



COLUMBIA SHUSWAP REGIONAL DISTRICT

Regular Board Meeting

LATE ITEMS AGENDA

Date: Thursday, February 15, 2018
Time: 9:30 AM
Location: CSR D Boardroom
555 Harbourfront Drive NE, Salmon Arm

Pages

3. Delegations

***3.1 10:00 AM: Kamloops Okanagan Dairymen's Association (KODA)**

1

Mr. Henry Bremer, President, KODA, in attendance to extend an invitation to the Board to attend a farm tour and luncheon and to discuss agriculture contribution to the region.

***KODA speakers Todd Born and Scott DeBoer will be in attendance**
Farm Tour Date: Thursday, April 5, 2018

***3.3 10:30 AM: Urban Systems Ltd.**

4

Mr. John Dumbrell in attendance to present a brief overview of the final report, findings and recommendations - South Revelstoke (Electoral Area B) Diagnostic Inventory of Planning, Service Delivery and Governance Final Report

***Summary of presentation included on Late Agenda.**

Related to The South Revelstoke (Electoral Area B) Diagnostic Inventory of Planning, Service Delivery and Governance Final Report , report from Jan Thingsted, Item 10.2 to immediately follow presentation.

4. Correspondence

***4.4 Ministry of Agriculture (February 9, 2018)**

26

Letter from Jennifer Dyson, Chair, Minister's Advisory Committee on Revitalizing the ALR and the ALC, seeking input from farmers, ranchers, agricultural industry groups and stakeholders on revitalizing the ALR and the ALC.

Motion

THAT: the correspondence contained on the February 15, 2018 regular Board agenda be received for information.

Motion

THAT: electoral Area Directors can attend meeting. Per diem and mileage will be covered.

5. Reports

***5.1 Revelstoke and Area Economic Development Commission Meeting Minutes 43**

Motion

THAT: the minutes of the December 7, 2017 Revelstoke and Area Economic Development Commission be received for information.

6. Business General

***6.3 Shuswap Tourism Creative Production Strategy Contract Award 46**

Report from Robyn Cyr, Economic Development Officer (EDO), dated February 13, 2018

Motion

THAT: the Board empower the authorized signatories to enter into an agreement with Destination Think Consulting to develop the Shuswap Tourism Creative Production Strategy for the amount of \$30,200.

***6.4 Shuswap Tourism Digital Marketing Promotion Project Contract Award 66**

Report from Robyn Cyr, Economic Development Officer (EDO), dated February 13, 2018

Motion

THAT: The Board empower the authorized signatories to enter into an agreement with Destination Think Consulting to develop the Shuswap Tourism Digital Marketing Promotion project for the amount of \$32,425.00.

7. Business By Area

***7.6 Request for Letter to Ministry of Transportation and Infrastructure regarding Improvement for Snow Removal Services in Electoral Areas, CSRD.**

Requested by Director Demenok.

Motion

THAT: the CSRD Board send a letter to the Minister of Transportation to outline issues and areas affected and invite them to a meeting with those affected.

Motion

THAT a resolution to SILG Abe developed.

11. Development Services Bylaws

*11.1 **Electoral Areas B, E and F: Building Bylaw No. 660 (CSRD)**

85

Report from Gerald Christie, Manager Development Services, dated February 13, 2018.

A bylaw to regulate building construction in Electoral Areas B, E and F and to replace existing Building Regulation Bylaw No. 630.

Motion

THAT: Second and Third readings given to “Building Bylaw No. 660” on the 18th day of January, 2018 hereby be rescinded, this 15th day of February, 2018.

Motion

THAT: “Building Bylaw No. 660” be read a Second time, as amended, this 15th day of February, 2018.

Motion

THAT: “Building Bylaw No. 660” be read a Third time, this 15th day of February, 2018.

Motion

THAT: “Building Bylaw No. 660” be adopted, this 15th day of February, 2018.

Motion

THAT: the Board resolve that for the purposes of clarification and enforcement of Bylaw No. 660 that every complete building permit application received for Electoral Area F prior to March 5, 2018 will be addressed by the CSRD through Building Regulation Bylaw No. 630.

12. ALR Applications

*12.1 **Electoral Area C: Agricultural Land Commission (ALC) Application Section 30 (1) Exclusion from the ALR - LC2545 (Shuswap Lake Estates Ltd. & Shuswap West Development Ltd.)**

140

Report from Dan Passmore, Senior Planner, dated January 23, 2018.
Balmoral Road, Blind Bay.

Revised Board report (Implementation section) attached to the Late Agenda.

Motion

THAT: Application No. LC2545, Section 30 (1) Exclusion, for Part SW 1/4, Section 8, Township 22, Range 10, West of the 6th Meridian, Kamloops Division Yale District, Except Plans 36962, H425, H944, KAP58710, KAP67184, and EPP3456, be forwarded to the Provincial Agricultural Land Commission with the recommendation of approval on this 15th day of February, 2018.

Motion

THAT: a letter from the Chair to ALC noting significant favour and the expense are convinced to deliver a sewer system in this area.

***12.2 Electoral Area E: Agricultural Land Commission (ALC) Application Section 21(2) - Subdivision LC2548E (Milliken)**

Application has been removed at the request of the applicant/agent.

15. Planning Bylaws

***15.3 Electoral Area D: Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02 & Ranchero / Deep Creek Zoning Bylaw No. 751**

490

Report from Jan Thingsted, Planner dated February 2, 2018.
Ranchero / Deep Creek, Electoral Area D

Motion

THAT: "Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02" be read a second time, as amended, this 15th day of February, 2018.

Motion

THAT: "Ranchero / Deep Creek Zoning Bylaw No. 751" be read a second time, as amended, this 15th day of February, 2018.

Motion

THAT: a public hearing to hear representations on "Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02" and "Ranchero / Deep Creek Zoning Bylaw No. 751" be held;

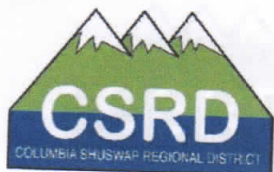
AND THAT: notice of the public hearing be given by the staff of the Regional District on behalf of the Board in accordance with Section 466 of the Local Government Act;

AND FURTHER THAT: the holding of the public hearing be delegated to Director Rene Talbot, as Director of Electoral Area D being that in which the land concerned is located, or Alternate Director Joy de Vos, if Director Talbot is absent, and the Director or Alternate Director, as the case may be, give a report of the public hearing to the Board.

17. Upcoming Meetings/Events

***17.2 Area A Local Advisory Committee Meeting**

Tuesday, February 27, 2018 6:00 - 8:00 PM meeting has been CANCELLED.



REQUEST TO APPEAR AS A DELEGATION

Name of Person or Organization:	Kamloops Okanagan Dairy Farmers Association (KODA)
Topic of Discussion:	An invitation to attend on farm tour and lunch to discuss agriculture contribution to the region
Purpose of Presentation:	<div> <input type="checkbox"/> Information Only <input type="checkbox"/> Requesting Support <input type="checkbox"/> Requesting Funding <input checked="" type="checkbox"/> Other (provide details) </div> Renew Agriculture's relationship with local governments Cover letter attached
Contact Information:	Note: A letter outlining the Request or the Information must accompany the Delegation Request form. Address: 1105 Grayston Rd Enderby BC V0E 1V3 Phone Number: 250 833 5844 Email Address: char.lorne84@gmail.com Contact person: Lorne Hunter
Meeting Date Requested:	Feb 15

Presentation Materials- Delegation Request forms and Supporting documentation **are due to** Corporate Administration Services for the agenda package **by 9am on the Tuesday one full week before the meeting**. If you wish to include a PowerPoint presentation within the Board Agenda package, in order to provide an opportunity for the Board members to review the information prior to the Board meeting date, please submit it by 9am Tuesday, prior to the meeting. Alternately, a PowerPoint presentation may be made at the Board meeting, provided you have supplied it to the CSRD offices at least three days prior to the actual meeting (the Monday prior to the meeting).

