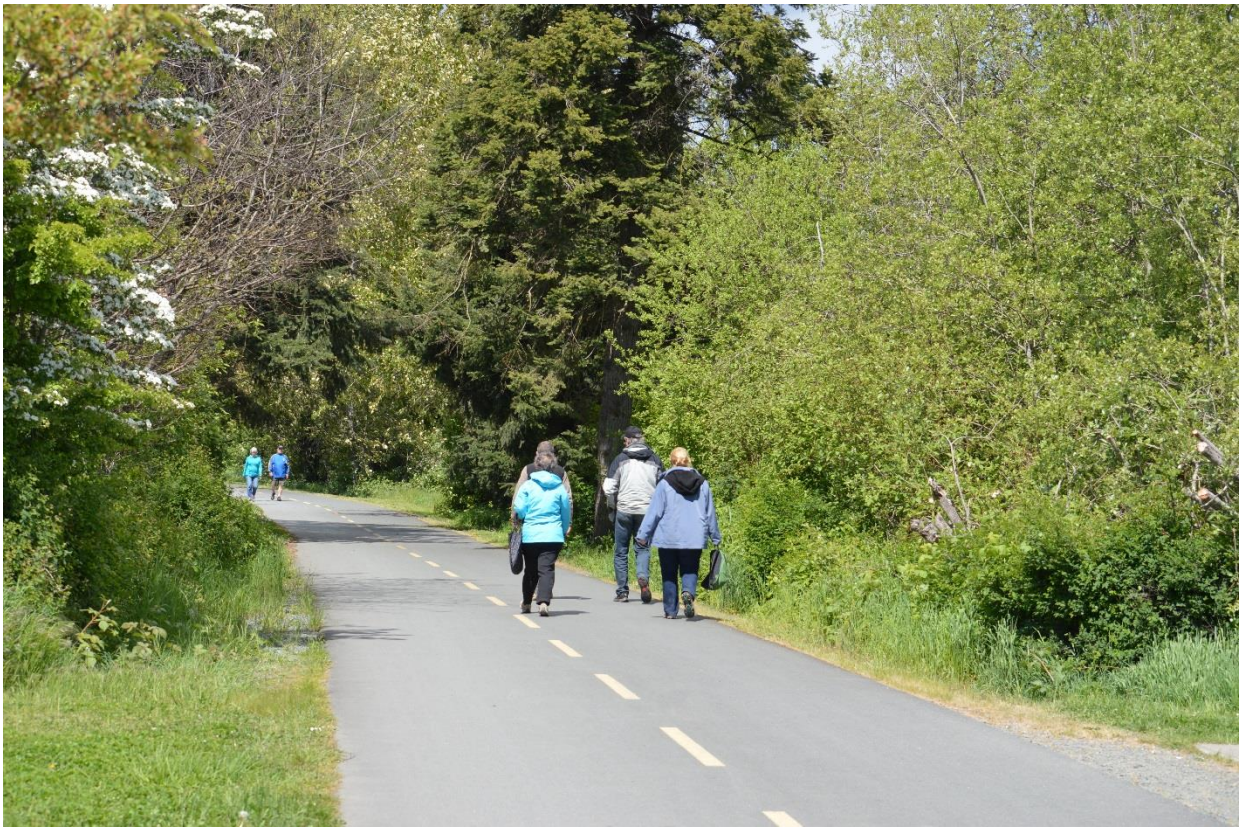
Regional Trail: A trail developed, operated and/or maintained by the Capital Regional District that links communities within the region and provides long distance recreation and transportation opportunities.

Sharrows: A term used for shared-use lane markings on roadways. Two white chevron markings (inverted Vs) are used, usually with a bicycle symbol beneath, to raise awareness of both cyclists and motorists of the correct cyclist positioning in the lane.

Special use: Activities or uses that are specified as such in a CRD bylaw, including but not limited to, any activity or event that attracts participants and spectators, such as a festival, competition, tournament, show, or outdoor ceremony, commercial filming, commercial services or activities, use of group picnic shelters, research activities, and or special events/activities.

Universal Accessibility: Refers to the design of facilities or environments for people with disabilities.

The concept of accessible design includes both “direct access” (unassisted) and "indirect access" meaning compatibility with a person's assistive technology (e.g., wheelchairs).



Lochside Regional Trail

Appendix 2: Off-leash or Leash Optional Dog Areas in the Capital Regional District

As noted in section 2.4.1of this plan, for the safety of trail users, their pets, and wildlife, all pets must be on-leash at all times while on regional trails. Recognizing that some people prefer to exercise their dogs off-leash, the following identifies designated off-leash or leash optional dog areas that exist within the Capital Region (2014). This is a reference only and should not be relied upon as an accurate or complete synthesis of municipal park bylaw requirements. Additional requirements or restrictions may apply. All persons should check municipal bylaws before using the areas listed below for off-leash activities to ensure they have accurate and up-to-date information.

City of Victoria

Alexander Park (6:am-10am and 4pm-10pm)
Arbutus Park (6am-10pm)
Banfield Park (April 1-September 20, 6am-9am and 5pm-10pm; October 1-March 31, 6am-10pm)
Beacon Hill Park (south of Dallas Road, from Douglas Street to Cook St)
Clover Point Park (Cook Street to Clover Point)
Gonzales Beach (September 1-May 31)
Oswald Park (6am-10pm)
Pemberton Park (6am-10pm)
Redfern Park (6am-10am and 4pm-10pm)
Songhees Hilltop Park (6am-10pm)
Topaz Park (Off Leash Area: Monday-Friday, 6am-10am and 4pm-10pm; Saturday and Sunday, 6am-8am and 5pm-10pm)
Topaz Park (Alternate off leash area: 6am-10pm)
Vic West Park (6am-10pm)

District of Oak Bay:

Anderson Hill Park (January-December, Sunrise to Sunset; leash recommended April-June due to bird nesting season)
McNeil Bay Beach (January-December, Sunrise to Sunset)
McMicking Point, Trafalgar Park, Walbran Park (January-December, Sunrise to Sunset)
Cochrane's Commons (January-December, Sunrise to Sunset)
Marina Park/Beach (January-December, Sunrise to Sunset)
Mary Tod Island (January-December, Sunrise to Sunset)
Haynes Park (January-December, Sunrise to Sunset)

Cattle Point (January-December, Sunrise to Sunset; dogs must be leashed when on roadway and in parking lot; dogs must be in control around seabirds on shoreline)
Loon Bay Park Oakdown Park (January-December, Sunrise to Sunset)
Windsor Park (May 1-Sept 15 sunrise to 9am; Sept 15-April 30 sunrise to 11am; excluding playground area and rose garden)
Willow Beach (October 2–April 30)
Uplands Park (January-March and July-December

Town of Sidney:
Peter Grant Park

Town of View Royal:
Aldersmith Park (excluding Garry Oak Meadow)
Centennial Park (between October 1-March 31)
Knockan Hill Park
Portage Park
View Royal Park (northwest of footbridge)

Township of Esquimalt:
Highrock Park
Macauly Point (east of breakwater)
Captain Jacobson Park
Saxe Point Park (westerly side only)

In other jurisdictions in the Capital Region, dogs must be "under effective control" or "under direct and continuous control" when in public areas. Again, all persons should check the relevant municipal requirements to ensure compliance requirements.

Galloping Goose Regional Trail, Photo: John Luton

Appendix 3: Trail Development Guidelines

General Trail Development Guidelines for Regional Trails

1. Bike & Pedestrian Trails:
    - Primarily cycling and pedestrian use; skateboarding and roller blading may also occur;
    - In some areas equestrian use may be permitted through an approved Management Plan;
    - Double track/Two way travel;
    - Paved surface; in rural areas surface material may be gravel;
    - Maximum grade of 10% with short sections up to 15%. In some areas, due to natural terrain grades may exceed standards. In these cases, signage will be used to warn users of steep slopes;
    - Standard tread width 4m; may be up to 7m width in high use areas; may be as narrow as 3 m in areas with restricted corridors. In sensitive areas or low use rural or wilderness areas a 2m minimum tread may be considered;
    - Standard shoulder width (each side) 0.5m minimum; in sensitive areas or low use rural or wilderness areas a shoulder width of 0.25 may be considered;
    - Cleared width - tread width plus 1m on each side; and
    - Cleared height – 3 m minimum.
2. Multi-Use Trails:
    - Multiple uses including cycling, pedestrian (excluding roller blading and skateboarding), and equestrian uses;
    - Double track/Two way travel;
    - Gravel surface;
    - Maximum grade of 10% with short sections up to 15%. In some areas, due to natural terrain grades may exceed standards. In these cases signage will be used to warn users of steep slopes;
    - Standard tread width 4m; may be up to 6m width in high use areas, as narrow as 3 m in areas with restricted corridors. In sensitive areas or low use rural or wilderness areas a 2m minimum tread may be considered;
    - Standard shoulder width (each side) 0.5m minimum; in sensitive areas or low use rural or wilderness areas a shoulder width of 0.25 may be considered;
    - Cleared width – tread width plus 1 m on each side;
    - Cleared height – 3 m minimum; and
3. Hiking and Walking Trails:
    - Primarily single use for walking, hiking, and running use;
    - In some areas equestrian use may be permitted;
    - Single track/two way travel;

- Gravel surface;
- Standard tread width 2m;
- Standard shoulder width 0.25-0.5m
- Cleared width – tread plus 0.5 m on each side
- Cleared height – 3m minimum

4. Single Use Trails (new trail type):
    - Single use for cycling-only or equestrian-only use;
    - Double track/two way travel or single track/one way travel;
    - Paved surface (urban cycling-only trails);
    - Gravel surface (for mountain biking-only or equestrian-only trails);
    - Standard tread width for double track 3-4 m;
    - Standard tread width for single track 1–2 m;
    - Standard shoulder width – 0.25-0.5 m;
    - Cleared width – tread plus 0.5 m on each side; and
    - Cleared height – 3 m minimum.

Trail Markings

- A dashed centre line will be used on paved trail surfaces (including paved bridge decks), as long as the trail surface is a minimum of 3m in width. Where the trail tread is less than 3m wide no centre line will be used but instead, a narrow surface sign will be used at each end of the narrow surface and white edge lines will be used to provide a visual guide for users. Where significant sightline challenges exist, solid centerlines may be used.
- The solid centre line will be used on paved trail surfaces approximately 5 m in advance of bollards, a diamond shape will be painted around the centre bollard, and the solid line will extend toward the road.
- White edge lines will be used on paved trails to alert users to identify where curbs or fences located in close proximity to the trail may pose a hazard.
- Kilometre markings may be painted on the trail surface or posted on signs.
- Symbols for permitted or restricted uses may be painted on the trail surface and/or posted on signs.
- On single use trails a diamond and use symbol may be painted on the trail surface to identify the permitted use and/or posted on signs.
- Directional information may be painted on the trail surface and/or posted on signs.

Bollards

- Bollards will be used in advance of trail-road intersections to preclude motor vehicles from accessing the trail and to alert trail users that they are approaching an intersection.
- Generally, bollards will be located approximately 5 m back from the edge of road or edge of sidewalk. Depending on the terrain, in some cases bollards may be located differently or chicanes may be used in place of bollards to slow trail users.
- Bollard placement will be such that they allow for wheelchair and mobility scooter access and standard child bike trailer (1.3 m maximum width) access.
- Reflective tape will be used on bollards to increase visibility.
- Bollards will be aluminum (uncoated) or white (powder coated or painted) in colour.

Trail Widening/Use Separation

- As use increases widening of the trail surface or separation of trail users should be considered, as per the strategic policies in this management plan.
- Where regional trails are expected to accommodate significant numbers of in-line skaters or skateboarders, as well as cyclists and pedestrians, a minimum trail width of 4m should be used.
- If separation of uses is implemented, the ideal design, subject to space and resourcing, would be a dual direction pedestrian trail with a minimum 2m width, a separation/buffer between it and a wheeled use trail (cyclists, skateboarders, in-line skaters) of 3-5 m in width.

E&N Rail Trail – Humpback Connector, Esquimalt

Appendix 4: Example of Standard Regional Trail Signs

The following is provided as an example of standard types of signage used on regional trails. Additional signs may be added as appropriate without amendment to the Management Plan. The signs below are based on the E&N Rail Trail signage. Each regional trail will have a separate trail identifier incorporated into certain wayfinding signage. Sign sizing will be based on the Transportation Association of Canada's Bikeway Traffic Control Guidelines and/or other established regional guidelines, where appropriate.

Sign Type	Examples of Signs in this category	General Use
Regulatory Signs	Stop Yield Dismount & Walk CRD Regulations	To advise trail users of what is legally required, permitted and/or prohibited on the trail.
Caution/Warning Signs	Share the Road Stop Ahead Yield Ahead Signal Ahead Concealed Intersection Ahead Road Crossing Ahead Railway Crossing Slippery When Wet Hill Sign for bicycles Caution Slow Down or Slow Narrow structure	To alert trail users to the unusual or uncommon dangers that may occur along the trial
Wayfinding	Trailhead Orientation (kiosk) Trail identifier (logo) Trail direction (straight, left, right) Welcome to Municipality (at or near municipal boundaries) Cross at Lights Trail Ends	To provide trail users with comfort that they are on their chosen trail, know where the trail goes, and when they have reached key destinations along the trail.

	Road names Local connections (adjacent facilities) Regional Destination Wayfinding	
Information and Educational Signs	Trail use/etiquette Interpretive	To inform users of desirable trail use practices and to provide trail users with interesting natural or cultural history stories related to the corridor and area.
Temporary Signs	Work zone Detour Change in Use Pattern Special Event	To provide trail users with specific information for a temporary timeframe. May relate to work underway, detours, etc.

E&N Rail Trail – Humpback Connector, Langford

Appendix 5: Some Key Trail Use and Etiquette Messages

Regional Trails are Shared Spaces – these behaviors can have positive impacts on everyone's trail experience.

All users - Keep right except to pass.
All users - Be aware of your surroundings and check for other users regularly.
All users – Respect other users; be responsible; consider how your behavior may impact other users.
All users – If you are in a group do not take up the whole trail.
All users - Move to right if you are stopping or if someone is passing you.
All users – You do not have the right of way at most road crossings; slow down/stop, check for vehicles, and ensure the way is safe before proceeding across roads.
All users - Be seen – carry/use lights, wear reflective or bright clothing, especially after dusk.

Cyclists - Slow down when around other users; Yield to pedestrians and equestrians.
Cyclists - Other users may not hear you approaching. Give warning as you approach/before you pass (for pedestrians use bell or verbal warning; for equestrians use verbal warning only).
Cyclists - Pass only when there is adequate room; leave at least 1 m between you and others when passing.
Cyclists - obey all traffic signs and signals.

Pedestrians - Keep children and pets on right hand side of trail.
Pedestrians – Keep pets on leash and under control.
Pedestrians - Yield to equestrians – give verbal warning as you approach.

Equestrians – Move to the trail edge if your horse is evacuating so horse manure does not become a traffic hazard that cyclists and pedestrians must manoeuver around.

Appendix 6: Southern Gulf Islands-Salt Spring Island Regional Trail Planning

The Regional Parks Strategic Plan 2012-2021, under Strategic Priority 2, includes the following strategic action: "In partnership with other public agencies, local government and private landowners, initiate planning for the regional trails system on Salt Spring Island and Southern Gulf Islands".

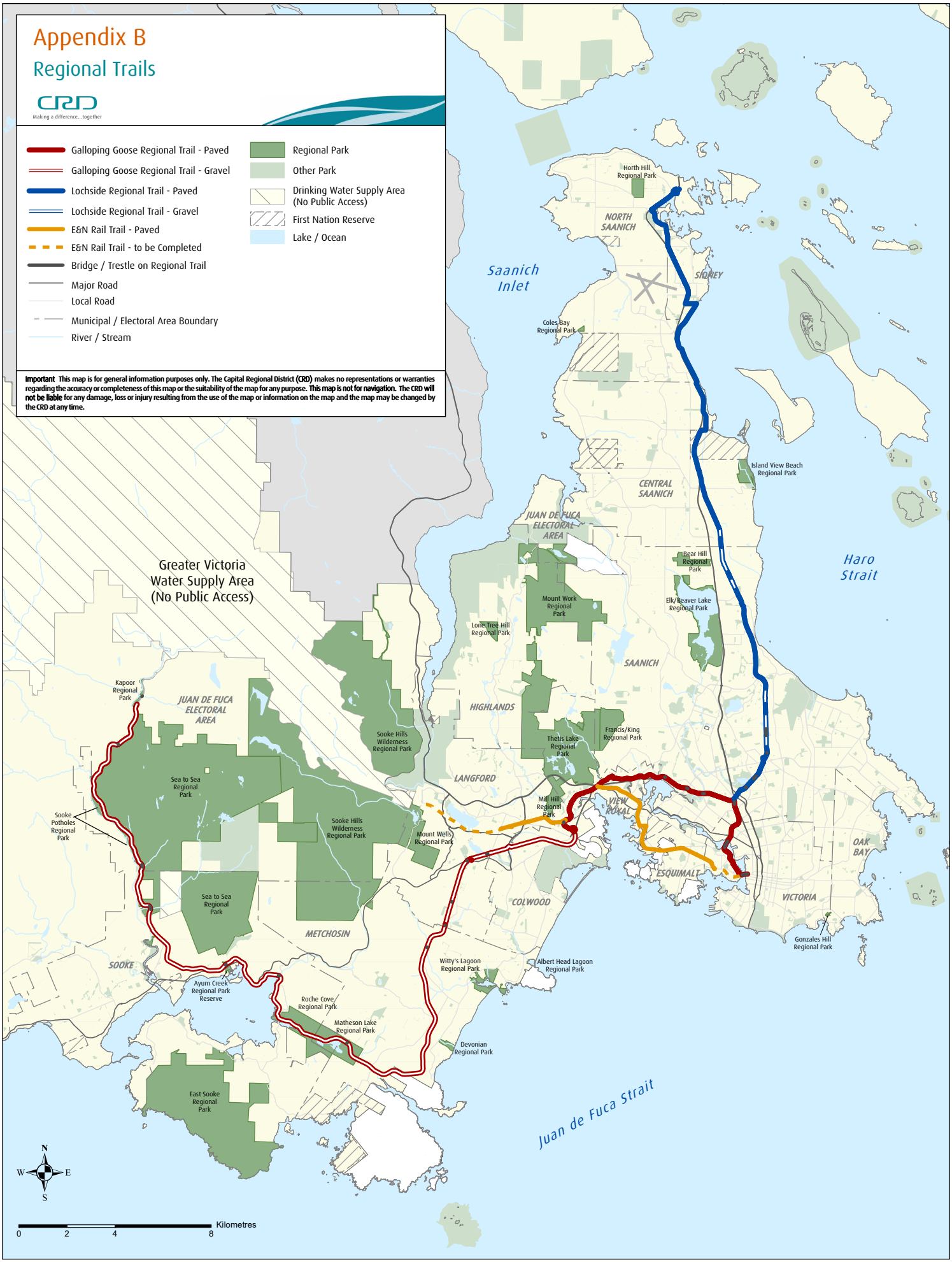
The "Experience the Gulf Islands" initiative (ETGI) of the Southern Gulf Islands and Salt Spring Island Economic Sustainability Commissions recognizes the need for a pedestrian and cycling trail system in the islands. An ETGI Concept Plan is currently being prepared by the CRD. The development of a Regional Trail Plan for the Southern Gulf Islands and Salt Spring Island will advance the ETGI initiative.

Regional Parks has undertaken initial trail planning work for the southern Gulf Islands in consultation with other government agencies, island Park and Recreation Commissions, island interest groups, and community members. This work has provided information about community interests, a vision for trails on the Gulf Islands, and ideas for potential regional trail routes. Information from the initial round of planning, and additional information from Salt Spring Island, will inform the development of a Regional Trail Plan for the Southern Gulf Islands and Salt Spring Island (SGI-SSI RTP) in 2017.

The currently proposed scope of the SGI-SSI RTP is to identify a conceptual regional trail route on each island. Each will provide a spine or loop within the community linking key regional destinations such as the ferry terminal and the main commercial center on island. Other community trails, established independently by local organizations, may connect to the regional spine or loop trails, creating a trail network. The regional trail plan will also include policy direction, such as how trail development priorities will be set, how community sustainability desires and public safety will be considered in determining trail widths, and development funding considerations.

In addition to funding provided by the CRD Regional Parks service, development of the proposed regional trails will be assisted through external funding sources such as grants and contributions.

Appendix B
Regional Trails



Making a difference...together

REPORT TO REGIONAL PARKS COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 27, 2021

SUBJECT **CRD Regional Parks – Mosquito Population Management and Control Program**

ISSUE SUMMARY

To provide an update on the delivery of the annual Mosquito Population Management and Control Program at Island View Beach Regional Park (IVBRP).

BACKGROUND

Since 1989, the District of Central Saanich, the Tsawout First Nation and the Capital Regional District (CRD) have partnered in an annual Mosquito Population Management and Control Program (MPMCP). This work is done under a provincially-approved Integrated Pest Management Plan PMP #825-0004-21/26. The program typically operates from February 1 to October 31 and the work focuses on the monitoring and treatment with VectoBac larvicide of more than 165 mosquito breeding sites on lands across Central Saanich, including sites in and around IVBRP. The MPMCP is implemented under a contract with Duka Environmental Services Limited – paid for by Central Saanich, the Tsawout First Nation and the CRD (Appendix A).

Treatment on District of Central Saanich property includes Island View Beach Municipal Park, located directly south of IVBRP. The District of Central Saanich treatment sites also include private properties (accessed with permission). The district also owns and operates a floodgate valve within the Lamont Road right-of-way that prevents tidal waters from flowing back into IVBRP and allows water accumulations from rain, snow and seepage to drain out (Appendix B).

The Tsawout First Nation treatment area includes salt marsh habitats located to the immediate north of IVBRP. The Tsawout First Nation also operates and maintains a flapper gate built circa 1936 that controls the inflow and infiltration of sea water into the Tsawout salt water marsh. There are 6 to 10 freshwater sites and a substantive (15+ ha) tidally influenced salt marsh divided into four treatment areas that comprise the Tsawout treatment sites.

The CRD treatment locations are within IVBRP. They include large old-field properties (45+ ha) defined by a network of ditches (approximately 4 km) originally dug along farm property line boundaries. There are nine identified saline and salt water-influenced sites, totalling 8 to10 ha in area and two to three freshwater swampy areas (0.5 ha) located along the base of the bluff that defines the western boundary of the park.

Most treatment sites within the Island View Beach (IVB) broader area are influenced by the proper functioning of the Tsawout flapper gate, the Central Saanich floodgate valve, associated ditches, as well as tidal heights, snow melt and precipitation. Due to the geology, topography and hydrology of the area, tidal heights in excess of 3.3 m (measured at Fulford Harbour) are sufficient to cause water infiltration into the area with resultant saturation of soils and surface water accumulations. From June 11 to July 1, 2021 inclusively, high tides at Fulford Harbour met or exceeded 3.3 metres. Mechanisms to control salt water accumulations into the marshes and ditches in the IVB area are in place in the form of berms, the Central Saanich floodgate valve and the Tsawout flapper gate.

Water accumulations and larval development at IVBRP and the Central Saanich Municipal Park

at IVB this season have been lower than in typical years and reflect the impacts of this summer's dryer conditions. VectoBac applications for the CRD and Central Saanich old field sites have been less (<50%) than that applied in a typical season. By contrast, the flooding and larval development in the Tsawout salt marsh this season were of a magnitude not seen for many years (see Appendix C).

In 2021, the flood conditions in the Tsawout salt marsh are attributable to water infiltrating the flapper gate during high tides when a log jammed open the gate for a period of time until Tsawout Public Works discovered and removed the impediment. According to Duka Environmental Services Limited, similar observations in larval development and treatment needs for the salt water marsh were last noted in 2011 when the flapper gate function was hampered by a log. Following its repair in the winter of 2011, flooding and larval development during the 2012 season were noticeably reduced and of a magnitude and scope that have been consistent from season to season, up to 2021. While issues with the flapper gate negatively impact the Tsawout marsh, the ditches at IVBRP were not negatively impacted by the increased flooding in the Tsawout salt water marsh. The District of Central Saanich has recently written a letter to the CRD Board to request that the CRD contribute $15,000 toward a feasibility study for the replacement of the Tsawout flapper gate (Appendix E).

The CRD and Central Saanich contracts Aqua-Tex Scientific Consulting Limited, a specialized company engaged in leading-edge integrated ecological site planning for water management, to conduct annual ditch surveys at IVBRP. Aqua-Tex produces an annual report for the CRD that prescribes the work required to maintain good water flow in the ditches and to reduce mosquito breeding habitat (Appendix D). The 2021 survey was conducted on July 5, 2021. The results of the survey found vegetation in the channels to be lush and vigorous but generally did not appear to be causing any major impediments to flow. However, given the plant growth, maintenance has been proposed to remove vegetation in select areas to ensure that drainage does not become impeded in the future. The ditch excavation work prescribed in the report was conducted by Michell Excavating Limited in July 2021. Vegetation removal work prescribed to provide access trails to Duka Environmental Services staff for ease of applying larvicide is completed by CRD staff when conditions permit.

ALTERNATIVES

Alternative 1

The Regional Parks Committee recommends to the Capital Regional District Board:

1. That the Board authorize up to $15,000 of funding toward a feasibility study for the replacement of the Tsawout flapper gate; and
2. That staff undertake a drainage study for the ditches in Island View Beach Regional Park, share the results with the District of Central Saanich and Tsawout First Nation, and report back.

Alternative 2

That this report be referred back to staff with direction.

IMPLICATIONS

Intergovernmental Implications

The CRD continues to work with Central Saanich and the Tsawout First Nation under the MPMCP. The Pest Management Plan is led by the District of Central Saanich and partners, the Tsawout

First Nation and Capital Regional District. The CRD provides funding to Central Saanich to support its portion of the plan and to hire contractors to do the work. Central Saanich has retained professional, experienced, environmental consulting firms to coordinate and supply specialized services through adherence to the Pest Management Plan.

The partnership developed to contribute and cooperate toward the implementation of the MPMCP has led to a reduction in adult mosquito populations through the IVBRP region. Continuing to work together on implementing this program is an important part of achieving the program's objectives.

Social Implications

The IVB area provides significant cultural, residential, recreational and agricultural opportunities. Adult mosquito annoyance can have a significant impact on residents, visitors and workers in the area, negatively impacting lifestyles and the ability of people to conduct recreation and business. This year, the CRD and the mosquito contractor have seen an increase in the number of complaints associated with a mosquito infestation at communities adjacent to IVB.

Financial Implications

In 2021, the CRD paid $13,825 to the District of Central Saanich as its contribution toward the implementation of the MPMCP. A further $1,926 was paid to Aqua-Tex Scientific Consulting for the IVB Ditch Maintenance Report and for supervision of the ditch maintenance recommended in the report. Costs for Michell Excavating Limited to conduct ditch maintenance varies but is typically around $3,000. The costs to implement the MPMCP are based on the amount of VectoBac that Duka Environmental Services Limited needs to use to treat mosquito breeding sites.

Alignment with Existing Plans & Strategies

The 1989 Island View Beach Regional Park Management Plan has the following objectives:

- To improve the drainage system within the park.
- To consider the needs of the mosquito abatement program when defining any actions regarding drainage.
- To ensure that any changes to the drainage system are done in a manner that minimizes the impact on the natural resources and character of the park.
- To cooperate with the District of Central Saanich to help alleviate mosquito breeding sites in the park.

In addition to these objectives, the following related policies are described in the 1989 management plan:

- The CRD Parks Department will cooperate with the District of Central Saanich in preparing a drainage plan for the park. The purpose of this plan is to identify ways of improving the drainage system for purposes of alleviating flooding of private lands and controlling mosquito breeding sites.
- No new drainage ditches will be constructed east of the existing north/south ditch.
- The Regional Parks Department will keep all ditches in the park clear of debris. This will be included in the annual maintenance program.
- The main east/west ditch and floodgate are not within the park and therefore are the responsibility of the District of Central Saanich.
- The District of Central Saanich will be permitted to enter park property for the purpose of maintaining the main east-west ditch and floodgate.

- The use of pesticides will be prohibited in the park.
- The use of physical and biological control methods will be permitted.
- The Regional District may cost share with the District of Central Saanich the cost of the mosquito abatement program. These costs will be addressed in the drainage plan and when requests from the municipality are presented to the Regional Parks Committee.

These policy directions guide management actions related to the mosquito abatement program.

CONCLUSION

The Capital Regional District partners with the District of Central Saanich and the Tsawout First Nation to implement the Integrated Pest Management Plan and the Mosquito Population Management and Control Program. Since 2011, the program has successfully reduced the number of adult mosquitos present in the Island View Beach area; however, in 2021, a failure with the Tsawout flapper gate combined with three weeks of very high tides resulted in a flooding of the Tsawout salt marsh, resulting in a noticeable increase in the number of mosquitos in the area. The CRD will continue to work with the District of Central Saanich and Tsawout First Nation to improve drainage conditions in the Island View Beach area.

RECOMMENDATION

The Regional Parks Committee recommends to the Capital Regional District Board:

1. That the Board authorize up to $15,000 of funding toward a feasibility study for the replacement of the Tsawout flapper gate; and
2. That staff undertake a drainage study for the ditches in Island View Beach Regional Park, share the results with the District of Central Saanich and Tsawout First Nation, and report back.

Submitted by:	Jeff Leahy, RPF, Senior Manager, Regional Parks
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Integrated Pest Management Plan, District of Central Saanich, Tsawout First Nation and Capital Regional District – January 19, 2021
Appendix B: CRD Island View Beach Regional Park – Mosquito Development Site Map
Appendix C: VectoBac 200G Larvicide Application Table from Duka
Appendix D: Aqua-Tex Ditch Maintenance Report – July 8, 2021
Appendix E: Letter from District of Central Saanich Council to the CRD Board – September 21, 2021

APPENDIX A

DISTRICT OF CENTRAL SAANICH, TSAWOUT FIRST NATION AND CAPITAL REGIONAL DISTRICT

Integrated Pest Management Plan
PMP # 825-0004-21/26

Mosquito Population Management and Control Program
2021 – 2026

Adult mosquito, *Aedes sp.*

Plan Prepared by
Duka Environmental Services Ltd.
Langley, BC

Prepared for
The District of Central Saanich and Tsawout First Nation
Saanichton, BC
and
Capital Regional District,
Victoria, BC

19 January 2021
Duka Ltd. File # PMP - 0421

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1.0 PEST MANAGEMENT PLAN SUMMARY

The District of Central Saanich as significant recreational and environmental value, providing residents and visitors with many outdoor summer activities and employment. Walking, running, cycling, bird watching, outdoor sports, golfing and gardening are just a few of these. Adult mosquito annoyance can often conflict with these activities and potentially impact public health. Besides the negative impacts on the lifestyle and well-being of residents, there can also be considerable economic impact from mosquito annoyance on local businesses. An integrated pest management (IPM) approach to mosquito population management and control can reduce overall annoyance levels and co-exist with these valuable resources.

The annual Mosquito Population Management and Control Program provided by the District of Central Saanich, Capital Regional District (Parks) and the Tsawout First Nation, collectively referred to in this document as 'Central Saanich', would continue to employ a comprehensive, Integrated Pest Management (IPM) approach to control. This approach focuses on the timely detection and treatment of larval mosquito populations using biological control products and methodologies. Where possible, and appropriate, physical or cultural controls (preventative) are recommended, and implemented, that reduce larval habitat and enhance, or conserve natural mosquito predators. Where required, larval mosquito populations would be controlled using the bio-rational larvicide product VectoBac® 200G (*Bacillus thuringiensis* var. *israelensis,* PCP #18158) and VectoLex (*Bacillus sphaericus,* PCP # 28008, 28009). All treatments would be completed in accordance with the methodologies and procedures prescribed in the BC Ministry of Environment-accepted Pest Management Plan for Mosquito Population Management and Control, prepared by *Duka Environmental services Ltd.,* on behalf of the District of Central Saanich, the Capital Regional District and the Tsawout First Nation for the years 2021-2026.

Mosquito control services are provided to residential and rural property owners, businesses, municipal and regional parks, sports fields, campgrounds, golf courses and other outdoor recreational and tourist facilities located within the District of Central Saanich, CRD Parks and Tsawout Band lands. The goal of the annual mosquito control program is to reduce the potential for widespread adult mosquito annoyance for the benefit of residents, workers and visitors to Central Saanich.

The mosquito control program proposed for the years 2021-2026 is largely unchanged from that of past seasons and focuses on larval control and reduction of populations. This PMP meets all the requirements of the *Integrated Pest Management Act* and will replace the previously approved, and soon to expire (2021), PMP # 825-0003-16/21.

This Pest Management Plan (PMP) reviews mosquito biology, the types of larval mosquito habitats affecting the program area and the local mosquito species complex. An integrated PMP approach to mosquito population management and control can reduce overall adult mosquito annoyance

levels through education, prevention and biological controls. This PMP outlines the procedures and methodologies which will reduce local mosquito populations for the purpose of preventing mosquito annoyance for area residents and visitors.

1.1 Geographic Boundaries of this Pest Management Plan

The District of Central Saanich (Central Saanich) is located approximately 20 kilometres north of Victoria, between the District of Saanich and the District of North Saanich, on Vancouver Island. It encompasses a total area of some 41.42 km^2 and a population in excess of 15,750. The District contains two main community centres, Saanichton, a near-continuous developed area along the East Saanich Road, and the second community centre on the east coast of the Saanich Pennisula, at Brentwood Bay.

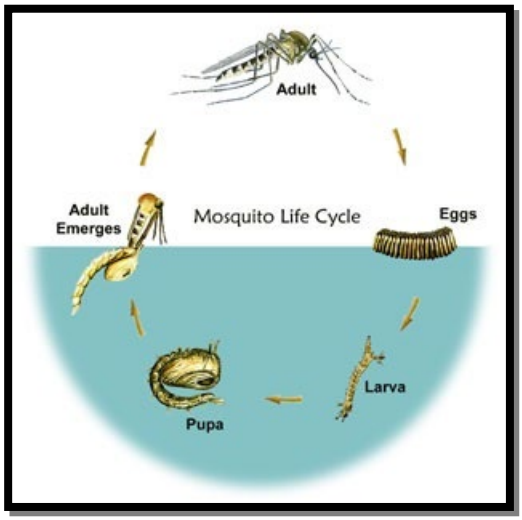
The Tsawout First Nation is a distinct community adjacent to the municipal boundaries of Central Saanich, with its main village located in Saanichton on the East Saanich Indian Reserve #2. The population is approximately 1600 people, with 1/3 being registered band members and others being residents who are leasing lands from the landowners. East Saanich IR #2 is approximately 241 hectares in total area (www.Tsawout.com). The Capital Regional District (CRD) manages the large Island View Beach Regional park (some +57 hectares) located directly to the south of, and contiguous with, the East Saanich Indian Reserve # 2.

The Tsartlip First Nation's main community is located on the South Saanich Indian Reserve # 1 in Brentwood Bay. It has a total area of 333.8 hectares and an on-site population of approximately 650 members. The Tsartlip FN do not participate in the annual Mosquito Population Management and Control Program.

The Central Saanich area, including the CRD and Tsawout, contain a unique mixture of farmlands, forested areas, creeks, swamps, ponds, coastal beaches and salt marshes. Over 80% of the District is zoned as Agricultural, Park, Rural or First Nation lands. These economic, recreational and natural resources enhance the outdoor enjoyment of residents, businesses, workers and visitors to the area. Recreational summer activities include organized sports, camping, hiking, fishing, boating, bird watching, sight seeing, photography, cycling and golfing. Widespread annoyance from adult mosquitos detracts from outdoor enjoyment and worker safety.

1.2 Mosquito Biology

Mosquitos are found world-wide in standing water of all possible descriptions. Mosquitos belong to the order Diptera, along with other pests such as the common house fly and the black fly. There are over sixty species common to Canada and over thirty are found in British Columbia.



Mosquitos undergo four distinct development stages; egg, larvae, pupae and adult. Larvae and pupae are aquatic. Eggs are laid on the water surface or on soil and vegetation adjacent to water. The eggs of some species of mosquitos, such as *Aedes*, can survive for upwards of 20 years and will hatch after a period of winter freezing, and upon being wetted.