Send your completed **Request to Appear as a Delegation Form** to:

Columbia Shuswap Regional District
 Attention: Deputy Manager of Corporate Administration
 via email: admin@csrd.bc.ca
 or to: PO Box 978, Salmon Arm BC V1E 4P1
 or via Fax: 250-832-3375

Your delegation is not confirmed until you are contacted by CSRD staff to confirm your place on the agenda. Please note that your Delegation request may not necessarily be approved for the date requested due to a maximum number of delegations, other commitments, or a particularly heavy Board Agenda of business items.

Please note the following information:

1. A fifteen (15) minute time limit is in effect regardless of the number of people in your delegation who wish to speak. Try to leave time for questions.
2. The name of the person and/or group will be published in the agenda and minutes (available to the public and on the CSRD website).
3. If your supporting material is not published in the agenda, bring sufficient handouts for the Board members and staff (15 copies minimum).
4. An immediate answer to your question may not be provided. The request or issue may be referred to staff for more information or to another meeting for further consideration, or it may simply be received.
5. Delegations with regard to any aspect of an Official Community Plan, Zoning or Land Use application/plan are prohibited between the conclusion of the Public Hearing and the Adoption of the bylaw.
6. All communication and petitions intended to be presented to the Board must be legibly written, typed, or printed; signed by at least one person; dated; and include a contact phone number or address before being accepted.

Other Suggestions

- Arrive 15 minutes in advance of your delegation start time.
- Turn off cell phones and pagers.
- Be prepared and speak clearly.
- Keep your presentation brief and to the point.
- Provide the Recording Secretary with any relevant notes if they have not been handed out or published in the agenda.

For Office Use Only:

Approved ☐ Declined ☐ Other ☐

Appearance Date: _____

Applicant informed of appearance date on: _____

Date: _____

By: _____

January 19, 2018

Kamloops Okanagan Dairymen's Association, (KODA), represents the eighty dairy farms in the North Okanagan, Shuswap region. Encompassing an area stretching from Wallacheen to Edgewood with the bulk of our members living and operating their farms in the Salmon Arm, Enderby, and Armstrong area. We provide representation for our members to the provincial and federal governments with a number of our members serving on select committees at the request of the ministries of these two levels of government.

With local and regional government now being expected to do more of the legwork of the two senior levels of government. KODA feels it's time for our organization to renew our relationship with local government, and demonstrate our considerable contributions to the region's economy to the elected officials and senior staff of our region. Because our membership base farms in four regional districts, one municipality, four cities and two villages we would like to offer a day of learning for our elected officials. Starting with a farm tour showing the growth and structural changes of our farm sector, the responsibility our members take to the environment, to the social expectations of our businesses, and how we care for our animals, for our soils, and the people who work with and for us. Followed by a sit down lunch with farmers, elected officials and support businesses and a presentation of how interactive our farm sector is with local businesses within all of the political boundaries in our area.

We are inviting all the elected officials, their staff from local and regional government, our two MLA's, our federal MP and we have extended an invitation to our Minister of Agriculture Ms. Lana Popham to attend. It is our intention to provide bus transportation starting from Salmon Arm and from Vernon to collect those wishing to attend, several of our members will be on the buses for one on one discussions of question that should arise from the day's topics.

We are aiming for a date in the first week of April, not yet finalized, so the weather will be gentler for the on farm tours and our MP, MLA's and the Minister are not sitting in legislature. We will be looking for numbers of who will be attending by March 15 so we can arrange transportation and lunches.

Respectfully submitted

Henry Bremer

President KODA

Image © Stuart Madden

South Revelstoke Diagnostic Inventory

CSRD Board Meeting

February 15, 2018

Presented by:

John Dumbrell



URBAN
systems



**CITY OF
REVELSTOKE**



**BRITISH
COLUMBIA**

URBAN
systems

Motivation for Diagnostic Inventory

- Individual requests for boundary extension
- Case-by-case review
- Current approach makes long-term planning challenging
- Need for baseline information on governance and service delivery to help inform a City-CSRD strategy on boundary extension

Our Process



What this Study is *Not*

- Development or analysis of options for boundary extension
- Recommendation for or against boundary extension