Mosquito larvae undergo four larval instars (or moults), each time emerging larger, but virtually unchanged from the previous instar. This is the feeding stage of the aquatic mosquito. The mosquito pupa, like a butterfly chrysalis, is a non-feeding stage and is where the once aquatic, larval mosquito undergoes metamorphosis to emerge as the winged, terrestrial adult mosquito. Adult mosquitos feed on plant juices and it is only the female which requires a necessary blood meal to complete the development of her eggs.

Mosquito development occurs in a wide range of larval habitats ranging from salt marshes, snowmelt and precipitation-influenced flood and seepage water pools and channels along rivers and lakes to freshwater, ponds, marshes, ditches and similar water-holding depressions. Bird baths, plugged rain gutters, livestock watering troughs, stored equipment, irrigation and surface water run-off collection ponds, ditches and any man-made container capable of holding water for a period of 7 to 21 days can provide suitable larval mosquito habitat.

Mosquitos are best known as vectors of 'tropical' diseases such as malaria and yellow fever. Although these exotic afflictions are extremely rare in British Columbia, mosquitos can still pose a serious health concern. Extreme allergic reactions or secondary infections from mosquito bites can occasionally require hospitalization. Diseases such as canine heartworm, Western Equine Encephalitis (WEE) and West Nile virus (WNv) are transmitted from some mosquito species to family pets, humans, and livestock.

The BC Centre for Disease Control (Vancouver) and local health authorities are responsible to coordinate the surveillance, identification and reporting of these diseases and their mosquito vectors. As part of this planning the BCCDC has developed the *Arbovirus Surveillance and Response Guidelines for British Columbia,* and the BCCDC has a provincial database containing

all mosquito, bird and human health surveillance data relating to WNv and vector mosquito species. Due to the low and stable incidence of WNv it was decided by the BCCDC in the fall of 2014 that it was no longer necessary to conduct active surveillance of mosquitos or other indicators. The provincial decision to eliminate this surveillance was reached at the BC Communicable Disease Policy Advisory Committee meeting in February 2015. Human clinical testing will continue. Human clinical testing continues as part of routine blood donor collection programs. Specific details on the response guidelines, surveillance, permitting, and other related information is available online through www.BCCDC.org

1.3 Need for Mosquito Control

The purpose of the annual mosquito control program is to provide residents, workers and visitors to the Central Saanich area with relief from extreme and/or persistent adult mosquito annoyance. The control program is not intended to, nor is it possible to eradicate local mosquito populations.

In addition to negative impacts on the lifestyle and general health of residents, a large population of adult mosquitos can have a negative economic impact on local businesses. Worker safety, comfort and efficiency can be compromised by adult mosquito annoyance. Milk, beef, and egg production in farming communities can be reduced when animals are unable to feed or rest because of extreme mosquito annoyance or through a reaction to mosquito saliva-borne toxins or disease. Farm, orchard and crop harvesting can be affected by nuisance impacts on pickers and field workers. Reduced use and enjoyment of hotel and restaurant outdoor patios, sports fields, golf courses, campgrounds and cycling or hiking trails by residents and area visitors directly affects business operations and revenues.

Although not a common occurrence in most areas of British Columbia, mosquitos are capable of transmitting (vectoring) diseases. A well organized and effective larval mosquito control program is important to limit the potential for both, widespread adult mosquito annoyance, and potential for disease transmission. Despite the best of efforts though, some adult mosquito annoyance may still occur during some months and residents are encouraged to avoid areas of mosquito harbourage (typically treed, forested or landscaped areas) during certain times of day, and to use repellents and approved adult mosquito control devices and products as per label directions.

The goal of the annual mosquito control program is to provide residents and visitors to the Central Saanich area with relief of adult mosquito annoyance through proactive larval mosquito control using an Integrated Pest Management (IPM) approach to surveillance and control. However, since mosquitos capable of vectoring diseases to man are often the source of localized annoyance (human biting), the control of mosquito populations known to cause nuisance also provides the benefit of controlling mosquito species having the potential to vector disease, including WNv. An effective, pro-active mosquito control program which focuses on the identification, prevention, or timely control of larval mosquito populations, also contributes to the protection of public health.

The Central Saanich, Tsawout and CRD Mosquito Population Management and Control Program Pest Management Plan, PMP # 825-0003-21/26, described in detail below, is presented in a format which adheres to the requirements of *Integrated Pest Management Act and Regulation,* including amendments, and the *Mosquito Management Sector Review Paper*. Copies of these documents may be accessed through the BC Ministry of Environment home page at www.env.gov.bc.ca/epd/epdpa/ipmp/pestact/index.html. The annual, Central Saanich Mosquito Population Management and Control Program is a collaboration between the District of Central Saanich, the Capital Regional District (CRD) and the Tsawout First Nation.

The Pest Management Plan is 'owned' by the District of Central Saanich and partners, the Tsawout First Nations and Capital Regional District. It would remain in place for the purposes of larval mosquito population management and control for the five year period, 2021-2026. The objective of the annual mosquito population management and control program is to reduce adult mosquito populations and the potential of widespread mosquito annoyance for residents, workers and visitors to the Central Saanich area. This is achieved using an Integrated Pest Management (IPM) approach to reducing, and suppressing, local mosquito populations through a focus on larval mosquito prevention and control initiatives. The program methodologies described within this PMP are a hybrid of approaches developed through collaboration with mosquito nuisance and vector control professionals worldwide. It has been carefully and specifically designed for the unique conditions of the program area and is a model of environmental compatibility.

A professional, experienced, environmental consulting firm is retained by program participants to coordinate and supply these specialized services through adherence to the Pest Management Plan. The consultants for the District of Central Saanich, the CRD and the Tsawout First Nations annual mosquito control program would have Registered Professional Biologists (R.P.Bios.,) as program managers and senior biologists. All program personnel would be appropriately certified as pesticide applicators by the BC Ministry of Environment, Integrated Pest Management Program.

Public relations and ongoing program education was accomplished through regular contacts with residents, businesses and local First Nations representatives. Information on mosquitos, their control, and prevention, is available to the general public in a variety of forms including notice boards, informational brochures, websites, newspaper articles and interviews. Resident requests for service were followed up with telephone contact and site inspection. Physical reduction, elimination or alteration of larval mosquito development habitats is an important aspect of the control program. Wherever possible, and practical, property owners were advised of measures they could undertake to reduce mosquito development.

1.4 Term of the Pest Management Plan (PMP)

A five year period, extending from 15 April 2021 to 14 April 2026.

The designated contact for this Plan is Mr. Norm Doerksen, Superintendent, Public Works, District of Central Saanich, 1903 Mt. Newton Cross Road, Saanichton, BC V8M 2A9. Telephone # 250-544-4224.

2.0 MOSQUITO CONTROL PROGRAM BACKGROUND

The geographical area covered under the PMP is defined as the boundaries of the District of Central Saanich and includes all lands owned by the Capital Regional District and the Tsawout First Nations (East Saanich Indian Reserve #2). Larval mosquito habitats within this area include freshwater marshes, ponds and ditches located in low-lying forested areas, farm fields, undeveloped areas and along roadsides and saltwater tidally-influenced abitats located on public, private and First Nations lands. Additional larval development habitats include roadside catch basins and temporary sites such as water-filled tire ruts, depressions, un-used or abandoned pools or boats, live-stock watering troughs, and containers.

The annual mosquito control program provided by the District of Central Saanich, the CRD and Tsawout First Nations focuses surveillance and control efforts on areas where larval populations occur and where past, often extreme, adult mosquito annoyance was documented. Mosquito control services are provided to residential and rural property owners, businesses, municipal and regional parks, sports fields, campgrounds, golf courses and other outdoor recreational and tourist facilities located within the area defined as Central Saanich.

In operation for over twenty five years the annual program has continued to evolve to increase its environmental compatibility, it effectiveness, and its affordability for area residents. The Central Saanich mosquito population management and control program has always been one of innovation and adaption. Detailed site mapping, larvicide product research and the establishment of predictive indices for larval mosquito development, particularly for species developing in the salt marsh and old field habitats of the Island View Beach and East Saanich Indian Reserve areas has improved program success, efficiency and sustainability.

The largest sources of mosquito development within Central Saanich is the near-continuous salt marsh and old field seepage and floodwater habitats which extend from Cordova Point and the East Saanich Indian Reserve #2 southwards through the CRD Island View Beach Regional Park and recreational area. Totalling some +57 hectares, these tidally-influenced permanent ponds, ditches and temporarily flooded depressions, ponds and channels are recurring sources of larval mosquito development. In addition, some 130 individual site locations comprised of natural and manmade ponds, marshes and ditches along public roadsides, at golf courses, on private properties and in farm and undeveloped lands exist throughout the program area. Ranging in size from less than

$10m^2$ to upwards of 1-2 hectares in area, these largely freshwater habitats provide another 30-40 hectares of potential larval mosquito development habitat.

The commencement of larval surveillance and control operations for salt marsh and old field habitats beginning in late January, and early February, is unique to the program area. Initially completed in 2010, and annually ever since, this " early" start is responsible for the significant reduction in adult mosquito nuisance in the eastern portion of the District, at the CRD Island View Beach Regional Park and the Tsawout First Nation residential and recreational camping areas. Freshwater habitats are routinely sampled, and treated where required, beginning in early April, and thereafter on regular basis through to late August and or early September. The Figure presents the locations of both fresh and saltwater influenced habitats.

A variety of monitoring and control methods, including physical site reduction or modification and the use of biological control products support the principles of an Integrated Pest Management (IPM) approach to mosquito control. They are the most effective means of reducing adult mosquito populations and the potential for annoyance or disease transmission. This IPM protocol consists of five components:

1) Public Education which explains mosquitos, the program, and how the public can contribute to successful operations;
2) Surveillance and identification of mosquito species and their distribution;
3) Timely implementation of mosquito controls and preventative measures;
4) Review of results achieved and adaptive management during a season; and,
5) Program evaluation and assessment to ensure sustainable, effective controls have been achieved.

The annual mosquito control program focuses mosquito population surveillance and control efforts in areas where larval populations are known to occur and where past, occasionally notable, adult mosquito annoyance was documented. Mosquito control services are provided to residential and rural property owners, businesses, municipal and regional parks, sports fields, campgrounds, golf courses and other outdoor recreational and tourist facilities.

2.1 Primary Land Use

The primary land uses of the areas contained within the control program are agricultural and undeveloped farm or forest areas. Light industrial and commercial properties (lumber yards, landscaping, shopping malls, campgrounds), recreational (golf courses, passive parks, playing fields, etc.), residential and rural land uses comprise the rest. In addition to agricultural, service and retail services, organized outdoor sports activities (Baseball, soccer, etc.) and recreational activities include walking, hiking, photography, golfing, camping, fishing, boating, sight seeing and bike riding.

2.2.1 Mosquito Species Identified within the area

Mosquito development occurs in a wide range of larval habitats ranging from tidally-influenced flood and seepage water pools and channels to permanent freshwater, ponds, marshes, ditches and similar water-holding depressions. Bird baths, plugged rain gutters, livestock watering troughs, stored equipment, irrigation and surface water run-off collection ponds, ditches, marshes and any man-made container capable of holding water for a period of seven to twenty days can provide suitable larval mosquito habitat.

Mosquito pest species collected from the Central Saanich area include:

Aedes dorsalis	*Anopheles punctipennis*	*Culiseta impatiens*
Aedes excrucians		*Culiseta incidens*
Aedes implicatus	*Coquillettidae perturbans*	*Culiseta inornata*
Aedes increpitus		
Aedes mercurator	*Culex pipiens*	
Aedes sticticus	*Culex tarsalis*	
Aedes vexans		

The majority of mosquito species collected from salt marsh and old field habitats are predominantly a complex of *Aedes dorsalis, Aedes vexans* and to a lesser extent *Ae. increpitus* and *Ae, sticticus*. These mosquitos are aggressive biting pests which prefer habitats such as fluctuating salt marshes (*A. dorsalis*), and seepage, floodwater and precipitation runoff accumulations in low-lying fields and deciduous forest areas (*Aedes sticticus* and *Aedes vexans*).

Developing in response to tidal influences fluctuating water levels in various ponds, depressions and overgrown ditches in the old salt marsh area *Aedes dorsalis* mosquitos are the most common species throughout the season, but from February through June they are the most numerous. Decreasing tidal height fluctuations and increasing ambient temperatures, evaporation and decreased precipitation typical to July and August causes many of these habitats dry, drain and disappear.

Culex and *Culiseta* mosquitos typically develop later in the season, from June through August, and require a different set of cues to initiate the onset of larval development including day length and temperatures. They prefer permanent and slow-draining, or frequently-refilled sites including

natural and man-made irrigation and display ponds, ditches and containers such as stored tires, boats and buckets or livestock watering troughs. *Anopheles* mosquitos prefer permanent sites or slow draining and flowing ditches or stream margins. Species such as *Culex tarsalis* are able to withstand brackish waters and a high degree of pollution. They can inhabit areas with high organic content, including septic field seepage, sewage lagoons and livestock hoof prints around barns, feed lots and along creeks. *Culex pipiens*, the "house mosquito", can use a large variety of freshwater habitats including manmade containers and in some areas they are the predominant (+99%) mosquito developing in roadside and sports field catch basins.

Culex, Culiseta and *Anopheles* are at their most numerous during late summer when drier conditions and warmer conditions typically exist. Although their populations and individual development sites are not usually as large as the synchronous hatching *Aedes* mosquitos, *Culex* and *Culiseta* mosquitos are capable of producing several generations in a typical season. They are very common in the old field habitats of Island View Beach Regional Park and in freshwater sites scattered throughout the Central Saanich area. They can be a source of reportable annoyance since their preferred habitats are common to residential, commercial, recreational and agricultural properties.

All of the species collected above are able to develop as multiple hatches during the season. With the exception of *Cu. territans*, all are capable of causing reportable and often extreme annoyance, particularly *Aedes,* and locally collected *Ae. dorsalis*, *Ae. vexans* and *Ae. sticticus* are all potential West Nile virus (WNv) vectors. *Culex* and *Culiseta* mosquitos are not only a source of annoyance but they too are also recognized as vectors of several diseases, including WNv. *Culex tarsalis, Culex pipiens* and *Culiseta incidens* are identified by the BC Centres for Disease Control (BCCDC) and the Centers for Disease Control (Atlanta, USA) as three of the primary vector vectors of WNv in North America. Control of locally occurring *Aedes*, *Culex* and *Culiseta* mosquitos not only prevents widespread nuisance for the benefit of residents, businesses and visitors, but also contributes to the protection of public health.

An uncommon mosquito, collected for the first time in Central Saanich during summer 2020, was *Coquillettidae perturbans,* the "cattail mosquito". It's larval siphon and pupal trumpets are serrated allowing them to puncture young cattail stems where they access air from in these hollow plants as a source of oxygen. Because of this attachment, they are not "free swimming" and generally not collected in routine larval sampling. They can be an aggressive biting pest of man and animals.

2.2.2 Mosquito Control Program Operations

In response to resident, workers and visitor reports of recurring adult mosquito annoyance, the District of Central Saanich, the CRD and the Tsawout First Nations have worked together to since 1989 to provide an effective nuisance mosquito control program for residents, workers and

visitors to the area since this time. During this time the program has evolved to become an example of environmentally-sound, and sustainable mosquito control using an IPM approach. This methodology incorporates public education, development site identification, surveillance, extensive mapping, correlation with tidal heights, and recommendations for the alteration or modification of suitable habitats. Where required, larval mosquito control is completed using the safest, most effective biological control agents available.

Ongoing mosquito development site surveys, monitoring and identification of larval and adult mosquito specimens updates the local mosquito species complex. Identified mosquito habitats are monitored throughout the season, typically from early February through to mid-September, depending on conditions, to assess the abundance and species of mosquitos developing in them. New Jersey or CDC (Atlanta) light traps and standardized mosquito biting and landing counts are used to sample and monitor adult mosquito populations. Routine suite surveillance and input from residents, business owners, facility operators and First Nations assists field technicians in locating and identifying new, altered or eliminated habitats.

Within Central Saanich there are currently over 130 properties or site locations where larval mosquito development habitats have been identified for routine surveillance and control as required. Ranging in size from less than $10m^2$ to over 2 hectares in treatment area, these sites vary in description from a single, permanent ditch or irrigation pond to salt marsh and old field habitats which may contain a hundred or more individual temporarily-filled depressions, ponds or ditches. Stagnant and non-flowing ponds and ditches, most of them manmade or influenced, provide ideal freshwater larval mosquito development habitat and often have the greatest diversity of species. Flooding and seepage water accumulations from spring and summer tides provide extensive habitat for repeated *Aedes dorsalis* and *Culex tarsalis* larval development in area salt marshes and old field habitats.

Other habitats such as bird baths, buckets, stored boats, livestock watering troughs, tires are not treated as part of routine control program operations. When discovered, physical control of these habitats can be easily accomplished by removal of the container or for bird baths or watering troughs, regular drainage and refilling. This prevents larval mosquito development and subsequent adult mosquito annoyance. Public education activities encourage property owners to survey their properties and identify these types of habitat.

Adult and larval mosquito population monitoring is conducted as part of ongoing operational mosquito management and control programs. This allows for an assessment of larval control effectiveness in reducing nuisance mosquito populations, updates the local species record and larval mosquito development site database.

2.2.3 Control Products (Larvicides) Proposed for Use

The Central Saanich Nuisance Mosquito Control Program has been developed with a focus on larval control initiatives and on the basis of using only biological control products. The bacterial mosquito larvicides VectoBac 200G (PCP # 18158) and VectoLex CG (PCP # 28008) are the control products of choice under this PMP. Both VectoBac 200G and VectoLex CG contain spores and crystals produced by *Bacillus,* a naturally-occurring soil bacteria and as such they are classed as a bio-rational control. See Appendix 1 for manufacturer's information package including labels and Material Safety Data Sheets, or from www.valentbiosciences.com.

Larval mosquito populations would be controlled from the ground and by hand or back pack spreader-broadcast using VectoBac 200G and VectoLex CG or WSP. Section 3.4.3 Larval Control an the Appendix of this PMP, discusses the products VectoBac and VectoLex further. Other, equivalent products may be used. These would be identified to the BCMOE with the annual Notification of Intention (NIT) to treat.