Study Area

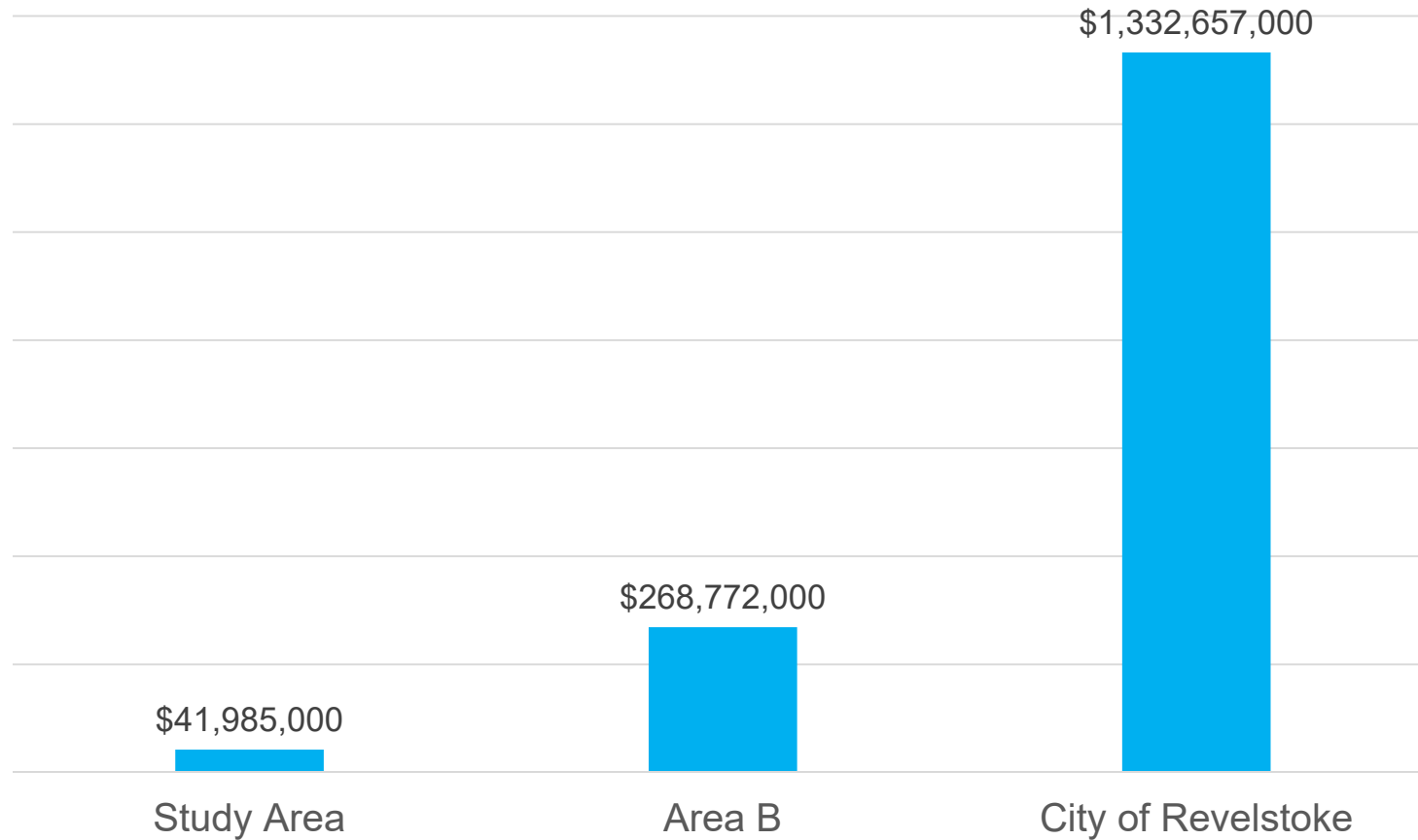


Local Government

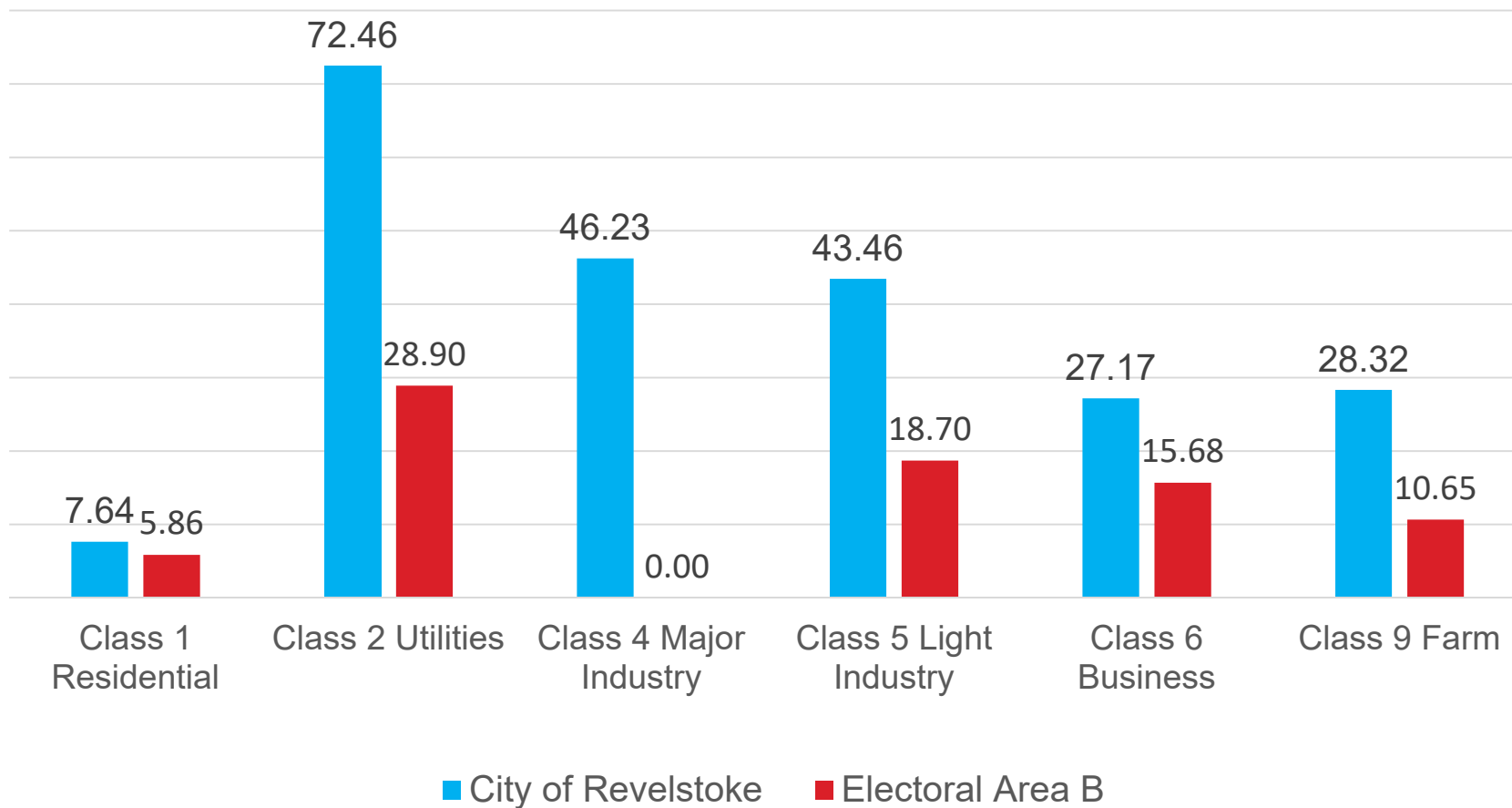
- Part of Electoral Area B
- Local government through CSRD (Electoral Area B Director)
- Local services provided by:
 - Province
 - CSRD
 - City (through contract with CSRD)



2017 Property Assessments



2017 Tax Rates



History of Boundary Extensions

Mid-2000s	Revelstoke Mountain Resort base
2008	Area B OCP (incl. recognition of resort potential of Upper Bench Lands)
2015	Camozzi Road property (Tree House Hotel)
2016	Thomas Brook community
Ongoing	Requests for boundary extension study

Community Engagement

Activity	South Revelstoke Residents	City Residents	Other
Community Meeting	59	64	7
Online Survey	191	335	n/a



Community Meeting - Themes

- Financial
 - Tax impacts
 - Cost of infrastructure connection
- Process
 - Definition of study area
 - Survey format and questions
 - Process for formal boundary extension consideration

Community Meeting – Themes

(continued . . .)

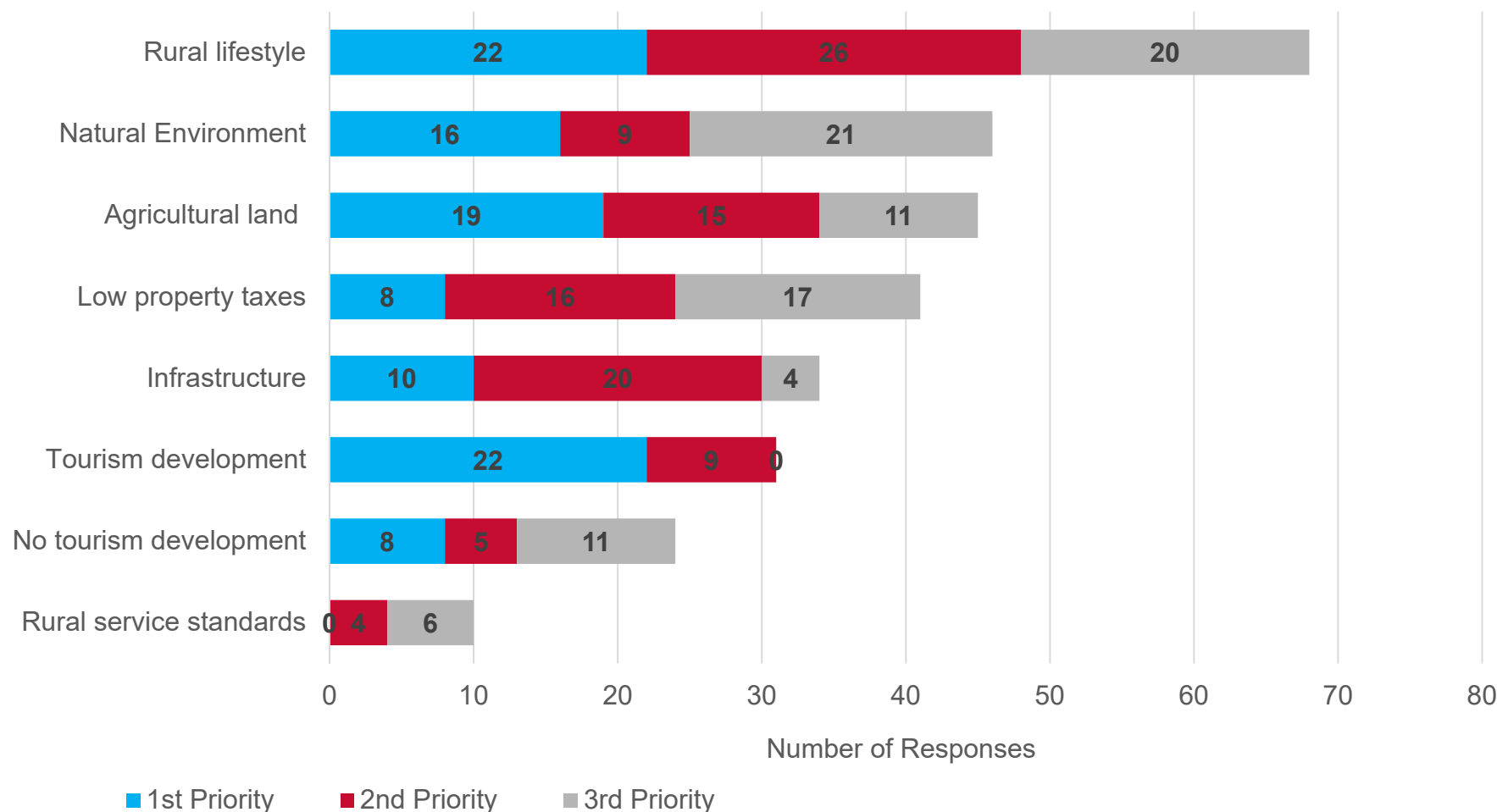
➤ Land Use

- Development sprawl
- Land use regulation without and with extended boundaries

➤ Other Themes

- Agricultural land protection
- Development impacts on groundwater
- Housing availability
- City debt capacity

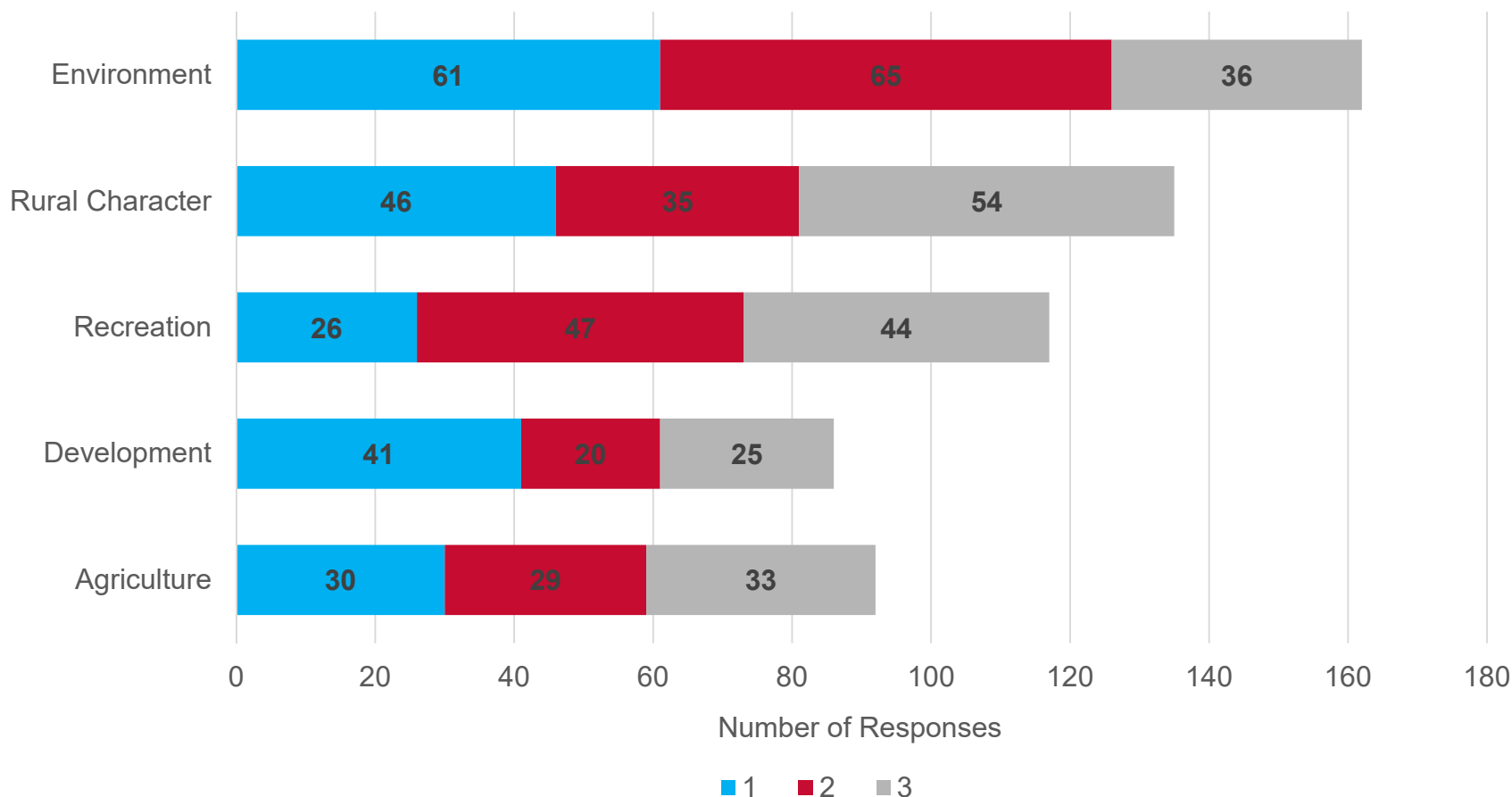
Online Survey Responses – South Revelstoke Study Area Priority Ranking



Online Survey Responses – South Revelstoke Study Area *(continued . . .)*

- Retain Agriculture?
 - 50% say important; 42% say unimportant
- More Development?
 - 61% say no; 38% say yes
- More Services?
 - 48% say no; others would like City water and sewer and curbside garbage collection (including recycling)
- More Taxes
 - 56% say no; 44% say yes

Online Survey Responses – City of Revelstoke Study Area Priority Ranking



Online Survey Responses – City of Revelstoke Study Area *(continued . . .)*

- Retain Agriculture?
 - 59% say important; 32% say unimportant
- More Development?
 - 55% say no; 42% say yes

Conclusions

- Boundary extension polarizing issue in study area and City
- Some want more development and services (including City utilities)
- Others want rural character and lower taxes
- Apparent that boundary extension to full study area would not be supported by majority

Potential Next Steps

- Formal mail-out survey to gauge interest in boundary extension study
- Recommend boundary extension study to Province
- City – CSRD agreement on fringe area management
- Combinations of above

Recommendations

- City – CSRD communication protocol for boundary extension and land use proposals
- Future land use plans – City housing market demand; CSRD Electoral Area B OCP focus on City/South Revelstoke interface
- Boundary extension applications – comprehensive, and contiguous to City
- If boundary extension study undertaken, joint CSRD – City initiative



Thank you!

Questions?

John Dumbrell

Hayley Graham

From: ALR and ALC Revitalization AGRI:EX <ALR_ALCRevitalization@gov.bc.ca>
Sent: Friday, February 9, 2018 3:10 PM
To: Inquiries
Subject: Stakeholder Meeting Invitation: Revitalization of the Agricultural Land Reserve and Agricultural Land Commission
Attachments: Kamloops - ALR ALC Revitalization Stakeholder Invitation - February 9, 2018.pdf; Discussion Paper - ALR and ALC Revitalization - February 2018 Final.pdf

Dear Agriculture Stakeholder,

The Minister of Agriculture's Advisory Committee has invited you to participate in a regional stakeholder meeting (invitation attached). This email confirms the date and location.

Meeting Date: Thursday, March 1, 2018

Meeting Location: Sandman Signature Kamloops Hotel, 225 Lorne St, Kamloops

Please RSVP by February 20, 2018 to the Advisory Committee at: ALR_ALCRevitalization@gov.bc.ca. Please indicate your preference for a morning, mid-day or afternoon meeting time. The Advisory Committee will do its best to accommodate your preference. Each meeting will be scheduled for approximately one hour. Please note you may share meeting time with other stakeholders if needed.

The Advisory Committee envisions conversation-style meetings, with short presentations by stakeholders if needed. Stakeholders are welcome to leave the Committee with other presentation material for the Committee's consideration.

Written submissions are also encouraged to the Advisory Committee by email and mail, and an online public survey is also available via the BC Government's engagement website. Please follow this link to the engagement webpage: <https://engage.gov.bc.ca/agriculturallandreserve>.

Further details are provided in the invitation attached to this email. The Minister's Advisory Committee looks forward to meeting with you and hearing your views on this important topic.