3.0 CONTROL PROGRAM METHODOLOGIES

The objective of the annual nuisance mosquito control program is to reduce the potential for widespread adult mosquito annoyance for residents, workers and visitors to the Central Saanich area. A program of this scope is not intended, nor could it, eliminate the local mosquito population. All public education initiatives and outreach activities remind residents and visitors that mosquitos are a part of the natural environment and that some mosquito annoyance may be reasonably expected at certain times of the seasons, in some locations and during some years. The total eradication of a widespread, fecund insect pest such as mosquitos is not practical, or feasible.

The potential impacts of control products, and activities, combined with a need to coexist with a delicate aquatic habitat, necessitates that an integrated approach to mosquito control be undertaken. This approach requires an assessment of the problem, an in-depth understanding of factors influencing the situation, followed by the use of appropriate control.

Control of or prevention of larval mosquito development is preferred over control of the often widely dispersed and mobile adult mosquito. Mosquito larvae are concentrated in one place, must remain there for 7-21 days, and are very susceptible to the bio-rational control (larvicide) products, VectoBac and VectoLex. Drainage, filling of depressions, restoration of flow in ditches or other physical alterations to appropriate larval mosquito development sites is the preferred and permanent control method. Physical control can be integrated into local public works and construction activities such as roadside grading, ditch maintenance and cleaning. For home and

business owners it can include the removal of water-holding containers such as buckets and unused pools, or the regular draining and refilling of livestock watering troughs and bird baths.

Only the most environmentally compatible, least toxic and persistent control products would be deployed for use within this annual program. Specifically, the bio-rational larvicides, VectoBac 200G and VectoLex both made with the *Bacillus* sp. bacterium are the larval control products of choice. Section 3.4.3 discusses these products in detail and sample labels are provided in Appendix 1 or available on-line through www.valentbiosciences.com.

Routine adult mosquito control applications (adulticiding) for the purposes of nuisance mosquito control **are not** a component of the Central Saanich Mosquito Population Management and Control Program or this Pest Management Plan.

The operational components of the PMP and the successful, annual, Central Saanich Mosquito Population Management and Control Program may include the following activities, as detailed in Sections 3.1 through to Section 4.5.

3.1 Public Information and Education

The general public must be advised of control program efforts in their area and provided with the opportunity to have input to their mosquito control program. Public input is invaluable to any community function and it is a key component of all successful, pro-active mosquito control programs. This is essential since, in the final analysis, it is the general public which must be satisfied with control efforts.

The *Integrated Pest Management Act and Regulation* requires public notification of Pest Management Plan preparation through newspaper notices which must be published twice in a two week period starting at least 45 days before submission of a notice confirming that a pest Management Plan has been prepared according to the legislation. The general public, first nations and other stakeholders are invited through these advertisements to provide to consult with the PMP holder or his or her designate, on PMP contents and the proposed mosquito population management and control program. In addition, those individuals or groups which had requested information or who had supplied input when the local mosquito control program was last advertised and approved are contacted directly each time the PMP is renewed.

The Central Saanich Nuisance Mosquito Control Program has employed various, proven effective approaches during the past + 25 years of annual operation to ensure that the general public areinformed of ongoing, annual control program operations. Interactive public education initiatives include literature, poster boards and brochure distribution, presentations for business associations, committees, display booths and ‘open houses’ at schools and fairs. Broadcast media

coverage via newspaper, radio and television interviews and articles or advertisements are very efficient in reaching a large audience and can be an effective component of public education activities.

Considerable value can be obtained through exposure of the control program and interactions with the public. For example, public contact can result in the locating of new mosquito development sites thus augmenting efficacy. Residents are encouraged to contact control program consultants through District of Central Saanich and/or Tsawout First Nation offices to report potential sources of larval mosquitos (a waterbody) or adult mosquito annoyance. Suggestions for physical removal or source reduction on private property allow the owner to participate on a smaller scale. Once accomplished, physical source reduction, especially the removal of artificial containers, grading of depressions or filling of tire ruts eliminates the need for further attention.

The annual nuisance mosquito control program is well known and supported by area residents and businesses. It's highly visible nature using field biologists working along roadsides, in parks, golf courses, along dykes and salt marshes has ensured that property owners, facility managers and residents remain familiar with their annual program. In annual operation for over thirty seasons, it has been providing mosquito surveillance, monitoring and larval control services for the benefits of residents, businesses and visitors to the area. Throughout this time, newspaper articles and advertisements, brochures, posters and interactions with field personnel have provided the public with regular and frequent information on mosquitos and program access.

Movement of adult mosquitos, either by active flight or passively by wind, from outside of treated areas into built up and developed areas is always a possibility given the nature of local geography. Public education further encourages residents and businesses to undertake actions for excluding adult mosquitos and modification of personal behaviours which will reduce the potential for annoyance. Through eliminating development sites on their property and learning to reduce adult mosquito annoyance through preventative actions residents can actively participate in their program. In addition to providing residents with information on how they can reduce larval development and annoyance around their properties, education initiatives help residents understand that the control program can only suppress mosquito populations, not eradicate them, and that some adult mosquito annoyance may be anticipated at certain locations, times of day and during some years.

Examples of some various public education and information initiatives which have been successfully employed in our other programs and which are available and have been deployed within Central Saanich throughout the years include:

- Newspaper Display Advertisements – placement in local newspapers from April – September. Provides information relevant to each month and program access details.

- *Newsmedia interviews* – provides opportunities to update the public on program operations and status, mosquito biology and additional public outreach

- *Presentations at Council meetings - (Power Point™).*
- *Open houses, farmers markets*
- *Radio, television and newspaper interviews and /or articles*
- *Informational Brochures* – these review mosquito biology and control, mosquito "myths", program operations and contact information for program biologists.
- Cardboard *Door Knob Hangers* - these "*Sorry we missed you*" door knob messages are left when residents aren't home during property inspections. They summarize field biologist site observations and have return contact information for resident use.

- Web-based program information and service contact details.
- Facebook account – another method of public access/information
- *Laminated posters* – durable. Can provide basic information on protection from annoyance. Installation along walking trails, picnic and camping areas is possible.
- *Mosquito Monthly* poster board - a 'flip chart' type of display board for placement in public access and reception areas of City Hall, at libraries, Recreation Centres, including pools and ice rinks etc.

At program start-up each season, residents and facility operators with previously identified larval development habitat on their property are contacted and control program operations, site status, access and notification procedures reviewed. As part of these initial contacts field personnel answer inquiries, supply relevant literature and complete on-site property inspections. Ongoing interactions and conversations with property owners, residents and general public provides opportunities to discuss program operations, goals and allow for the distribution of public education and outreach materials and information. Office and field personnel response to service requests, by telephone, email, and in person provide additional opportunities for public education and information sharing of program operations.

The cooperation and support of local businesses, the Capital Regional District, Tsawout First Nations, farmers, business, facility operators and other property owners is indicative of true community spirit and support for a successful program which benefits workers, residents and visitors to the Central Saanich area. Prevention of adult mosquito annoyance through pro-active, larval mosquito control provides significant benefit to outdoor worker and recreational uses.

3.2 Mosquito Control Program Data Collection and Reporting

The environmental consultant (contractor) managing the annual mosquito control program for the Central Saanich program is responsible to follow the data collection and reporting requirements of the PMP and the *Integrated Pest Management Act and Regulations*.

The District of Central Saanich, Capital Regional District and the Tsawout First Nations would be regularly informed of control program activities of this contractor/consultant through personal contact, telephone, facsimile or e-mail with program managers and field personnel. In addition, written progress reports summarizing weather conditions, surveying and monitoring results, treatment areas and interactions with the public are typically prepared by program consultants and submitted on a regular basis during the operational phases of the control program.

At the conclusion of each annual Nuisance Mosquito Control Program season a summary report detailing all activities and pesticide treatments completed under the PMP and it's BC Ministry of Environment (BCMOE) issued confirmations is produced. All pesticide use reporting required under the *Integrated Pest Management Act*, the approved PMP and as requested during the season by government regulatory agencies including the BCMOE, is completed as necessary.

At a minimum, the consultant would maintain the following information for their use in managing the program and to complete the reporting and information requirements of the annual control program, the PMP, the Pesticide Use Confirmation, the *Integrated Pest Management Act and Regulations,* and the BC Ministry of Environment:

- a mosquito development site database with information including property ownership, address, contact telephone number, public access information (paths, trails, roadways), development site maps and or photographs, records of past and current monitoring and treatment activities, pesticide use daily operation records and other relevant information related to the control program.

- a record of properties identified as 'AVOID' areas, where the owner or residents have indicated through telephone, written, verbal (in person conversation) or electronic (e-mail, facsimile) communication with the District, CRD, Tsawout or the program consultants, their wish to be excluded from the mosquito control program.

- a list and/or maps identifying 'AVOID' areas of environmental sensitivity, including provincial or regional parks, habitat conservation areas and other identified or designated speciality management areas. When the status of a waterbody or other area of potential environmental concern (eg. bird nesting sites) is unknown, a local representative of Fisheries and Oceans Canada or the Environmental Stewardship Division of the BCMOE would be consulted.

The development site database and avoid area lists are updated during each field season when control program personnel meet with residents, owners and operators of the farms, businesses and recreational facilities. Property ownership, access, development site status, avoid areas and control program operations are reviewed at this time. Regular contact is maintained with these individuals throughout the season to provide updates on control program operations and opportunities for input and comment on the control program. Ongoing activities related to surveying, monitoring and mosquito control operations are recorded in the historical data section of the database as they occur.

3.3 Surveying and Monitoring of Mosquito Populations

As part of the annual program start-up, and throughout the season, program field biologists conduct regular, comprehensive surveys of Central Saanich and surrounding areas by ground and air, as appropriate. The goal of these surveys is to confirm the extent and locations of existing, known mosquito development sites and to identify any new, or previously undetected, larval habitats. Surveying and monitoring of larval development sites (always waterbodies) determines the presence of larval mosquitos, the need for control and allows for regular update of the database. Where observed, larvae are collected and enumerated using a standard 350 ml white larval mosquito dipper. Larval specimens are identified to the species level whenever possible.

Mosquito development varies from year to year and throughout the season depending on environmental conditions and habitat availability. Environmental cues interact to affect both the timing and magnitude of mosquito development, and adult mosquito survival. Provincial and regional snowpack accumulations, river levels, tidal heights, precipitation and temperatures are reviewed as necessary to ensure timely surveying to detect mosquito development.

Monitoring and correlation of fluctuating tidal heights, local temperatures and precipitation totals over several seasons allows for the determination of 'thresholds' which aid in the prediction of larval development and distribution within the salt marsh. Similarly, temperatures, humidity and precipitation all influence the extent of flooding and seepage water accumulations in adjacent low-lying fields, forested areas, ditches and ponds. Failure to timely survey and monitor larval habitats could allow unchecked development of larvae which will result in adult mosquito annoyance. When investigating resident reports of adult mosquito annoyance or potential larval development sites, a thorough survey of each area is performed to locate the source of annoyance, and any previously unidentified larval habitat.

- ***Larval mosquito monitoring***

Surveying and monitoring of larval development sites (always waterbodies) determines the presence of larval mosquitos and the need for control. Larval habitats would be monitored throughout the season using a standard 350ml white larval mosquito dipper to assess the relative

~200 larvae/350ml dip sample

abundance and species of larval mosquitos found in these habitats. Routine sampling of development habitats is completed on a 6-10 day basis, depending on conditions and observations, throughout the operational season, typically mid-April to mid-September.

Larval mosquito populations as small as one larvae per 350ml dip sample in an area as small as a backyard swimming pool (5m x 10m) can produce thousands of adult mosquitos over the course of a season. Located adjacent to established outdoor recreational facilities including golf courses, sports parks, water slides, picnic areas, campgrounds and nearby residential and commercial areas, salt marsh and old field permanent sites (ponds, ditches) are a major source of potential mosquito annoyance and a primary focus of the annual mosquito population management and control program.

Pre-treatment surveys determine the extent of larval development which ensures that control measures are directed only to those areas containing larvae. In addition to providing pre-application information essential to timely control applications, surveying and monitoring following treatment, 'post-treatment monitoring' allows for an evaluation of the degree of control achieved from a particular application. Environmental compatibility and cost effectiveness of a control program is dependent on proper pesticide use through the application of control measures directed only to those areas requiring them. Post-treatment monitoring to confirm to larval mortalities is typically completed within 2-96 hours of larvicide (VectoBac 200G and Vectolex CG and WSP) application.

- ***Adult mosquito monitoring***

To objectively measure the success and effectiveness of larviciding efforts in reducing adult mosquito populations, two internationally accepted sampling methods are employed. The first, a standard biting/landing count, measures the number of mosquitos which land, to bite, on the exposed forearm (from wrist to elbow) in a one minute period. Adult biting counts of three or more per minute, measured between the wrist and exposed forearm, is intolerable for most people. Beyond three bites per minute, outdoor enjoyment and worker performance and safety are affected, and negative economic impacts on recreation and tourism can be expected.

Although it is the accepted world-wide standard, it must be noted that bite counts are not without bias. Clothing and body physiology make some people more or less attractive than others. Also, daily timing for collection is crucial as mosquitos are most active at dusk and dawn, when temperatures are lower and humidity generally higher. For these reasons, collection timing,

locations and clothing worn by the observer are standardized as much as possible. When reviewed in conjunction with anecdotal reports from residents, this data is a useful measure of mosquito annoyance levels and facilitates the collection of mosquito species that actively seek a human blood meal.

The second method used for adult mosquito population assessments uses either Standard New Jersey or Center of Disease Control (CDC, Atlanta) Adult Mosquito Light Traps. Both types of traps use a normal incandescent light source as an infra-red attractant and are programmed to start collections at sunset and terminate at sunrise. Samples are typically retrieved the following morning and forwarded to the laboratory for enumeration and identification. These traps can be augmented (baited) with $C0_2$, in canisters, or as dry ice, to increase capture rates as it is another key attractant for female mosquitos. Information gathered from light trap captures can be used to give an indication of the mosquito population size, species complex and the type of development habitat.

CDC Light Trap

New Jersey or CDC Light traps would be deployed to monitor adult mosquito populations in areas with a history of adult mosquito annoyance problems. Benefits associated with these traps include the collection of a much greater number of specimens than with un-baited traps, or from biting counts, and they provide an objective, reproducible sampling method. These collections complement bite count sampling for annoyance by allowing field personnel to more effectively collect and identify mosquito species present in a particular area. Correlation of this data over several years with larval monitoring and adult mosquito biting count data allows for continued, increased forecasting of mosquito populations.

Larval and adult mosquitos would be identified in our laboratory according to the taxonomic keys of Darsie and Ward (1981) and Wood, Dang and Ellis (1979), and others as appropriate.

3.3.1 Mosquito Development in Central Saanich

The largest and most prolific sources of mosquito development in Central Saanich are tidally-influenced flood and seepage water accumulations in salt marshes and old field habitats located on Tsawout and CRD lands in northeastern Central Saanich. Several days of sustained tides exceeding 3.3 metres (as measured at Fulford Harbour), fill sections of the old the ditch system, low-lying areas of the salt marsh and adjacent undeveloped farm fields. Resultant lateral and

vertical seepage produces water accumulations in ponds and isolated channels scattered throughout the marsh. Egg eclosion (hatching) occurs within hours of inundation and over the next several days larval development occurs throughout the East Saanich (Island View Beach) salt marsh and old field habitats, and is at its greatest during peak tides in excess of 4.0 m. *Aedes dorsalis,* a very pestiferous mosquito species develops in response to these fluctuating water levels.

Located adjacent to established outdoor recreational facilities including golf courses, sports parks, picnic areas, campgrounds and nearby residential and commercial areas, salt marsh and old field sites are a major source of mosquito annoyance and a primary focus of the annual nuisance mosquito control program Regular monitoring of salt marsh habitats during the season ensures that larval mosquito development does not proceed unchecked. With larval populations averaging between 50-100 larvae/350ml dip sample, multiple hatches in a seasons, and a total treatment area often amounting to over 50% of annual efforts for the Central Saanich area, the control of larval development in salt marshes and old field habitats is essential to prevent widespread adult mosquito annoyance. In addition to developing throughout the summer, salt marsh and old field habitats have been found to support larval mosquito development throughout fall and winter. Larvae have been found in the months of October, November, December and January. Starting in 2010, larval surveillance and treatment has been completed for salt marsh and old field development sites beginning in late January or early February and continuing through to late August or September, depending on weather conditions.

Impounded irrigation, display and water run-off/collection ponds also provide ideal habitat for larval development. Largely permanent, these sites fluctuate in size throughout the season in response to seepage and surface water runoff accumulations from precipitation and human activities including field irrigation, equipment and vehicle washing, dust control and site clean-up. These permanent and temporary development sites can support larval mosquito populations for as long as they contain water. Typically located near residential and commercial or recreational areas, control of larval development in these sites are of great importance to preventing localized annoyance and under certain conditions, they have the potential to impact residents located several hundred metres to a few kilometres away.

The remaining larval mosquito development habitats of Central Saanich are roadside ditches and depressions. As a result of ongoing and long-term ditch maintenance programs (grading, vegetation removing, culvert cleaning) larval development in these types of sites is highly variable from season to season and site to site. Sampling and treatment of freshwater development sites (ponds, marshes, ditches) typically begins in early to mid-April and extends through to late August or September depensing on conditions.

Although their populations and individual development site sizes are not usually as large as the synchronous hatching *Aedes* sp. mosquitos in salt marsh flood and seepage water habitats,

Culex and *Culiseta* mosquitos make use of a large variety of habitats, including containers such as stored tires and equipment, livestock watering troughs, buckets and bird baths. Such habitats are common throughout urban and rural areas and since they are typically located close to residences, businesses and outdoor recreational areas *Culex* and *Culiseta* mosquitos can be a source of reportable, localized mosquito annoyance. When discovered by field personnel during site inspections the presence of water-holding containers would be brought to the attention of property owners for removal, drainage or regular water changes which would eliminate their potential as sources of mosquito development and annoyance.