Sincerely,
 Jennifer Dyson
 Chair, Minister's Advisory Committee
 ALR and ALC Revitalization

February 15, 2018

GC
CP

RC

<input type="checkbox"/> CAO <input checked="" type="checkbox"/> Works <input checked="" type="checkbox"/> DS <input type="checkbox"/> Fin/Adm	<input checked="" type="checkbox"/> Agenda <input checked="" type="checkbox"/> Reg Board <input type="checkbox"/> In Camera <input type="checkbox"/> Other Mtn	Ownership: File#
<input checked="" type="checkbox"/> Ec Dev <input type="checkbox"/> IT <input type="checkbox"/> Parks <input type="checkbox"/> SEP <input type="checkbox"/> HR <input type="checkbox"/> Other	RECEIVED <input type="checkbox"/> Staff to Report <input type="checkbox"/> Staff to Respond <input type="checkbox"/> Staff Info Only <input checked="" type="checkbox"/> Mailbox <input type="checkbox"/> Circulate	Ack Sent: <input type="checkbox"/> Fax <input type="checkbox"/> Mail <input type="checkbox"/> Email

via email, please



February 9, 2018

File: 0280-30

Dear Stakeholder:

The Minister of Agriculture, the Honourable Lana Popham, has established an independent advisory committee to provide strategic advice and policy guidance on revitalizing the Agricultural Land Reserve (ALR) and the Agricultural Land Commission (ALC). The Minister's Advisory Committee (Advisory Committee) is responsible for delivering recommendations through consultation and engagement with stakeholders and the general public. The Advisory Committee is tasked with a forward-looking focus on the future of the ALR and ALC.

The Advisory Committee is seeking the input of farmers, ranchers, agricultural industry groups and other stakeholders across the province, to help inform their recommendations. It is the Advisory Committee's hope to change the conversation about agricultural land preservation from the short-term to the long-term in order to more fully support and enable agriculture in BC well into the future.

To guide consultation and engagement and support recommendations to the Minister, the Advisory Committee has identified three general ALR and ALC revitalization objectives:

1. Preserve the productive capacity of land in the ALR;
2. Encourage farming of land in the ALR for uses related to agriculture and food production; and,
3. Strengthen the administration and governance of the ALR and ALC to both increase public confidence and to ensure that land use regulation and land use decisions are preserving agricultural land and encouraging farming and ranching in the ALR.

You are invited to participate in a regional stakeholder consultation. Please refer to your email for the specific date, location and RSVP date. Please RSVP to:

ALR_ALCRevitalization@gov.bc.ca

If you cannot attend a consultation, other equally important opportunities for participation in this engagement include written submissions and an online survey, which is available via the BC Government's engagement website. Please follow this link to the engagement webpage:

<https://engage.gov.bc.ca/agriculturallandreserve>.

.../2

- 2 -

In order to help stimulate discussion, a Discussion Paper has been sent to you. This paper identifies some of the important themes the Advisory Committee would like to discuss, along with any other issues or ideas you would like to raise.

The Advisory Committee looks forward to meeting with you and hearing your views.

Sincerely,

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Jennifer Dyson, Chair
Minister's Advisory Committee on Revitalizing the ALR and ALC

Minister of Agriculture's Advisory Committee
Revitalizing the Agricultural Land Reserve and the Agricultural Land Commission
Discussion Paper for Stakeholder Consultation and Public Engagement

Minister of Agriculture's Advisory Committee

The Minister of Agriculture, the Hon. Lana Popham, was tasked in her mandate letter with "Revitalizing the Agricultural Land Reserve (ALR) and the Agricultural Land Commission (ALC)". To deliver on this important commitment, the Minister established an independent advisory committee to provide the Province with strategic advice and policy guidance.

The Minister announced the Minister's Advisory Committee (Advisory Committee) members on January 4, 2018. The Advisory Committee has been tasked with delivering to the Minister a set of interim recommendations by spring 2018. The guiding principles for the Advisory Committee's work include:

- Focus on the future of the ALR and ALC
- Evaluate policy issues that inhibit the purposes of the ALR and ALC
- Evaluate what is working well
- Develop recommendations that:
 - work toward improving the purposes of the ALR and ALC;
 - clearly identify the issues, goals and objectives that will strengthen the ALR and ALC in pursuing the purposes;
 - suggest a strategy on how to achieve the goals and objectives;
 - include, where possible, data/information that validates the issue as defined; and,
 - are legally sound and are achievable.

Stakeholder Consultation and Public Engagement

The Advisory Committee is responsible for delivering recommendations through consultation and engagement with stakeholders and the general public, with secretariat support from the Ministry of Agriculture (the Ministry). In examining measures to revitalize the ALC and ALR, stakeholders and the public will be asked to consider the purpose of the ALC as set out in Section 6 of the *Agricultural Land Commission Act* (the Act):

- (a) to preserve agricultural land;
- (b) to encourage farming on agricultural land in collaboration with other communities of interest; and,
- (c) to encourage local governments, first nations, the government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

The Advisory Committee consultation and engagement activities in early 2018 will include:

- Providing this background Discussion Paper with a view of seeking opinions and feedback on issues that will lead to the revitalizing of the ALR and ALC;
- Regional meetings to hear opinions and feedback directly from key stakeholders in farming and ranching communities. Meetings are expected to be held in Abbotsford, Cranbrook, Fort St. John, Kelowna, Kamloops, Nanaimo and Prince George; and,
- An online consultation process/survey to seek opinion and feedback from other stakeholders and interested parties.

The Advisory Committee will use the consultation process, along with other information, to develop its recommendations to the Minister. The recommendations may include changes to the current legislative, regulatory, and administrative framework that guides the ALR and the ALC.

It should be noted that this Discussion Paper is intended to stimulate conversation during the consultation process. It is not intended to direct participants toward specific issues, questions or outcomes.

Revitalization Objectives

To date, the Advisory Committee has identified three general objectives:

1. Preserve the productive capacity of land in the ALR;
2. Encourage farming of land in the ALR for uses related to agriculture and food production; and,
3. Strengthen the administration and governance of the ALR and ALC to both increase public confidence and to ensure that land use regulation and land use decisions are preserving agricultural land and encouraging farming and ranching in the ALR.

Common Issues/Themes

Upholding the integrity of the ALR, the ALC and the agricultural land base is critical. This conversation seeks to ensure there is a legacy of farmland for future generations of British Columbians. Common issues and themes raised to date include:

1. A Defensible and Defended ALR:

During the past 45 years, the ALR boundary has been refined through early boundary reviews, local government land use planning exercises and over 48,000 individual applications. The ALR boundary is often viewed as temporary and adjustable. The perspective that the ALR is available for urban uses perpetuates land use pressure on farmland. Continued speculation of this nature results in a focus on applications made by individual landowners to modify the ALR and detracts from pro-active work such as focussing on regional-level land use planning, analysis of permitted uses and the preservation and encouraging farm use mandate.

2. ALR Resilience:

Pressure for non-agricultural uses persists on the ALR land base and on the administrative body (the ALC) that oversees it. The ALR, ALC, and agriculture in BC should be stable and resilient for generations to come.

3. Stable Governance:

The ALC governance and decision making model can be easily changed through legislative amendments and changing government direction. The ALC's independence is often threatened from interests outside of the ALC. Independence is vital to strengthening the ALC and ALR into the future. More information about ALC governance can be found on the [ALC Operations & Governance](#) webpage.

4. Efficacy of Zone 1 and 2:

The passage of Bill 24 in May 2014 introduced amendments to the Act that included the division of the ALR into Zone 1 and Zone 2.

Zone 1: Includes Vancouver Island, South Coast, and Okanagan Panel regions.

Zone 2: Includes Interior, Kootenay, and North Panel regions.

In Zone 1, land use decisions are based on the agricultural purposes of the ALC laid out in section 6 of the ALC Act. The Act considers preservation of agricultural land, encouraging farming in collaboration with other communities of interest; and encourages local governments, First Nations, and other agencies to enable farm use and uses compatible with agriculture in their plans, bylaws and policies.

In Zone 2, the Commission is required to consider the agricultural purposes of the Commission (Section 6 of the Act as identified above), as well as Section 4.3 of the Act pertaining to economic, cultural and social values, and regional and community planning objections.

More information about Bill 24 amendments can be found on the [ALC Act and ALR Regulation](#) webpage. For example, the Regulation was amended to include additional uses that allow a residential lease for a retiring farmer to remain on their property subject to conditions, and to allow a second single family dwelling if the property is at least 50 hectares and subject to conditions of siting of structures.