3.4 Mosquito Control Options

Mosquito development varies from year to year and throughout the season depending on environmental conditions and habitat availability. Environmental cues interact to affect both the timing and magnitude of mosquito development, and adult mosquito survival. These factors include mountain snowpack accumulations, tidal fluctuations, temperatures, humidity, and precipitation.

Each mosquito development site will have its own unique requirements and treatment options. The PMP for this mosquito control program uses a combination of techniques, and an IPM approach, to achieve the management and control of mosquito populations. The best choice for control reduces both mosquito populations, and the potential for adverse effects on people, domestic animals, livestock and natural ecosystems. Sometimes, particularly with man-made habitats such as ditches, irrigation or display ponds and containers, larval mosquito populations can be reduced, or effectively limited using physical or natural controls. These control options would be considered as a potential solution prior to any larvicide applications.

Many of the possible physical control options suggested below may be implemented by local public works personnel and landowners. Private property owners with mosquito development habitat are best motivated to become involved in their control program through public education initiatives (see Section 3.1 above) and through consultations with program personnel. Once educated about mosquitos and their habitats, property owners can undertake steps to reduce or eliminate larval mosquito habitat and adult mosquito annoyance on their property. A reduction in larval populations contributes to the overall decrease in adult mosquito annoyance.

The preservation or enhancement of balanced wetland habitats has the best opportunity for a meaningful long-term contribution to overall mosquito control program success through reduction of mosquito populations and enhancement of natural controls including insect, fish and birds. Elimination of stagnant water and enhancements in natural or created ecosystems will be of benefit to overall control program efficacy through increasing habitat for natural mosquito predators. The use of a biological control products such as *Bacillus thuringiensis* var.

israelensis (VectoBac 200G) and *Bacillus sphaericus* (VectoLex) maximizes the effectiveness and environmental compatibility of the program.

IPM-focused mosquito control programs do not have deleterious effects on humans, domestic pets and livestock, wildlife, fish and their food and are routinely conducted throughout British Columbia. There are three larval mosquito control options available to the program. These are physical, biological and bio-rational product oriented.

3.4.1 Physical Control

A major emphasis for the control program is decreasing or eliminating larval mosquito development habitats. Although initially very expensive, physical mosquito control through source reduction (filling, ditching, draining, dyking) is a preferred method of control. Once done, it is permanent and usually requires no further attention.

Removal or alteration of mosquito producing habitat does not necessarily mean drainage resulting in habitat destruction for other organisms and natural predators such as birds and fish. As part of a comprehensive approach to mosquito control, property owners are encouraged to manage stagnant and non-flowing waters to minimize their use as sources for mosquito development. For example, the removal of emergent shoreline vegetation, combined with either water level management at greater than one metre in depth or a shoreline groomed to a gradient of 3:1 or steeper, effectively eliminates mosquito production in irrigation and settling ponds or other water impoundments. The installation of fountains in display ponds found on golf courses and in parks can reduce their suitability and use as larval mosquito development habitat.

Ditching of flooded depressions located in fields may be a suitable solution to larval development by permitting drainage or allowing fish access to temporarily flooded areas. Grading or filling of depressions may reduce an area's potential to retain water. The costs for such physical control measures may, however, be prohibitive or not desirable for reasons other than mosquito control.

Clearing established ditches of obstructions or vegetation, failed culverts or grading to effect flow may increase flow, drainage or access by fish or aquatic insect predators. Where possible, and appropriate, public works crews, residents and business operators are encouraged to remove, or alter standing waters which provide suitable habitat for larval mosquito development. For most property owners this involves eliminating water-holding containers, such as buckets and boats or

canoes and the draining or regular changes of water in bird baths, livestock watering troughs, wading pools and display ponds. When done by the homeowners, this permits residents an opportunity to actively participate in their control program. This can be especially important for residents, as two of the most common West Nile virus vector mosquitos, *Culex tarsalis* and *Culex pipiens,* make ready use of manmade habitats.

Installation and maintenance of window screens, mosquito magnets™ (adult mosquito traps) and the use of mosquito repellents by individuals provides additional protection from potential adult mosquito annoyance and potential disease transmission.

3.4.2 Biological Control

Biological control involves the use of predators, pathogens, and parasites to reduce mosquito populations. Insects predators, both aquatic (ie. dragon flies, beetles) and terrestrial (ie. spiders, wasps), contribute to the natural mortalities of both larval and adult mosquitos. Conserving, or enhancing natural habitats wherever possible, allows these predators to contribute to control program effectiveness.

Of all the various predator control methods tested, only larvivorous fish are used operationally in widespread programs. Regan *et al.* (1982) evaluated the effects of three-spined stickleback fish (*Gasterosteus aculeatus*) on mosquito larvae located in the Fraser Valley. They were found to be effective in reducing larval populations. Their natural fecundity combined with their ubiquitous nature makes these fish an ideal natural (biological) control agent. They are a common occurrence in many of ditch systems.

Introduction of fish (Koi, gold fish) to manmade, self-contained outdoor display or irrigation ponds may also reduce, or eliminate larval mosquito development in such habitats. Most practical in the warm, lower mainland Fraser Valley and Vancouver Island, in areas with very cold winters, this type of control requires considerable work and cost which many include the over-wintering of fish indoors or annual replacement. The relocation, or introduction of fish to any natural water course requires approval and permitting through various governmental agencies including Department of Fisheries and Oceans and the BC Ministry of Environment.

Although flying insects can form a large component of the diet for flying insectivores (*eg.* bats, swallows, Purple Martins), there is no evidence which suggests they provide a detectable level of mosquito control. Both birds and bats are also opportunistic feeders and adult mosquitos have been identified as a small component (<2%) of their diet, (Fang 2010 and Gonsalves *et.al.*, 2013).

They are not however, scientifically recognized as able to provide any real impact on mosquito populations when used solely as a mosquito population control option. Interested residents would however still encouraged to install bird nesting boxes or bat houses if they wish, since it allows individuals to contribute to a comprehensive, integrated mosquito control program, and in some cases may provide residents with a sense of reduced adult mosquito annoyance.

Pathological agents such as viruses and certain parasites have received much research attention, but none of these are commercially available or approved for use in Canada. The naturally occurring soil bacteria, *Bacillus thuringiensis* var. *israelensis* (*Bti*) and *Bacillus sphaericus* (*Bsph*) have highly specific insecticidal properties and are discussed below.

The greatest natural control of mosquitos is an absence of water. Evaporation or drainage eliminates, or reduces, the magnitude of water accumulations or pond size, and therefore larval habitat. Warm temperatures and low humidity similarly causes the desiccation (drying out) and death of adult mosquitos.

3.4.3 Bio-rational Control

The Central Saanich nuisance mosquito control program, through it's PMP, would only use VectoBac 200G and VectoLex CG or WSP for larval mosquito control. VectoBac and VectoLex are the closest form of a natural or biological control agent currently available for routine use in operational mosquito control programs. The use of these products maximizes the environmental compatibility of the annual mosquito control program when used in circumstances where other control options such as physical or natural (biological) control are not practical, they support the principles of an IPM approach to control. The Appendix contains VectoBac and VectoLex product labels and information. Brochures and Material Safety Data Sheets (MSDS) are available at www.valentbiosciences.com.

Property owners would be consulted with prior to any larvicide applications and for any recommended physical of biological/natural methods. Product brochures, labels, MSDS sheets and website addresses are provided and reviewed as required to ensure residents, business, and facility operators understand, are comfortable with, and approve, proposed treatments. In the event that a property owner wishes exclusion from the control program this request would be honoured and noted in the development site database.

VectoBac acts on the larval mosquito stomach and must be eaten to effective. VectoBac 200G is very specific, producing rapid lethal effects (within hours) in larval mosquitos. It has no residual activity, does not bio-accumulate and has no impact on beneficial organisms found in mosquito development habitats. Negative or toxic effects on mammals, birds or other wildlife have not been observed. Formulated as a corn cob granule it requires no mixing and is ready to apply by hand, backpack blower or by helicopter. The granule allows the larvicide to penetrate vegetative covers and reach the water surface where the *Bti* is "released" for consumption by mosquito larvae.

VectoBac 200G is recommended by the manufacturer for use in standing water habitats including temporary and permanent pools in pastures and forested areas, irrigation or roadside ditches, natural marshes or estuarine areas, waters contiguous to fish-bearing waters, catch basins and sewage lagoons.

Similar to VectoBac 200G, VectoLex CG also contains a naturally occurring, spore-forming soil bacterium. VectoLex CG contains spores and crystals produced by *Bacillus sphaericus.* It also is classed as a bio-rational, rather than conventional, pesticide. Like VectoBac, VectoLex acts on the larval mosquito stomach and must be eaten to be effective. VectoLex is very specific and produces lethal effects in a narrow range of mosquito species, including *Aedes vexans* and most *Culex* and *Culiseta* mosquito species. It has also been found to be an effective control for *Coquillettidae perturbans,* an aggressive adult pest of humans. Known as the "cattail mosquito" because of the unique adaption of the larval siphon and pupal "trumpets", which are serrated, for attachment to young cattails, they can access the air in these hollow plants as a source of oxygen. Because there are not "free swimming" like most other larvae they are not generally collected in larval sampling. Several sites, most notably irrigation ponds, have a significant amount of cattail (*Typha* sp.) along their margins.

The use of VectoLex CG and VectoLex WSP in these types of sites has greatly reduced anecdotal reports of adult mosquito annoyance. Like VectoBac, VectoLex larvicides do not have any effects on man or animals, fish and other insects which may use these aquatic habitats.

Operationally, the important differences between VectoLex and VectoBac are speed of action and persistence in the larval habitat. Larval mortality can take several days for VectoLex versus several hours with VectoBac 200G. This occurs because *B. sphaericus* is more stable, has a

slower settling rate in the water column and the unique ability for its spores to germinate, grow and reproduce in dead mosquito larvae. This is known as recycling and is the mechanism which allows VectoLex to provide long-term, extended control (in excess of 28 days in the Fraser Valley, Lower Mainland) of recurring larval mosquito development. VectoLex CG is recommended by the manufacturer for use in standing water habitats including temporary and permanent pools in pastures and woodlots, irrigation or roadside ditches, natural marshes or estuarine areas, waters contiguous to fish-bearing waters, catch basins and sewage lagoons.

In permanent ponds and stagnant ditches with difficult access because of thick, overgrown, or dense vegetation (i.e. blackberries and *Typha* sp. cattails), the long-acting VectoLex WSP may be used for treatments. These 10gm satchels (2cm X 2cm) can be readily thrown into these sites where the bio-degradable, glucose-based bag quickly dissolves, and the granules disperse across the water surface.

The use of *Bti* and *Bsph* maximizes the environmental compatibility of the annual mosquito control program since both products are species (target) selective and non-toxic to other aquatic organisms which co-exist in these habitats including insects, fish and amphibians. When used in circumstances where other control options such as physical or cultural control are not practical, they support the principles of an IPM approach to mosquito control.

See the Appendix for copies of the manufacturer's product labels for VectoBac 200G and VectoLex CG and WSP, or contact www.valentbiosciences.com for more information.

The Central Saanich nuisance mosquito control program would use the least toxic, most environmentally sound control products available. As new products become available and registered in Canada, their suitability for use in annual control program will be reviewed.

3.4.4 Chemical Control

Chemical control products and equipment are predominantly used for the purposes of reducing adult mosquito populations. As with most adult insect control programs, adult mosquitos are typically controlled using a broad-spectrum (adulticide) insecticide. Although there are 'natural' adult mosquito control products make from chrysanthemum flower extracts (pyrethrins) and their synthetic equivalents, all adulticides only provide temporary control.

Because of the variable dispersion patterns of mosquitos, geography, types of vegetation encountered and ambient weather conditions at the time of treatment, it is difficult to provide anymore than temporary control of localized adult mosquito annoyance. Unless regular and

routine treatment of 'problem areas' is completed, uncontrolled adult mosquitos developing in other areas will often expand into these treated areas to again cause annoyance.

Typically applied from the ground using cold aerosol sprayers or misters, and much less commonly, from the air using helicopters of fixed-wing aircraft their mode of action is on the nervous system following contact with the organism and absorption across through the exoskeleton. Because they are applied to the air, and the fact they are non-specific, such applications will not only control adult mosquitos which come in contact with the spray mist, but other non-target organisms such as moths, flies, flying beetles and other insects. Restrictions on applications include habitat type, timing of applications, mosquito population thresholds, weather conditions and areas of identified avoidance.

Adulticide applications **ARE NOT** a component of the annual mosquito control program at Central Saanich. The mosquito control program described within this PMP does not utilize any chemical control methods for the abatement (control) of larval or adult mosquitos.

3.5 Mosquito Control Operations

A total of over 80 hectares of potential larval mosquito habitat located at +130 separate development site locations identified within the District of Central Saanich, including CRD parks and the Tsawout First Nation lands. The actual total area that will become infested and require larvicide treatment in each season is dependent on hydrological and meteorological events. Fluctuating water levels in tidal salt marsh habitats and precipitation or seepage-water influenced development sites cause recurrent larval development. Ponds, channels and flooded depressions throughout area salt marshes, old field habitats and similar freshwater sites in low-lying farm fields and wooded sites typically require multiple treatments to effect control. Permanent irrigation or display ponds and ditches become routinely infested with larval development as their depths fluctuate and temperatures increase with water use later in the season.

The well-organized, pro-active, IPM approach to mosquito control for the Central Saanich reduces the potential for adult mosquito annoyance by ensuring the timely identification and control of larval populations occurring in sites which are unable to be drained, filled or effectively modified to reduce their use for larval development. Larvicide applications would be completed at identified larval mosquito development habitats where pest populations exceed identified thresholds for control, and where other options such as site drainage or alteration are impractical,

inappropriate or fiscally prohibitive. New or previously undetected, larval mosquito development sites, once identified, are monitored, treated as required with permission, and added to the site database for future surveillance and control as necessary.

As required by the *BC Integrated Pest Management Act and Regulations*, all larvicide applications would be completed, and/or supervised by, personnel certified by BC Ministry of Environment as pesticide applicators in the category of *Mosquito and Biting Fly Abatement*, or equivalent.

All larvicide treatments would be completed using application rates, equipment and methods recommended by the pesticide manufacturer.

3.5.1 Public, Worker and Environmental Safety During Mosquito Control

To ensure public and worker safety, all conditions and restrictions governing biorational larvicide (VectoBac and VectoLex) applications would be followed. Pesticide applicators will follow the conditions of the approved PMP, with regulations contained in the *Pest Control Products Act*, the *Pesticide Control Act*, the *Transportation of Dangerous Goods Ac*t and other relevant government regulations. Larvicide handling, storage and application procedures would conform with those detailed on product labels and endorsed in the '*Pesticide Applicators and Dispensers Handbook*' and associated reference materials supplied through the BC Ministry of Environment.

The Central Saanich Mosquito Population and Management and Control Program is not intended to eliminate the mosquito population and as such landowners and residents who want to be excluded from the control are recorded and their wishes respected. Landowner permission to survey, monitor and treat infested larval mosquito habitats located on private property is confirmed each season. Treatment of developing larval mosquito populations in waterbodies on public lands are permitted under this approved PMP.

Program personnel will take all practical precautions to protect application personnel, the environment and the general public during all larvicide applications. Prior to larvicide application field personnel would:

- verify property ownership, treatment site boundaries, public points of access (paths, trails, roadways), pest presence and population size, both pre and post-treatment.

- review, and as required update, the development site database information for the mosquito control program. The database contains information on property ownership, address, contact telephone number, development site maps, photographs and records of past monitoring and treatment results. The database is continually being updated and contains information on all known mosquito development habitats, including those located on public and private lands.

- confirm the boundaries and/or locations of 'AVOID' areas, including surface (drinking) water intakes or wells, and identify these with flagging tape, ribbons or suitable equivalent, if required.

- identify fish-bearing waters or areas of environmental sensitivity (ie. bird nesting sites) and the need for avoidance of these areas, particularly for ground nesting birds,

- when necessary, community watersheds status will be determined by accessing the BC Ministry of Environment Community Watershed listings and informational website:

  www.gov.bc.ca/wsd/data_searches/comm_watersheds/index.html.

- Similarly, a listing of registered groundwater Wells and Aquifers and an interactive map is available at:

  www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells-aquifers

- review larvicide product label and recommended precautions for handling and application, safety gear, weather restrictions (wind, temperatures, etc) and other listed precautions.

- inform the general public of ongoing applications through public notices, news media articles, advertisements and ongoing, routine personal contact.

3.5.2 Larval Mosquito Control, Treatment Thresholds and Application Rates

VectoBac and VectoLex are only applied when larval mosquitos are present.

Larval mosquito surveillance and control protocols would focus efforts on the timely identification and treatment of larval mosquito populations with surveillance and control efforts targeting 1st through 3rd instar larvae. Given that the most extensive larval development locally involves synchronous hatching *Aedes* mosquitos in recurring salt marsh habitats, this strategy ensures maximum control.

In addition to treating the most actively growing and feeding instars, it also, allows for retreatment (touch-up) of sites, or portions of sites, that may have not have been treated ascompletely, as desired, because of conditions on the day, changing water levels or because of subsequent hatching. Also, application rates can be lower, and therefore material costs, and overall mosquito larvicide use rates in the environment are reduced. Even though the products products, Vectobac 200G (*Bti*) and VectoLex (*Bsph*), proposed for use in the program have the safest environmental profiles of any bio-rational larvicides in common use, decreasing any volume of control product is beneficial and maximizes environmental compatibility.

Treatments targeting all mosquito populations with later 3rd or 4th instars under the guise of allowing natural predators to impact some level of control is not encouraged. It is not recommended on *Bti* or *Bsph* product labels, or by the *Municipal Mosquito Control Guidelines (Ellis, 2005)*. Controlling mosquito larvae at their source, with a focus on 1st through 3rd instar larvae still contributes to the "food web". Predators will feed on live larvae, and dead larvae become food for many other organisms, including insect detritivores, fungi and bacteria which in turn become food for other aquatic insect and vertebrate predators and grazers. While there may be predation of some mosquito species occurring in permanent ponds, such as *Culex* or *Culiseta*, the two most common genera in these types of sites, this strategy is wholly impractical for *Aedes* mosquitos.

Aedes hatch in large numbers, typically +100/dip, and inhabit temporary pools created by snowmelt, precipitation, river flood and seepage waters or salt marsh which may only last several days or weeks. These types of temporary habitats seldom have established natural predators and where they may occur they are typically inadequate to deal with larval populations of such extreme magnitude. A pond the size of a back yard swimming pool ($50m^2$), with a larval population of just 1 larvae/350ml dip sample, can produce over 24,000 larvae. A one hectare site, about the size of 2 football fields, with a larval population density of 1 larvae/dip sample can produce 4,285,714 mosquitos.

Delaying treatments to target populations with later 3rd or 4th instars is also not ideal. The potential for reduced feeding rates of later instar larvae may provide incomplete control, reduced efficacy and may result in a number of other undesirable outcomes;

1) that larvae develop into the untreatable pupal stage, and then onto nuisance causing adults;

2) that field staff may not return at an appropriate time to treat them before this occurs. Changing weather conditions and temperatures over a few days can dramatically accelerate larval development rates; and lastly

3) product manufacturers recommend that later instar larvae are treated with higher application rates, upwards of 10kg/ha (1 gm/M), thereby requiring more larvicide, increased field personnel surveillance and treatment time and reduced environmental compatibility.

VectoBac 200G larvicide is only applied when larval mosquitos are present. Typically upwards of 5 - 10 dip samples per development site, depending on site size, are completed. Larval mosquito dip samples averaging from 1-3 larvae/350ml dip sample in sites containing predominantly 2nd and 3rd instar larvae would be the minimum treatment threshold for mosquito larvae found in many temporary, and most permanent sites which typically contain a high proportion of *Culex* and *Culiseta* mosquito larvae. A treatment threshold of five, 1st instar larvae/350ml dip sample is utilized when monitoring synchronous, extensive *Aedes sp*. larval development common to early-

season snowmelt, seepage water and similar temporary habitats. The threshold for 2nd and 3rd instar *Aedes* larvae would be 1-3 or more larvae/dip sample.

VectoLex larvicides which are largely ineffective against *Aedes* mosquitos would only be utilized to control developing larvae in those permanent and temporary sites having *Culex, Culiseta* and *Coquillettidae perturbans* larvae. Larval populations averaging 1-3 larvae/350ml dip sample will be the threshold for treatment using VectoLex larvicides.

These thresholds are based on the "industry standard" used by operational mosquito control programs in the Northwest Mosquito and Vector Control Association (NWMVCA) and American Mosquito Control Association (AMCA).

Larval dip sampling, light trap collections and where appropriate, adult mosquito emergence traps, would be employed to evaluate post-application larval control results. Larval mortalities of at least 95% would be considered successful. If required, and where indicated by post application sampling, additional, or expanded treatments of nearby areas would be completed to achieve desired efficacy.

All ground-based larvicide applications to small and accessible sites are completed, where required, by hand broadcast or backpack spreader during the mosquito control season. Fluctuating water levels in many of these sites cause repeated larval development requiring repeated treatment.

All Vectobac 200G and Vectolex CG application rates would be within those recommended by the manufacturer. These rates range from 2.5 to 10.0 kilograms per hectare with applications completed under this PMP to be conducted at rates ranging from 4.0 to 8.5 kilograms per hectare. VectoBac and VectoLex application rates typically average 7.5 kg/ha which has been demonstrated over some 30 years on annual operation as effective under the conditions encountered at Central Saanich. All applications are followed with post-application monitoring to confirm the effectiveness of treatments.

Applications of VectoBac 200G and VectoLex CG to within 10 metres of fish-bearing waters, or waters contiguous to fish–bearing waters, and potable waters or wells is anticipated and waters contiguous with fish bearing water may be treated, as permitted on the Health Canada, Pesticide Regulatory Management Agency (PRMA) approved product labels.

3.5.3 Post Application Monitoring

Within 02-96 hours after (post) treatment with VectoBac 200G, larval mortalities would be confirmed through monitoring using a standard 350 ml mosquito dipper. The goal is for larval population reductions of 95%, or to levels averaging less than 1 larvae/350ml dip sample with

sampling results mostly measured at zero larvae/350ml dip sample, and averaging much less than 1 larvae/350ml dip sample. Post-application monitoring confirms treatment success and allows for the 'touch-up' treatment of any areas which may have, for reasons of geography, vegetative cover or access, received inadequate application. Because larval mortality from VectoLex can take several days to occur, and can continue to occur for several weeks, treated larval habitats would be monitored on a regular basis with re-treatment completed as required.

Adult mosquito populations would be monitored in areas adjacent to larval development sites to confirm the effectiveness of larval controls in reducing adult mosquito annoyance. In addition, adult mosquito populations would be monitored at select locations to compare adult mosquito populations between various location and community centres. Given the difference in individual tolerances to mosquito annoyance the success of larval control in limiting adult mosquito populations would be determined through resident reports, interviews and requests for service.

The goal of the annual Central Saanich Mosquito Population Management and Control Program is to decrease larval mosquito populations sufficiently to reduce, and/or prevent, adult mosquito annoyance for residents, workers and visitors. Property owners, residents and businesses are also expected to implement personal protective measures to limit their exposure to adult mosquito annoyance. These include repellent use, clothing choices (long sleeves, light coloured), avoidance of perfumed personal hygiene products (shampoos), window screens and temporal (minimize activity at dusk and dawn) or location avoidance which can lessen adult mosquito annoyance.

4.0 QUALIFICATIONS OF PROGRAM PERSONNEL

The contractor/consultant supplying mosquito control services to the District of Central Saanich, Capital Regional District (Parks) and the Tsawout First Nation will have all necessary Pesticide Vendor and/or Pest Control Service Licences. As required, all personnel working in the annual mosquito control program will be certified as pesticide vendors in the category of "*Commercial Pesticides*" and/or as pesticide applicators in the category of '*Mosquito and Biting Fly Abatement*' or equivalent, as accepted by the BC Ministry of Environment.

Consultant mosquito control program management personnel would be Registered Professional Biologists. Field personnel would include University and College graduates or senior Co-Operative Education students studying within the disciplines of biology and environmental science or equivalent practical experience with mosquito population management practices and training.

5.0 LARVICIDE HANDLING AND APPLICATION

As required by the BC Integrated Pest Management Act, all personnel handling and applying larvicides for the mosquito control program must be certified by BC Ministry of Environment as pesticide applicators in the category of *Mosquito and Biting Fly Abatement*, or equivalent.

Pesticide applicators will comply with regulations contained within the *Pest Control Products Act*, the *Integrated Pest Management Act*, the T*ransportation of Dangerous Goods Act* and other relevant government regulations. Larvicide handling, storage and application procedures would conform with those detailed on product labels and endorsed in the '*Canadian Pesticide Education Program Applicator Core Manual*', the '*Pesticide Applicators and Dispensers Handbook*' and associated reference materials supplied through the BC Ministry of Environment. This PMP does not attempt to duplicate all the information contained within this handbook and other references. The 'Acts', the Handbook, product labels, manufacturers' websites and any other resource materials detailed above, and this PMP would be reviewed before handling, transporting, storing or applying pesticides.

5.1 Larvicide Transportation

During transportation, all pesticides would be secured to prevent an accidental spillage or theft. Granular VectoBac 200G and VectoLex CG larvicide products would be secured and handled to prevent tearing of bags, spillage and exposure to adverse weather conditions such as precipitation.

Mosquito Control program personnel will carry within their vehicles a suitable spill clean-up kit, basic first aid kit and appropriate personal safety gear and supplies.

Applicators would only transport the minimum amounts of pesticide required to complete the proposed treatments. It is common for field personnel to require less than forty kilograms of Vectobac 200G or VectoLex CG for a typical workday.

5.2 Larvicide Storage

The District of Central Saanich would provide secure, dry, well ventilated pesticide storage space for mosquito control larvicide (VectoBac 200G, VectoLex CG) within their secure public works facility. No large volumes of larvicide are stored on-site over the winter. In an average year, less than 200 kg of larvicide is stored on-site to be available for program start-up in early February.

Emergency telephone numbers for police, fire, ambulance, Canutec, Dangerous Goods Emergency Spills, Poison Control, and the BC Ministry of Environment are posted on-site at the storage facility and available at Public Works offices

5.3 Larvicide Mixing, Loading and Application

Applicators will follow the directions and precautions warranted by pesticide use as described above and in relevant references. All avoidance areas, pesticide free zones and pesticide buffer zones would be established and appropriately identified prior to pesticide application. All larvicide applications would be completed from the ground by hand broadcast or backpack applicator.

No mixing is required. VectoBac and VectoLex granular larvicides are 'ready to apply'. They are supplied in thick, plastic plastic bags. All used and empty bags would be disposed of in municipal or regional landfills as directed by the manufacturer on the Pesticide Management Regulatory Agency-approved pesticide label and MSDS sheets. All handling of pesticides for application would be conducted in level, well ventilated, outside areas. Field personnel would wear suitable safety gear, including the appropriate respirator, ear protection, rubber gloves, boots and other protective equipment as indicated by pesticide labels, MSDS sheets and the manufacturer.

Property owners would be consulted with prior to any larvicide applications and for any recommended physical of biological/natural methods. Product brochures, labels, MSDS sheets and website addresses would be supplied and reviewed to ensure residents, business, and facility operators understand, are comfortable with, and approve, proposed treatments. In the event that a property owner wishes exclusion from the control program this request would be honoured and noted in the development site database.

Weather forecasts would be consulted, and current weather conditions (wind speed, temperature, precipitation) would be noted, and recorded, during all larvicide applications. Treatments would be suspended in the event that wind speeds during larvicide applications are sufficient to cause the displacement, or drift, of granular larvicides outside of the treatment area. Similarly, should precipitation be sufficient to cause larvicide (corn cob) granules to clump and clog backpack blowers, or similarly affect hand broadcast applications, treatments would be suspended until suitable conditions return.

In the event of accidental spillage, personnel would follow accepted spill containment and clean-up procedures. With VectoBac abnd VectoLex granules this typically involves recovery with brooms and dustpans or shovels. This ‘recovered’ larvicide would be used for the treatment of intended habitats.

5.4 Equipment Maintenance and Calibration

Ground-based applications of VectoBac 200G and VectoLex CG are completed by hand broadcast or motorized back-pack type (leaf blower) applicator.

Applicators would adjust their walking speed, and throttle speed if using backpack blowers, to ensure they are achieving the correct application rate/density of granules per square foot of water surface. For an application rate of 7.5 kg/ha and granules which are 5/8 mesh in size, this is 4-5 granules per square foot.

6.0 REFERENCES AND BIBLIOGRAPHY

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FIGURES

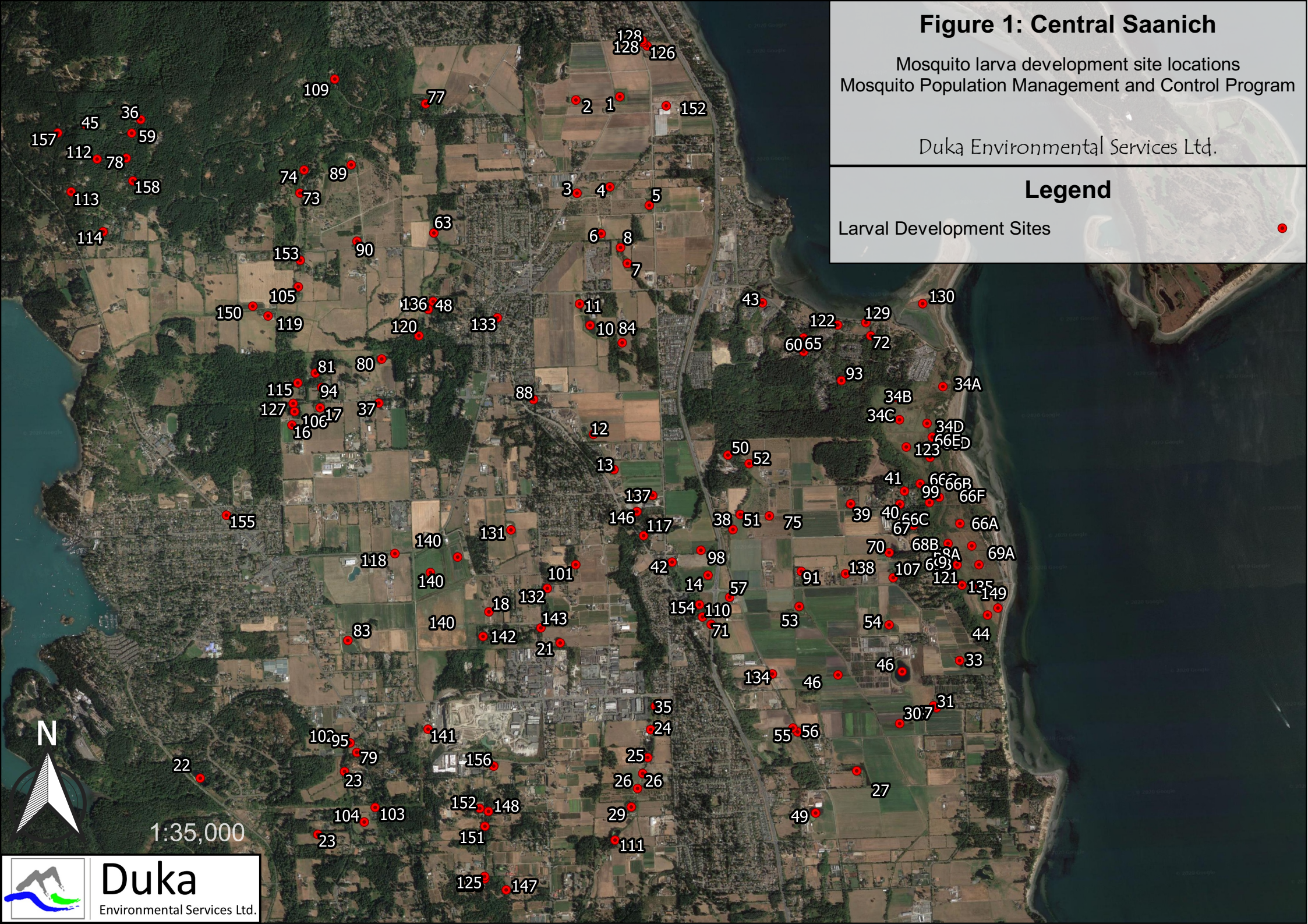


Figure 1: Central Saanich
Mosquito larva development site locations
Mosquito Population Management and Control Program
Duka Environmental Services Ltd.
Legend
Larval Development Sites
N
1:35,000
Duka
Environmental Services Ltd.

APPENDIX

VectoBac and VectoLex (Larvicide) Product Information Package.

VectoBac® 200G

BIOLOGICAL LARVICIDE

GRANULE

GROUP	11	INSECTICIDE

RESTRICTED

GUARANTEE:
Bacillus thuringiensis subsp. *israelensis*,
Serotype H-14, strain AM 65-52, 200 International
Toxic Units (ITU) per milligram (0.2 billion ITU/KG)

REGISTRATION NO. 18158
PEST CONTROL PRODUCTS ACT List No. 60214-13

INDEX:

READ THE LABEL BEFORE USING
KEEP OUT OF REACH OF
UNAUTHORIZED PERSONNEL
POTENTIAL SENSITIZER
CAUTION EYE IRRITANT

1.0 PRECAUTIONS

KEEP OUT OF REACH OF UNAUTHORIZED PERSONNEL
MAY CAUSE SENSITIZATION
CAUTION EYE IRRITANT

DO NOT apply directly to treated, finished drinking water reservoirs or drinking water receptacles when the water is intended for human consumption.

Avoid contact with skin, eyes, and clothing. Avoid breathing dust/spray mist. Wear a long sleeved shirt, long pants, waterproof gloves, shoes and socks, eye goggles and NIOSH-approved respirator with any N-95, R-95, or P-95 filter for biological products when handling, mixing/loading or applying the product and during all clean-up/repair activities. Applicators may remove gloves, eye goggles and respirators if the design and delivery of the application apparatus reduces exposure to a negligible level (e.g. backpack sprayer with application wands that apply product directly over water surface). Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

2.0

FIRST AID	
If on skin or clothing	Rinse skin immediately with plenty of water. Remove contaminated clothing and wash separately before reuse. If irritation occurs and persists or is severe, seek medical attention.
If in eyes	Hold eye open and rinse slowly and gently with water. Remove contact lenses, if present, then continue rinsing eye. If irritation occurs and persists or is severe, seek medical attention.
If inhaled	Move person to fresh air, apply respiration if needed and seek medical attention.
If swallowed	Rinse mouth and throat with copious amounts of water. DO NOT induce vomiting. Promptly contact a physician or poison control centre. DO NOT give anything by mouth to an unconscious person.
General	Seek medical attention if irritation or signs of toxicity occur and persist or is severe. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

3.0 TOXICOLOGICAL INFORMATION

Treat symptomatically.

4.0 STORAGE

In order to ensure microbial purity and potency, VectoBac 200G should be stored in the original container at 0 - 25°C and used within 24 months of the date of manufacture.

5.0 DISPOSAL

Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank. Follow provincial instruction for any required additional cleaning of the container prior to its disposal. Make the empty container unsuitable for further use. Dispose of the container in accordance with provincial requirements. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

6.0 NOTICE TO USER

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

NATURE OF RESTRICTION: This product is to be used only in the manner authorized; consult local pesticide regulatory authorities about use permits which may be required.

7.0 DIRECTIONS FOR USE

MOSQUITOES	Suggested Range Rate
Habitat: Standing water	3 – 10kg/ha* (0.3 – 1.0 g/m^2)

Temporary and permanent pools in pastures and woodlots, irrigation or roadside ditches, natural marshes or estuarine areas, water contiguous to fish-bearing water, catch basins and sewage lagoons.

*Use higher rates in deep and/or polluted water, and when late 3rd and 4th instar larvae predominate.

Apply recommended rate by conventional aerial or ground equipment. Uniform coverage is necessary for best results. For aerial application, apply in uniform non-overlapping swaths when conditions do not favour drift or when wind speeds are less than 10 km/h.

A 3 to 14 day interval between applications should be employed. Monitoring will indicate the appropriate retreatment interval. VectoBac 200G Biological Larvicide does not affect non-target, aquatic, invertebrate predators and parasites which are non-filter feeders. Therefore, longer periods of suppression may result since these beneficials would be conserved to aid in mosquito population management.