5. Interpretation/Implementation of the Act and Regulation:

As drafted, parts of the Act and Agricultural Land Reserve Use, Subdivision and Procedure Regulation (the Regulation) are 'permissive', which means that it lists the activities that are permitted in the ALR without requiring approval of the ALC; it does not list what activities are not permitted. In some instances, definitions, criteria, thresholds, and intent of the Act and Regulation are interpreted differently by local governments, ALR land owners, farmers and ranchers and the general public across the province. There is a need for clearer regulations and consistency in interpretation. The ALC is not aware when a permitted activity takes place or when a permitted activity is misinterpreted.

6. Food Security and BC's Agricultural Contribution:

Concern over the source and quality of food we eat has raised public attention to the issue of food security and to the long-term ability of the ALR to provide a safe and adequate agricultural land base to accommodate continuous, secure food production for domestic consumption and export. Often agriculture's vital role in the BC economy and the potential for export and trade opportunities is forgotten in the discussion around competing land uses. More information on BC's Agrifood and Seafood Sector contributions can be found on the [Ministry of Agriculture's Agriculture and Seafood Statistics](#) webpage.

7. Residential Uses in the ALR:

Additional dwellings, farm worker housing, "mega homes" and 'lifestyle estates' in the ALR occupy agricultural land. In some circumstances additional dwellings are necessary for intensive agricultural operations; however there is also demand on the ALR for additional dwellings solely for residential purposes. When there is a subdivision of ALR land, it is usually for development of another parcel and residence. In addition, the large footprint occupied by "mega homes" and acreages purchased for lifestyle estates (with little or no agricultural production) has raised concerns about use of arable land for housing and increased residential assessment values of ALR land. While not currently legislated provincially, some local governments have adopted restrictions on sizing and siting of residential uses in the ALR.

8. Farm Processing and Sales in the ALR:

The Regulation permits landowners in the ALR to process and retail farm products on a parcel of land subject to criteria that attempts to ensure that the product is associated with the farm or a registered co-operative. The Regulation affords farmers and ranchers the ability to produce "value added" products (e.g. berry processing, alcohol production, farm stands). Processing and retail facilities range in size and sometimes incorporate other ancillary uses such as parking lots, food services, patios, galleries, event spaces, meeting rooms, etc.; however, there is concern that some facilities are occupying large areas of arable ALR land with little connection to agricultural production on the farm. There is also concern that ALR land is purchased for the other ancillary permitted uses, but there is no agricultural production (i.e. building a retail store with extremely limited farm products for sale).

9. Unauthorized Uses:

Agricultural land is sometimes used for unauthorized non-agricultural uses and some landowners expand beyond what is permitted. ALC Compliance and Enforcement officers currently handle between 300 to 400 files annually related to complaints, investigations, or actions on unauthorized uses. Some of these unauthorized uses include illegal filling (e.g. dumping soil, construction waste, concrete), commercial uses (e.g. commercial truck parking, recreational vehicle storage, scrap vehicle yards), and residential uses (e.g. additional dwellings). These activities may directly damage the agricultural land base and in some cases the damage is permanent. These activities can sometimes be more damaging to agricultural land than applications for exclusion considered by and approved by the ALC.

10. Non-Farm Uses and Resource Extraction in the ALR:

Other activities, from agri-tourism and agri-tourism accommodation to resource extraction such as oil and gas and aggregate (sand and gravel) can take place in the ALR. Concerns about cumulative impacts of these activities and remediation of agricultural land have been raised.

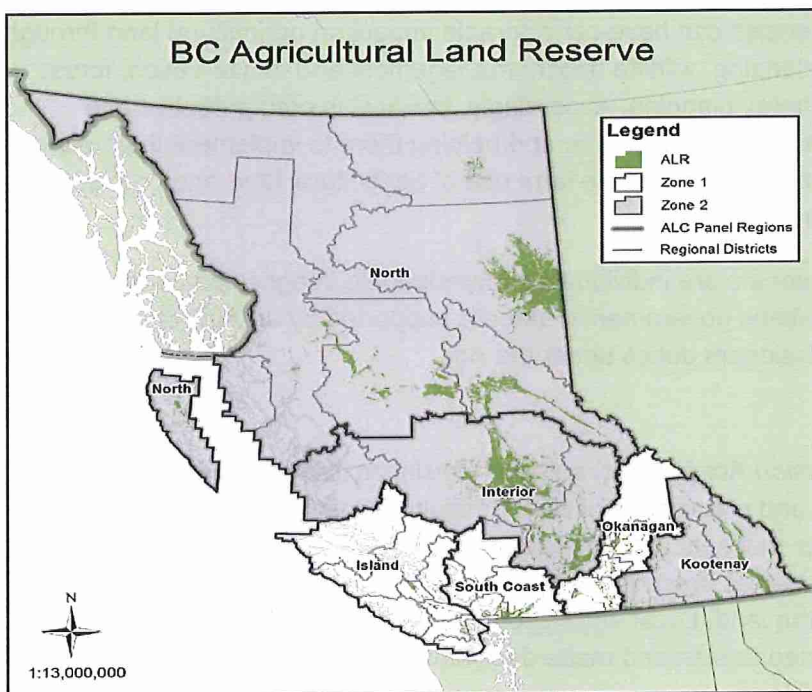
Background

BC's current approach to the ALR attempts to balance the needs of farmers and ranchers to carry out their daily work with the need for land use decision-making that best supports Government's goals and objectives for the ALR.

The ALR

The ALR was a bold initiative in 1973 that acknowledged that BC has a limited agricultural land resource which should be available for current and future generations of farmers and ranchers to operate agricultural businesses for local consumption and export. Soil is most fertile in valley bottoms where other competing land uses including urban development also take place. The ALR was established in the face of rapidly expanding urban areas and non-farm development in rural areas.

Approximately five percent of BC's land base is within the ALR, a provincial zone within which agriculture is recognized as the priority activity. The ALR includes public (Crown) and privately held land in all regions of the province.



The ALC

The ALC is an independent administrative tribunal dedicated to preserving agricultural land and encouraging farming in BC. The ALC occupies a distinctive role within the Canadian legal system. While it is part of “government” broadly defined, it is not part of any government ministry. The ALC is instead part of the Canadian community of independent administrative tribunals, vested with important statutory powers, whose members are obliged to exercise those statutory powers in accordance with the law.

The *Agricultural Land Commission Act* (the Act) empowers the ALC to delegate certain decision making powers, allowing local government and other authorities to make non-farm land use and subdivision decisions in the ALR. For more information, see the [ALC Delegation of Decision Making](#) webpage.

The ALC has been preserving agricultural lands for 45 years through its land use planning work with local governments and decision making on land use applications. The ALR forms the foundation for the business of agriculture in BC. When the ALR was designated it was done so with a long-term focus knowing that pressures on this limited resource would only increase with time. The ALR and the ALC enjoy strong and consistent public support.

The ALC is mandated to encourage others, including the provincial government and its agents, to take the interests of the ALR and agriculture into account when generating new policies, participating in land use planning initiatives, changing legislation and regulation, and planning for future developments.

Government ministries and agencies can have considerable impact on agricultural land through such things as transportation planning, wildlife habitat management and conservation, forest and water management and energy planning. Accordingly, the ALC is both proactive and collaborative in working with ministries, supporting and helping them to implement their plans, bylaws and policies to enable and accommodate farm use of agricultural land and/or to support uses compatible with agriculture.

As set out in the Act, Commissioners are individuals knowledgeable in agriculture, land use planning and local and First Nations governments, and are supported by an ALC staff secretariat to carry out Commissioners duties under the Act.

The Legislation

The *Agricultural Land Commission Act* (the Act) sets the legislative framework for the establishment, administration, and procedures of BC's agricultural land preservation program. The Act is the high-level statute that sets out principles and broad rules for the protection of agricultural land in BC. The Act takes precedence over, but does not replace other legislation and bylaws that may apply to the land. Local and regional governments, as well as other provincial agencies, are expected to plan and make decisions in accordance with the provincial policy of preserving agricultural land.

While the purpose of the Act has remained generally the same with some minor changes over 45 years, there have been a series of major changes to the Act and Regulation as well as the ALC's structure and operations over the past 3.5 years. For more information about these changes, please see the [ALC Act and ALR Regulation](#) webpage.

The Regulation

[The Regulation](#) identifies specific land uses allowable on farmland in the ALR without an application to the ALC. Current examples include such things as growing plants and raising animals, putting up buildings necessary for farm use, selling agricultural products direct to the public as well as specified farm and non-farm activities such as the construction of buildings for alcohol production, farm product processing, agri-tourism activities, gatherings for events, agri-tourism accommodation, additional dwellings, home based businesses, composting operations, deposition of fill and removal of soil, and others. The Regulation is a permissive regulation, meaning that it lists the activities that are permitted in the ALR without requiring approval of the Commission. Any activities not permitted by the Regulation require an application to and approval of the ALC.

The Regulation also sets out the process for making an application to include and exclude land from the ALR, use ALR land for activities not permitted in the Regulation and subdivide land within the ALR. The Ministry maintains the Act and the Regulation.

Local Governments and the ALR

Approximately 150 BC local governments have lands in the ALR, some extensive, and others not. Local governments play an important role in enabling farm businesses to thrive on protected farmlands, therefore contributing to the local, regional and provincial economy. The ALC supports coordinated and collaborative planning with local governments to ensure agricultural lands are protected and available to provide food and other agricultural products for generations to come.

Through the *Local Government Act* (LGA) and the *Community Charter*, which fall under the responsibility of the Minister of Municipal Affairs and Housing, the Province has delegated community planning and zoning bylaw powers to local governments, provided they are consistent with the Act and the Regulation. For more information, see the [ALC Working with Local Government](#) webpage.

Public Feedback

The Minister of Agriculture has directed the Advisory Committee to consider the future of BC's land base for agriculture and farming, fairly and without bias, in order to improve the ALR and the ALC. While the ALR and the ALC generally enjoy strong public support, the issues, themes and information in this Discussion Paper highlight some of the areas for improvement and for strengthening BC's agricultural land preservation system.

On behalf of the Advisory Committee, the Ministry of Agriculture will provide further information to the public through news releases during the stakeholder consultation and public engagement process. Feedback from stakeholders and the public will help the Advisory Committee provide substantive recommendations to the Province for revitalizing the ALR and the ALC. For questions about how to provide input and feedback, please email ALR_ALCRevitalization@gov.bc.ca.

Written Submissions

In addition to regional stakeholder consultation meetings, there are several ways to provide written feedback to the Advisory Committee by:

- Mail:
 Minister's Advisory Committee
 Revitalization of ALR and ALC
 C/o Ministry of Agriculture
 PO Box 9120
 Stn. Prov. Govt.
 Victoria BC V8W 9B4
- Email: ALR_ALCRevitalization@gov.bc.ca
- Online survey: An online survey will be initiated in February 2018 to seek feedback from the general public.

Appendix 1 – Ministry of Agriculture News Release

For Immediate Release

2018AGRI0002-000009

Jan. 4, 2018

Ministry of Agriculture – NEWS RELEASE

B.C. farmers, communities, public to shape revitalization of the Agricultural Land Reserve

VICTORIA - An independent committee with members from diverse agricultural backgrounds and experiences will lead the revitalization of the Agricultural Land Reserve (ALR) and the Agricultural Land Commission (ALC) through an authentic and meaningful consultation process with stakeholders and British Columbians, Minister of Agriculture Lana Popham announced today.

"I am proud and grateful to have attracted British Columbians with the knowledge, expertise, passion and experience that the committee members possess for agriculture," said Popham. "The ALR and the ALC are incredibly important to the health and economic well-being of our province's future, and making it easier and more efficient for the commission to fulfill its mandate of protecting farmland and encouraging farming is a commitment the B.C. government is delivering on."

The nine-member Minister of Agriculture's Advisory Committee will provide strategic advice, policy guidance, and recommendations on how to help revitalize the ALR and ALC to ensure the provincial goals of preserving agricultural land and encouraging farming and ranching in British Columbia continue to be a priority. The committee will be chaired by Jennifer Dyson, with members from throughout the province with diverse agricultural knowledge and experience.

"As we embark on this consultation, our collective mandate is to ensure that the ALC and agriculture is positioned for the future," said Dyson. "I am asking that each of our review committee members listen to what is being said, honestly, impartially, professionally and in a principled fashion. I am looking forward to the conversations."

Beginning in early 2018, the committee will:

- Share a consultation paper to seek opinions and feedback on revitalizing the ALR and ALC;
- Host regional meetings to hear opinions and feedback directly from the local farming and ranching communities in Abbotsford, Cranbrook, Fort St. John, Kelowna, Kamloops, Nanaimo and Prince George; and
- Open an online consultation process to seek public opinion.

The committee will use the input it receives during the consultation process to develop recommendations for the provincial government's consideration. The recommendations may include changes to the current legislative, regulatory, and administrative framework to revitalize the ALR and the ALC. Any legislative changes that support the revitalization of the commission and the reserve are targeted for late 2018 or early 2019.

The ministerial mandate letter for the Minister of Agriculture identifies as a priority the revitalization of the Agricultural Land Reserve and the Agricultural Land Commission, an independent administrative tribunal dedicated to preserving agricultural land and encouraging farming and ranching in British Columbia.

Contact:

Dave Townsend

Government Communications and Public Engagement Ministry of Agriculture

250 356-7098

250 889-5945 (cell)

Appendix 2 – Minister’s Advisory Committee Members: Biographies

Jennifer Dyson (Chair)

Jennifer Dyson has been involved in many aspects of agriculture; as a producer, consultant, chair, commissioner and industry member. Dyson has participated in the Partnership Committee on Agriculture and the Environment, Environmental Farm Plan Working Group, and Island Agri-Food Initiative. She was appointed to the Agricultural Land Commission in 2008 and served as chair of the Island Panel until 2017. Dyson served the agriculture industry, province and federal government as the executive director of the Agricultural Workforce Policy Board formed to respond to human resources challenges. Dyson was one of a handful of people who formed the Island Farmers Alliance and served as the Western Women’s representative appointed by the BC Agriculture Council to the Canadian Federation of Agriculture. Dyson and her family operate an innovative water buffalo dairy and direct farm market in the Alberni Valley.

Vicki Huntington

Victoria Huntington is a native of Vancouver and has a degree in political science. She spent much of her early career in the RCMP security service and subsequently working with ministers of the Crown in Ottawa. She served five terms as an elected councillor in the municipality of Delta. Huntington was elected as an Independent MLA for Delta South in May 2009 and re-elected in May 2013. She was the first Independent elected to the BC Legislature in over 60 years and her re-election as an Independent is a first in modern BC political history. She recently retired in 2017. Huntington served as band manager for the Gitanmaax Indian Reserve in Hazelton, subsequently becoming a policy assistant to the federal Minister of Indian Affairs and Northern Development. She was vice-chair of the Lower Mainland Treaty Advisory Committee (LMTAC) and its representative on the Provincial Treaty Negotiating Team. Huntington has shown a particular interest in environmental and agricultural matters.

Chief Byron Louis

Chief Byron Louis has over 25 years of knowledge and experience, at various levels of the political spectrum. First, elected to Council in 1991, then designated as chair of the Okanagan Nation Fisheries Commission in 1995 and as a title and rights advisor at the Tribal Council and regional level, and political liaison designate with U.S.-based tribal, public and private utilities (hydroelectric generation) and state and federal authorities. Over the course of his career he has served in various facets of political office involving natural resource management, economic development, public works, community planning, liaison and strategic development and negotiation with various levels of senior government and the private sector. Louis continues to work extensively on First Nations social and economic issues and interests and is currently Ministry of Agriculture serving his fourth term as Chief of the Okanagan Indian Band. In 2015, he took on the role of director with the New Relationship Trust, an independent non-profit organization dedicated to strengthening First Nations in BC through capacity building.