AERIAL APPLICATION INSTRUCTIONS

Apply only by fixed-wing or rotary aircraft equipment that has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions and precautions are product-specific. Apply only at the rate recommended for aerial application on this label. Where no rate for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment.

Ensure uniform application by using appropriate marking devices and/or electronic guidance equipment.

Use Precautions

Apply only when meteorological conditions at the treatment site allow for complete and even coverage.

Apply only when meteorological conditions are in compliance with local and/or provincial authorities.

Operator Precautions

DO NOT allow the pilot to mix product to be loaded onto the aircraft. However, loading of premixed product with a closed system is permitted. It is desirable that the pilot has communication capabilities at each treatment site at the time of application. The field crew and the mixer/loaders must wear the personal protective equipment described in the PRECAUTIONS section of this label. When handlers/loaders use closed systems to load product onto the aircraft, the handler requirement for eye goggles and a NIOSH-approved respirator/mask with any N-95, R-95, or P-95 filter for biological products may be waived. When reduced personal protective equipment is worn, the respirator/mask and eye goggles must be immediately available for use in an emergency such as a spill or equipment breakdown. All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing must be washed before reuse. Decontaminate aircraft cockpit and vehicle cabs if contamination occurs.

Product Precautions

Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-323-9597 or obtain technical advice from the distributor or from your provincial agricultural or forestry representative. Application of this specific product must meet and/or conform to the aerial uses and rates on this label.

RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, please note that VectoBac 200G Biological Larvicide contains a Group 11 insecticide. Any insect population may contain individuals naturally resistant to VectoBac 200G Biological Larvicide and other Group 11 insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same site. Other resistance mechanisms that are not linked to site of action but are specific for individual chemicals, such as enhanced metabolism, may also exist. The following appropriate resistance management strategies should be followed to delay insecticide resistance:

- Where possible, rotate the use of VectoBac 200G Biological Larvicide or other Group 11 insecticides with different groups that control the same pests in a site.
- Insecticide use should be based on an Integrated Pest Management program that includes scouting, record keeping, and considers cultural, biological and other chemical control practices.
- Monitor treated pest populations for resistance development.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance management and/or integrated pest management recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance, contact Valent BioSciences Corporation at 1-800-323-9597.

Registrant:

VALENT BIOSCIENCES CORPORATION
870 TECHNOLOGY WAY
LIBERTYVILLE, IL 60048 U.S.A.
1-800-323-9597

Canadian Agent:
Valent Canada, Inc.
6-130 Research Lane
Guelph, Ontario N1G 5G3 CANADA

04-7021/R2

Biological Larvicide

VectoLex® CG

RESTRICTED

GUARANTEE:
Bacillus sphaericus Strain 2362, 50 BsITU/mg

REGISTRATION NO. 28008
PEST CONTROL PRODUCTS ACT List No. 05722.13

INDEX:

READ THE LABEL BEFORE USING
KEEP OUT OF REACH OF UNAUTHORIZED PERSONNEL
POTENTIAL SENSITIZER
CAUTION EYE IRRITANT

1.0 NOTICE TO USER

This control product is to be used only in accordance with the directions on this label. It is an offence under the *Pest Control Products Act* to use a control product under unsafe conditions.

2.0 NATURE OF RESTRICTION

This product is to be used only in the manner authorized; consult provincial pesticide regulatory authorities regarding appropriate use permits that may be required.

3.0 LIMITATIONS

DO NOT apply directly to treated, finished drinking water reservoirs or drinking water receptacles.

4.0 RESTRICTED USES: DIRECTIONS FOR USE

VectoLex CG is a mosquito larvicide to be applied, without mixing or dilution, by conventional ground or aerial application equipment. Apply to mosquito breeding sites when sampling indicates that mosquito larvae are present. For best results, apply when young larval stages are present. Reapply at a minimum interval of one week as needed, if monitoring indicates that further applications are required. Do not reapply within one week of application.

Aerial Application Instructions:
Apply only by fixed-wing or rotary aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label. Label rates, conditions and precautions are product specific. Apply only at the rate recommended for aerial application on this label. Where no rate for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment. Ensure uniform application by employing appropriate marking devices and/or electronic tracking equipment.

Use Precautions:
Apply only when meteorological conditions at the treatment site allow for complete and even coverage. DO NOT apply when wind speed is greater than 16 km/h at flying height at the site of application. Apply only under conditions of good practice specific to aerial application as outlined in the *Basic Knowledge Requirements for Pesticide Education in Canada: Applicator Core and Aerial Module*, available from the Federal/Provincial/Territorial Committee on Pest Management.

Operator Precautions:
Do not allow the pilot to mix product to be loaded onto the aircraft. Loading of premixed product with a closed system is permitted. It is desirable that the pilot has communication capabilities at each treatment site at the time of application.

The field crew and the mixer/loaders must wear the personal protective equipment described in the PRECAUTIONS section of this label. All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Product Specific Precautions:
Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-323-9597 or obtain technical advice from the distributor or from your provincial agricultural or forestry representative. Application of this specific product must meet and/or conform to the aerial uses and rates on this label.

Rinse and flush spray equipment thoroughly following each use.

5.0 MOSQUITO LARVAL CONTROL

VectoLex CG is a mosquito larvicide. It is not effective against mosquito adults and pupae. Apply to mosquito larval breeding sites when sampling indicates that mosquito larvae are present. For best results, apply when young larval stages are present.

For use in:	Mosquito species controlled	Application rate and interval	Application methods
Water bodies: freshwater marshes, salt marshes, flood plains, flooded fields and pastures, wetlands, ponds, storm water detention/ retention and seepage ponds, wastewater sewage effluent, sewage lagoons, oxidation ponds, log ponds,	*Culex* spp. *Culiseta* spp. Aedes vexans (Other *Aedes* spp. and *Ochlerotatus* spp. have variable degrees of susceptibility to VectoLex CG)	5.6-16.8 kg product/ha (0.56-1.68 g product/m^2) of water surface area. Use the higher rate in water polluted with sewage, water with high organic content and water with a high level of suspended solids. Do not reapply within one week of application. Reapply at a minimum interval of one week as needed, if monitoring indicates that further applications are required.	Apply by ground or aerial application equipment capable of uniform delivery of VectoLex CG over the water surface.

For use in:	Mosquito species controlled	Application rate and interval	Application methods
impounded waste water, septic ditches, drainage ditches including open storm sewers and irrigation ditches			
Waste tires	*Culex* spp. *Culiseta* spp. *Aedes triseriatus*	0.56-1.68 g product/ m^2 of water surface area. Use the higher rate in water with high organic content and water with a high level of suspended solids. Do not reapply within one week of application. Reapply at a minimum interval of one week as needed, if monitoring indicates that further applications are required.	Apply by hand or ground application equipment to individual tires which contain standing water. Use with other mosquito management techniques such as shredding waste tires, removing standing water and covering the stacked tires.

6.0 RESISTANCE MANAGEMENT RECOMMENDATIONS

Mosquito populations may contain individuals naturally resistant to VectoLex CG. The resistant individuals may dominate the mosquito population if VectoLex CG is used repeatedly as the sole means of control in the same geographic location/use area.

To delay/avoid the resistance of mosquito populations to VectoLex CG it is recommended that users:

- Rotate the use of VectoLex CG with other mosquito larvicides currently registered in Canada, which do not contain *Bacillus sphaericus* as the active ingredient, providing they are registered for use in control of the same pests in the same sites.
- Treat a portion of the target area with a *Bti* formulation or an alternative insecticide ensuring the continual existence of populations of mosquitoes not exposed to VectoLex CG within a given geographic location.
- Insecticide use in mosquito control should be based on an IPM program that includes scouting, record keeping, and considers cultural/habitat, biological and chemical control practices suitable for the area to be treated.
- Monitor treated pest populations for resistance development.
- For further information or to report suspected resistance contact Valent BioSciences Corporation at 1-800-323-9597 or at www.valentbiosciences.com.

7.0 PRECAUTIONS

KEEP OUT OF REACH OF UNAUTHORIZED PERSONNEL.

May cause sensitization. May irritate eyes. Avoid contact with skin, eyes or clothing. Mixer/loaders and applicators not in enclosed cabs or aircraft must wear a long-sleeved shirt, long pants, shoes plus socks, eye goggles, waterproof gloves and a dust/mist filtering respirator (MSH/NIOSH approval number prefix TC-21C) or a NIOSH approved respirator with any N-95, R-95, P-95 or HE filter for biological products when handling, mixing/loading or applying the product and during all cleanup/repair activities. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

8.0 FIRST AID

IF SWALLOWED: Rinse mouth and throat with plenty of water.

IF ON SKIN/CLOTHING: Take off contaminated clothing. Wash exposed skin with plenty of soap and water.

IF INHALED: Move to fresh air.

IF IN EYES: Hold eye open and rinse slowly and gently with water. Remove contact lenses, if present, then continue rinsing eye.

GENERAL: IMMEDIATELY seek medical attention if irritation or signs of toxicity occur and persist or are severe.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

9.0 STORAGE

Store at temperatures between 0°C and 25°C. Store container upright and keep tightly closed when not in use. Material must be used within 12 months of the Date of Manufacture.

10.0 DISPOSAL

1. Completely empty the bag into the application equipment.
2. Follow provincial instruction for any required additional cleaning of the container prior to its disposal.
3. Make the empty bag unsuitable for further use.
4. Dispose of the bag in accordance with provincial requirements.

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

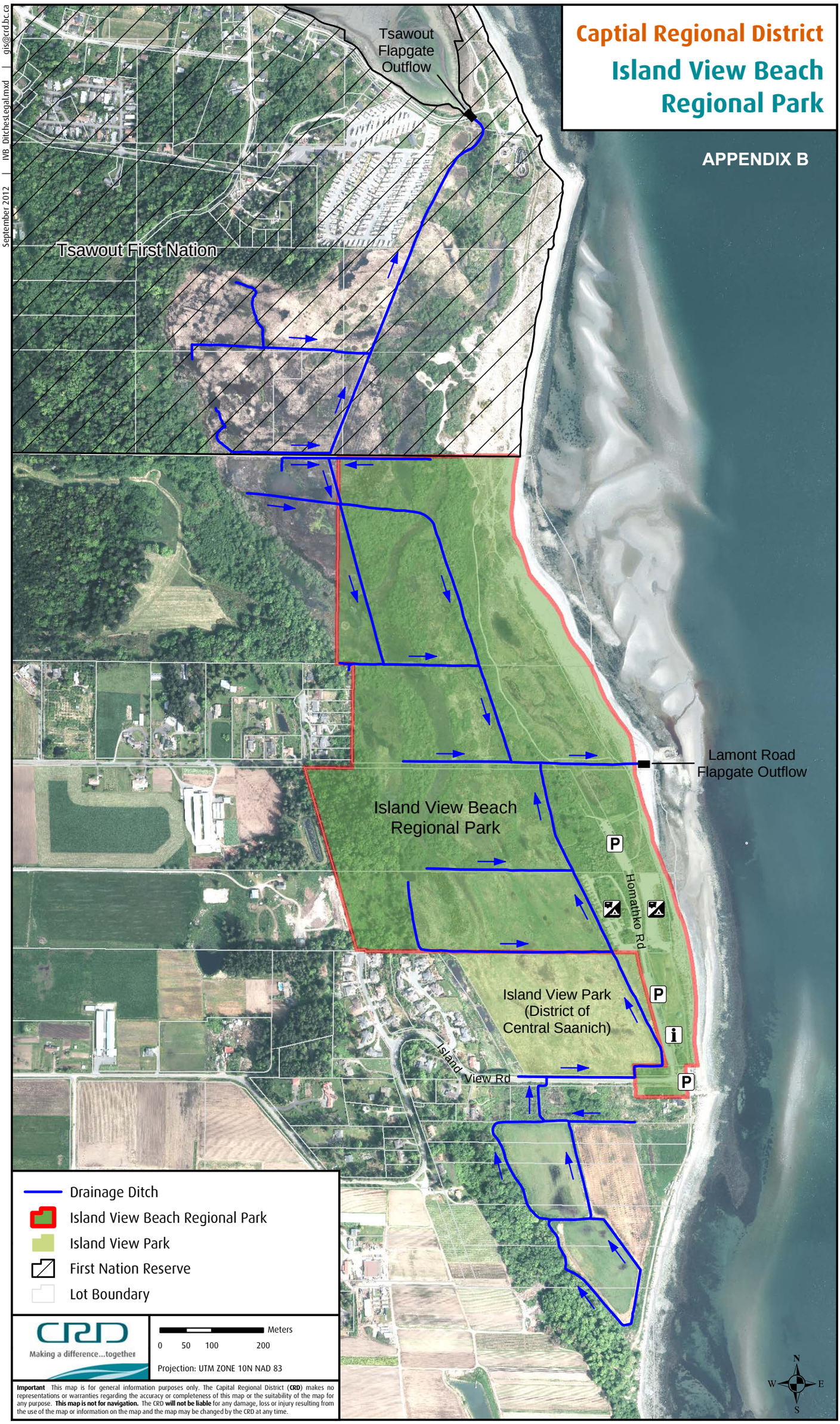
DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

11.0 NOTICE TO BUYER

Seller's guarantee shall be limited to the terms set out on the label and, subject thereto, the buyer assumes the risk to persons or property arising from the use or handling of this product and accepts the product on that condition.

Registrant:
Valent BioSciences Corporation
870 Technology Way, Suite 100
Libertyville, IL 60048
U.S.A.

Canadian Agent:
Valent BioSciences Canada, Ltée.
40 King Street West, Suite 2100
Toronto, Ontario M5H 3C2
CANADA


Captial Regional District
Island View Beach Regional Park
APPENDIX B
September 2012 | IVB_Ditches1.egal.mxd | gis@crd.bc.ca
Tsawout Flapgate Outflow
Tsawout First Nation
Lamont Road Flapgate Outflow
Island View Beach Regional Park
Homathko Rd
Island View Park (District of Central Saanich)
Island View Rd
Drainage Ditch
Island View Beach Regional Park
Island View Park
First Nation Reserve
Lot Boundary
Making a difference...together
Meters
0 50 100 200
Projection: UTM ZONE 10N NAD 83
Important This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.
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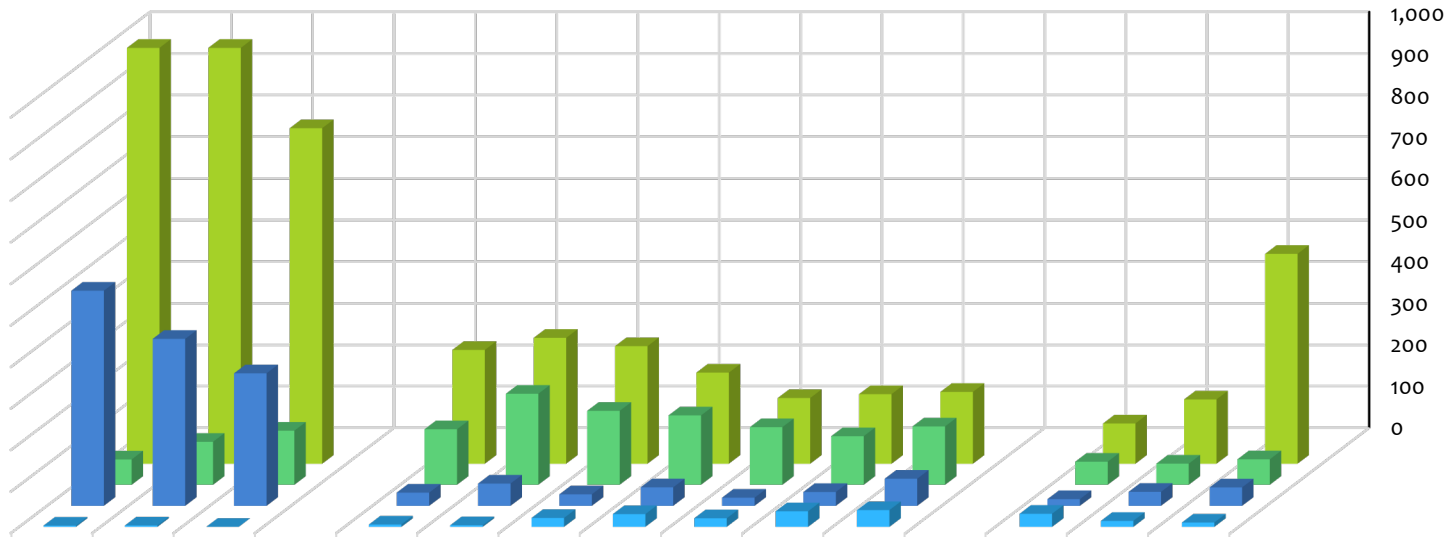
APPENDIX C

Central Saanich MCP - Island View Beach Area– VectoBac 200G Application Summary 2009 - 2021



	2009	2010	2011	CRD ditch clean Tsa flap gate repair	2012	2013	2014	2015	2016	2017	2018	CRD some ditch clean	2019	2020	2021
Central Saanich, sites #69 A,B	3.00	3.30	0.00		5.70	3.90	21.50	30.80	20.70	37.50	40.30		31.57	14.40	10.55
Central Saanich, sites #123	518.00	402.00	319.05		31.80	53.60	27.77	44.55	19.60	33.40	65.30		16.10	33.65	44.40
CRD, sites #66, #68	61.00	103.50	130.20		133.70	219.20	178.01	167.01	138.70	117.01	140.52		55.61	50.95	61.31
Tsawout, site #34	1063.00	1017.80	807.00		274.10	303.10	283.12	219.39	158.21	167.56	172.91		96.92	154.90	505.20
Totals	1645.00	1526.60	1256.25		445.30	579.80	510.40	461.75	337.21	355.47	419.03		200.20	253.90	621.46

Aqua-Tex
Scientific Consulting Ltd. (1993)

390-7th Avenue,
Kimberley, B.C. V1A 2Z7
Tel: (250) 427-0260
Fax: (250) 427-0280
e-mail: aqua-tex@islandnet.com

201-3690 Shelbourne St
Victoria, B.C. V8R 4H2
Tel: (250) 598-0266
Fax: (250) 598-0263

MEMO

To: Marc Solomon, CRD Regional Park Operations Supervisor – North District

From: Tracy Motyer, B.Sc., R.B. Tech., Biology Technician
Patrick Lucey, M.Sc., R.P. Bio, Sr. Aquatic Ecologist
Cori Barraclough, M.Sc., R.P. Bio., PMP, Freshwater Ecologist

Re: Island View Beach Ditch Maintenance 2021

Date: July 8, 2021

This memo outlines the findings of the most recent site visit to Island View Beach Regional Park on Monday July 5, 2021 (11:45 a.m. – 3:30 p.m.) by Aqua-Tex staff members Tracy Motyer (R.B. Tech) and Patrick Lucey (R.P Bio). The findings have been reviewed by Cori Barraclough (R.P. Bio).

At the time of assessment, the tide was 1.3 m and rising with low tide having occurred at 8:45 a.m. and high tide occurring at 5:45 p.m. at Sidney tide station (Figure 1). The rising tide did not enable viewing of the tide gate structure, but the higher water level did make observations of 'high points' in the ditch inverts more easily visible.

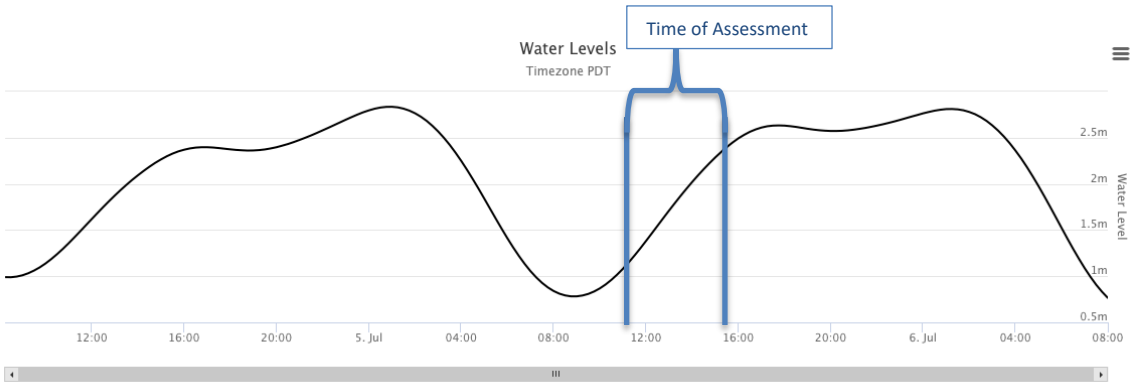


Figure 1. Tidal cycle for Saanichton Bay, July 5, 2021.

The channel conditions in 2021 were much the same as they were in 2020. Additional vegetation growth was noted in most of the channels, but it was generally minimal and not as drastic as the growth observed between 2019 and 2020. Vegetation in the channels was lush and vigorous, but generally did not appear to be causing any major impediments to flow as on close inspection the ditches all maintained relatively open areas within the thalweg of channels. However, given the

plant growth, maintenance has been proposed to remove vegetation in select areas to ensure that drainage does not become impeded in the future.

The higher tide during the 2021 assessment allowed for the easy identification of three isolated areas where the channel bottom appeared higher than upstream areas, as a result of sediment build up, and may be contributing to retention of additional surface water. These areas of sediment build up include: the junction between the middle and downstream end of Ditch 2, the middle of Ditch 5 and the downstream end of the Lamont Road right-of-way ditch.

Trails were generally accessible in good condition, with only minor hand-clipping required in some areas. This enabled good access to ditches for this assessment. The only ditch where the surrounding shrubs are growing in, to the point where access to the channel for assessment is challenging, is in Ditch 1. The most upstream end of Ditch 1 required cutting a trail through dense shrubs at select points along the channel. The middle portion of Ditch 1 was completely inaccessible due to dense shrubs and hand cutting trails was not practical. Though these shrubs restrict access for assessment, they also shade the channel and generally, areas where the channel is shaded by overhanging vegetation do not need maintenance. If access is needed here, vegetation should be trimmed back from the north bank, retaining as much shade as possible.

Selected photos, most with comparisons to last year, are provided in the following pages. As much as possible, photos remain in the same order as previous years with a few additional photos provided where maintenance is proposed. Comments on channel conditions and proposed maintenance are described below the photos.

Summary of proposed maintenance for summer 2021:

- Ditch behind the campground. Channel maintenance should be conducted as in previous years removing only vegetation growing in channel bottom using a ‘checker board’ pattern to create a clear path through the vegetation without removing all of the vegetation.
- Confluence of the Lamont Road right-of-way and Ditch 4. Minor removal of vegetation in channel.
- Ditch 4. Removal of vegetation in bottom of channel in three isolated spots not covered by overhanging vegetation.
- Downstream end of the Lamont Road right-of-way ditch, immediately upstream of culvert, removal of built-up sediment in the channel bottom. Check grade with a laser level. Thinning of vegetation in channel bottom using a ‘checker board’ pattern in the middle section of the Channel.
- Ditch 1 middle section to confluence with Ditch 3. Removal of vegetation in bottom of the channel using a ‘checker board’ pattern.
- Confluence of Ditch 1 and Ditch 3. Removal of vegetation clump at the confluence.
- Confluence of Ditch 2 and Ditch 3. Removal of vegetation in the bottom of the channel around the confluence.
- Ditch 2. Check grade with a laser level and remove any high points in the channel. If necessary, regrade the channel to create a constant slope, particularly in the middle and upper portions of the channel. Care should be taken to not over excavate the channel bottom.

- Ditch 5. Check grade with a laser level and remove any high points in the channel, particularly in the middle of the channel. If necessary, regrade the channel to create a constant slope. Care should be taken to not over excavate the channel bottom.

Of note, when the ditch maintenance occurred in previous years, some of the material was side-cast on to the berms, rather than being spread out. It is important to spread the material out wherever possible to avoid raising the berms and potentially restricting drainage from the meadows.

Summary of other observations:

- A significant amount of iron bacteria (rust-coloured biofilm) was noted in the channels, more then was observed in previous years.
- The assessment was undertaken on a rising tide. Many of the ditches contained surface water at the time of assessment. Soil moisture was low south of Ditch 1, soil moisture was high north of Ditch 1. The amount of new plant growth in 2021 was not as significant as 2020.
- No emergency or concerning impediments to flow were observed, but select areas have been identified for maintenance this year to ensure good drainage through the remainder of summer and into the fall.
- The trails remained in good condition this year, with only minor hand clipping of vegetation required to access most channels. The only channel where access is becoming challenging is Ditch 1. One area that could not be accessed was the middle of Ditch 1. If access is created for Ditch 1, clearing should be undertaken on the north bank to retain as much shade as possible.
- No especially invasive weeds such as hound's tongue or purple loosestrife were observed this year. Thistles, blackberry and other "common" weeds are present.
- Mosquitos presence was high in the northwest corner of the site, around Ditches 1, 2, 5 and the upstream end of Ditch 3.

A .kmz file of the track that was walked, as well as associated GPS-referenced photos, is provided as a supplement to this report. The .kmz file includes many more photos than are provided in this memo.

Figure 2. Overview aerial photograph showing the location of the ditches at Island View Beach.

Figure 3. Campground ditch, July 5, 2021.

The south portion of the ditch adjacent to the campground has dense vegetation present. Vegetation in this portion of the ditch should be thinned out using the ‘checkerboard pattern’.

Figure 4. Campground ditch July 5, 2021.

The middle portion of the ditch, from the trail crossing culvert to the north end of the campground has some vegetation growth, but a clear pathway for water flow is present. The ‘checkerboard pattern’ is still visible from previous work. No maintenance is needed here.

Figure 5. Campground ditch July 5, 2021.

Figure 6. Campground ditch July 7, 2020

The northern portion of the ditch north of the campground, from the Lamont Road ROW to the trail crossing culvert, has grown in with vegetation. Vegetation in this ditch should be thinned out using the 'checkerboard pattern'.

Figure 7. Lamont Road ROW ditch, downstream end, July 5, 2021.

Figure 8. Lamont Road ROW ditch, downstream end, July, 7, 2020.

Looking west along the Lamont Road right of way ditch. The downstream end of this ditch was dry, but some impounded water was observed further upstream indicating that there is some sediment build up at the downstream end of this ditch. Sediment should be removed from the downstream portion of this ditch. A laser level would be helpful to regrade the channel without over excavating the bottom.

Figure 9. Downstream third of the Lamont ROW ditch, July 5, 2021

Figure 10. Vegetation in downstream third of the Lamont ROW ditch, July 5, 2021.

Vegetation in the lower third of the Lamont ROW ditch is growing in, however there is still space within to allow for passage of water. Some bank sloughing on the sparsely vegetated north bank was also observed. Sediment removal in the downstream portion of this ditch should create better drainage. If vegetation thinning is also required, it should be thinned out using the 'checkerboard pattern'.

Figure 11. Middle of the Lamont Road ROW ditch July 7, 2021.

Standing water is present in the middle of the Lamont Road ROW ditch, this appears to be a consequence of sediment build-up at the downstream end. Vegetation does not appear to be impeding water in the ditch. No specific maintenance is required here.

Figure 12. Confluence of Lamont Road ROW and Ditch 4 July 5, 2021.

Figure 13. Confluence of Lamont Road ROW and Ditch 4 July 5, 2021.

The confluence of the Lamont Road ROW and Ditch 4 is largely clear of vegetation, the majority of the veg is overhanging grasses from the banks and is not impeding flow, but there is one clump of vegetation at the confluence which should be removed.

Figure 14. Ditch 4 at confluence with Lamont Rd ROW July 5, 2021

Figure 15. Ditch 4 at confluence with Lamont Rd ROW July 7, 2020.

Looking upstream (north) along Ditch 4 from the Lamont Road ROW confluence there is one clump of vegetation at the confluence that should be removed and also a second clump of vegetation in Ditch 4 about 20m upstream of the confluence which should be thinned using the 'checkerboard pattern'.

Figure 16. Ditch 4, 20m upstream of confluence with Lamont Rd ROW, July 5, 2021.

Second clump of vegetation in Ditch 4 about 20m upstream of the confluence which should be thinned using the ‘checkerboard pattern’.

Figure 17. Ditch 4 July 5, 2021.

Third clump of vegetation near the middle of which should be thinned. This is a short open stretch in the middle of the channel where it is not shaded by overhanging vegetation. Though it doesn't appear to be impeding flow at this time, this vegetation clump should be thinned using the 'checkerboard pattern' to the extent it can be accessed with a machine.

Figure 18. Downstream end of Ditch 1 July 5, 2021

Figure 19. Downstream end of Ditch 1 July 7, 2020

The downstream end of Ditch 1 is clear. There are some overhanging grasses, but no impediment to flow. No maintenance is required here.
The downstream middle of Ditch 1 has grown over with dense shrubs and was not possible to access for inspection. However, generally overhanging shrubs provide shade and prevent growth of vegetation in the channels, so it is unlikely that there are any maintenance requirements. If access is needed, clearing should be undertaken on the north bank, to retain as much shade as possible.

Figure 20. Middle of Ditch 1 July 5, 2021

Figure 21. Middle of Ditch 1 July 7, 2020.

The middle of Ditch 1 is vegetated with bulrush (*Scirpus lacustris*). Though flow is does not appear to be impeded at this time, this vegetation should be thinned using the 'checkerboard pattern'.

Figure 22. Middle of Ditch 1, July 5, 2021.

Above photo shows the bottom of Ditch 1 where the channel is vegetated with bulrush. Water does not appear to be impeded by this vegetation, but it should be thinned using the ‘checkerboard pattern’.

Figure 23. Confluence of Ditch 1 and Ditch 3, July 5, 2021.

Figure 24. Confluence of Ditch 1 and Ditch 3, July 7, 2020.

There is some vegetation growing in at the confluence of Ditch 1 and Ditch 3. The vegetation does not appear to be impeding flow at this time, but should be moved to keep the confluence clear.

Figure 25. Ditch 3, July 5, 2021.

Figure 26. Ditch 3, July 7, 2020.

The northern arm of Ditch 3 that crosses the wet meadow running east-west is largely clear of vegetation in the channel and does not require maintenance this year.

Figure 27. Ditch 3 under dense vegetation canopy. July 5, 2021

Figure 28. Ditch 3 under dense vegetation canopy. July 7, 2020.

Ditch 3 under dense canopy in the middle of the channel is shaded and clear. The shade continues to effectively inhibit vegetation growth in the channel.

Figure 29. Confluence of Ditch 2 and Ditch 3. July 5, 2021.

Figure 30. Confluence of Ditch 2 and Ditch 3. July 7, 2020.

Ditch 3, immediately downstream of the confluence with Ditch 2 is growing in with grasses. Vegetation in the channel bottom around this confluence should be removed.

Figure 31. Northern end of Ditch 2. July 5, 2021.

Figure 32. Northern end of Ditch 2. July 7, 2020.

The northern half of Ditch 2 contained standing water, but the vegetation had not grown-in to a point where it was blocking flow and a clear pathway for water was visible. Vegetation growth does not appear to be the issue, but this ditch is quite long and extremely low gradient, so it may be able to benefit from some regrading with a laser level to create a constant slope. However, care should be taken not to over excavate it and exacerbate the grade issue.

Figure 33. Middle of Ditch 2. July 5, 2021.

Figure 34. Middle of Ditch 3. July 7, 2021.

The middle of Ditch 2 also contained standing water, but again the vegetation had not grown-in to a point where it was blocking flow and a clear pathway for water was visible. As with the upper reach, vegetation does not appear to be the issue here, rather the low gradient of the channel holds some water. Though this channel did not have any high, dry spots, it appears that there is some sediment buildup in the lower portion of this reach. This area may be able to benefit from some regrading with a laser level to create a constant slope. However, care should be taken not to over excavate it and exacerbate the grade issue.

Figure 35. Downstream end of Ditch 2. July 5, 2021.

Figure 36. Downstream end of Ditch 2. July 7, 2020.

The downstream end of Ditch 2, near the confluence with Ditch 1, was similar to the rest of the channel with respect to vegetation being present, but not appearing to impede flow. This segment also contained water, but it had visible flow and appeared to be readily draining into Ditch 1. No specific maintenance is required in this reach.

Figure 37. Western end of Ditch 5. July 5, 2021

Figure 38. Western end of Ditch 5. July 7, 2021.

The western end of Ditch 5 has vegetation growing in the channel and is slowly filling in. Similar to Ditch 2, vegetation growth in Ditch 5 does not appear to be impeding water flow. Since the tide was high, the channel was holding water and a dry, high point was identified near the middle of the channel. This high point should be removed and this channel should be checked with a laser level and regraded if necessary to create a constant slope. However, care should be taken not to over excavate the channel.

Figure 39. Middle of Ditch 5. July 5, 2021.

A high, dry point was identified in the middle of Ditch 5. This area of accumulated sediment should be removed.

Figure 40. Eastern end (upstream end) of Ditch 5. July 5 2021.

Figure 41. Eastern end (upstream end) of Ditch 5. July 7 2020.

The eastern end (upstream portion) of Ditch 5 contained some standing water. Vegetation in the channel did not appear to be impeding flow. Water appeared to be impounded by accumulated sediment in the middle of the ditch. Once the sediment downstream is removed, no further maintenance is anticipated on this upper portion of the ditch.

Figure 43. Ditch on Tsawout land. July 5, 2021.

Figure 42. Ditch on Tsawout land. July 7, 2020.

The ditch on Tsawout land which parallels the chain link fence on private property. In contrast to previous years, visible flow was present in this ditch and the water level appeared lower in 2021. This ditch should be monitored to ensure that positive drainage continues.

Figure 44. Ditch on Tsawout land. July 5, 2021.

Figure 45. Ditch on Tsawout land. July 7, 2020.

The ditch that drains through Tsawout land toward the ocean. In contrast to previous years, visible flow was present in this ditch and the water level appeared lower in 2021. This ditch should be monitored to ensure that positive drainage continues.

Figure 46. Trash rack upstream of tide gate. July 5, 2021.

Figure 47. Trash rack upstream of tide gate. July 7, 2020.

The tide was high at the end of the 2021 assessment, the tide gate was submerged and there was water impounded at the trash rack. There did not appear to be any excessive debris accumulation or impediments to drainage.

APPENDIX E

Central Saanich

1903 Mt. Newton Cross Road | Saanichton, BC Canada | V8M 2A9 | 250.652.4444

September 21, 2021 File No. 0400-60/21

Capital Regional District Board
625 Fisgard Street, PO Box 1000
Victoria, BC V8W 2S6

Re: Island View Beach Flapper Gate Replacement Study Funding

At their September 20, 2021 Regular Meeting, the Municipal Council of the District of Central Saanich passed the following motion:

> ***WHEREAS*** *the management of Island View Beach ditches resulted in situation which did not adequately control and abate mosquito breeding in the engineered ditches within the Regional Park;*
>
> ***AND WHEREAS*** *part of the necessary infrastructure for controlling the inflow and infiltration of sea water into the Island View Regional Park constructed ditch system includes a flapper gate constructed in or about 1936 and located on SȾÁUTW First Nation between Island View Beach Regional Park and TW̱EN (Cordova Spit) [which is presently owned by Central Saanich until it is formerly transferred to SȾÁUTW as previously directed by council in 2017]; and*
>
> ***AND WHEREAS*** *the District of Central Saanich is committed to continued relationship and capacity building with SȾÁUTW First Nation in the spirit of reconciliation;*
>
> ***THEREFOREBE IT RESOLVED*** *that the District of Central Saanich contribute funding toward a feasibility study for replacement of the aforementioned flapper gate (to a maximum of $15,000).*
>
> ***BE IT FURTHER RESOLVED*** *that the District write to the Capital Regional District Board requesting that the Board consider authorizing an equivalent amount to the funding provided by the District (up to a maximum of $15,000) for the feasibility study.*

Should you have any questions with respect to the above, please do not hesitate to contact the undersigned at 250-544-4202.

Sincerely,

Emilie Gorman
Director of Corporate Services/Corporate Officer

cc: Christine Culham, CAO, District of Central Saanich
Larisa Hutcheson, General Manager, Parks & Environmental Services
Jeff Leahy, Senior Manager, Regional Parks