Lenore Newman

Lenore Newman holds a Canada Research chair in Food Security and Environment at the University of the Fraser Valley, where she is an associate professor in the department of geography and the environment and the director of the Centre for Food and Farmland Innovation. She runs a research program focused on farmland preservation, agriculture on the rural/urban fringe, culinary development, and food innovation, and consults widely on how to protect the world's farmland while growing the agricultural industry. Her opinion pieces on the future of farmland use and other food-related issues have been published in the *Globe and Mail*, the *Vancouver Sun*, and the *Georgia Straight*. Her first book, *Speaking in Cod Tongues: A Canadian Culinary Journey*, was published in 2017. She holds a PhD in environmental studies from York University. Newman is a member of the Royal Society of Canada's New College, and the patron of the Newman Heritage Farm. She splits her time between Vancouver and the Sunshine Coast.

Chris Kloot

Chris Kloot was born and raised on a dairy farm in Chilliwack. Today, with his wife and sons, he owns and operates a poultry farm in Rosedale, just east of Chilliwack. Recently, the pair became partners in the purchase of a vacant dairy farm with the intent to branch into dairy farming, as all three of their sons work on dairy farms and display a natural affinity for the industry. Kloot is also a real estate agent, and is serving his first term on Chilliwack City Council. His tremendous passion for agriculture has been recognized by the council. Kloot is the chair of the city's Agricultural and Rural Advisory Committee and was instrumental in the implementation of the Farm Home Plate bylaw in 2017. He is a member of the Chilliwack Agricultural Commission and devoted to the promotion and success of agriculture and agri-business in Chilliwack. You may recognize him as one of the lead roles in the flashy humorous action trailer of the "Chicken Squad", a savvy innovative online marketing campaign to promote BC Chicken and share accurate facts to educate consumers about Canadian chicken growing practices. This was produced in 2014 by the BC Chicken Marketing Board and BC Chicken Growers Association.

Shaundehl Runka

Shaundehl Runka has worked in land-use planning and resource management in British Columbia since the early 1990s. With a background in geography, Runka operated as a consultant dealing with a broad range of land- and water-use issues, across all regions of the province. In 2001, Runka joined the Agricultural Land Commission (ALC) as a policy analyst, ending her career there in early 2017 in the policy planner position. Runka gained extensive experience interpreting the *Agricultural Land Commission Act*, regulation and policies and in working with Agricultural Land Reserve (ALR) stakeholders throughout the province on a day-to-day basis. During her tenure at the ALC, she participated in legislative and regulatory reviews and carried out an extensive re-write of ALC policies to reflect government direction and the commission mandate. Runka was raised in the Okanagan Valley, has lived in Vancouver for

30 years and is co-owner of a family farm in Baldonnel in the Peace region. Her professional life has taken her to all regions of the province.

Irmi Critcher

Irmi Critcher and her husband Barry own and operate a first generation grain and oilseed farm.

The 1,600 hectare farm is located near Taylor, in the Peace River District. Critcher has always taken a very active role on the farm and jointly manages it with her husband. They have been farming for over 25 years and grow wheat, barley, oats, canola, peas and grass seeds. Critcher has been the past president of the BC Grain Producer's Association and has held director positions on provincial and federal agriculture Industry boards including the BC Grain Industry Development Council, Investment Ag Foundation and Grain Growers of Canada. She has chaired numerous committees within these associations including Localized Crop Research, Environment and Climate Action Initiatives.

Arzeena Hamir

Arzeena Hamir is a farmer and agronomist from the Comox Valley. She earned her bachelor's degree in crop science from the University of Guelph and her master's degree in Sustainable Agriculture from the University of London, England. In 2007, she spoke at her first city council meeting to save the Garden City Lands in Richmond. Since then, she has advocated for community food security, farmland conservation and supports for new farmers. She is currently president of the Mid Island Farmers Institute and a director of the Investment Agriculture Foundation.

Brian Underhill

Brian Underhill worked in varying capacities at the Agricultural Land Commission (ALC) since 1980 and most recently, he was the ALC's deputy chief executive officer, before retiring in 2015. In his leadership role, Underhill was responsible for the management and administration of the ALC staff secretariat which included functions related to land-use planning, policy development and interpretation, as well as compliance and enforcement and land information services. Underhill worked closely with the chair of the ALC and its appointed commissioners, providing strategic advice and recommended courses of action. He also performed statutory land-use decision-making duties, consultation and co-ordination with local governments throughout the province and collaboration with provincial government ministries, agencies and other administrative tribunals to ensure consistency between policies and legislation and community and regional planning and the *Agricultural Land Commission Act* and regulations. By way of his experience at the Agricultural Land Commission, his background in geography and resource management studies and extensive travel throughout the province, Underhill has developed considerable knowledge of land-use issues in relation to community planning and the agriculture industry. Underhill resides in Vancouver and has a special interest in promoting education and awareness of farmland protection and how it is related to the provincial policy to preserve agricultural land and encourage farming throughout British Columbia.

Appendix 3 – Background Information

- Farm Credit Canada Reports
<https://www.fcc-fac.ca/en/about-fcc/governance/reports/2016-fcc-farmland-values-report.html>
- ALC Annual Reports
<https://www.alc.gov.bc.ca/alc/content/library/commission-reports>
- ALC Act and the ALR Regulation and Recent Amendments
<https://www.alc.gov.bc.ca/alc/content/legislation-regulation/the-alc-act-and-alr-regulation>
- ALC's Delegation of Decision Making
<https://www.alc.gov.bc.ca/alc/content/about-the-alc/working-with-local-governments/delegation-to-local-governments>
- ALC's Working with Local Governments
<https://www.alc.gov.bc.ca/alc/content/about-the-alc/working-with-local-governments>
- ALC website Library
<https://www.alc.gov.bc.ca/alc/content/library>
- ALR Values and Benefits
<https://www.alc.gov.bc.ca/alc/content/alr-maps/living-in-the-alr/alr-values-and-benefits>

**Revelstoke and Area
Minutes of the Economic Development Commission
Wednesday, December 6, 2017 at 4:00 p.m.
in the Revelstoke Business and Visitor Information Centre Boardroom,
301 Victoria Road West**

PRESENT: Members Roberta Bobicki, Tracey Buckley, Nathan Weston, Mark Baron,
Connie Brothers, Brett Renaud, Robyn Goldsmith, Kevin
Dorrius, Rob Elliott
Staff Nicole Fricot, Director of Community Economic Development
Brooke Burke, Recording Secretary
ABSENT: Lisa Longinotto, Kristina Welch, Loni Parker

1. CALL TO ORDER

Meeting was called to order by chair, Roberta Bobicki at 4:00 pm.

2. ADOPTION OF AGENDA

Moved by Connie Brothers

Seconded by Mark Baron

THAT the agenda be adopted as presented.

CARRIED

3. ADOPTION OF THE MINUTES

Moved by Tracey Buckley

Seconded by Kevin Dorrius

THAT the minutes from November 1, 2017 be adopted as presented.

CARRIED

4. BUSINESS ARISING FROM THE MINUTES

Page 2, Item 5b, Trail Strategy Study – Nicole noted she is waiting to receive the information from Parks & Rec department. Should have it for the next meeting.

Page 1, Item 4b, Sani-Dump– Letter was reviewed by commission. Discussion around why having it located by the car wash is not possible. Information received from City staff was the area wasn't large enough and part of the land has been marked for future cemetery use. Commission questioned who determines the size required for the sani-dump. Discussion on process of having letter put on council agenda.

Action: Letter will be sent to be put onto council agenda for review.

Economic Development Commission Minutes, December 6, 2017

5. ACTIVITY REPORT

Nicole reviewed the report with the following discussed in further detail:

Extreme Weather Response Program – waiting to hear back the RCHS on if they have the capacity to take on such a large project. It was noted extreme weather for our area is considered December 15 – March 31. If project were to move forward it would also provide the opportunity to collect data to see if a full time homeless shelter is required.

EOF Funding Request – it was reviewed the project fit the criteria for the funding. With other issues between the City and CSRD this makes it more difficult to pursue other funding now needed for this project.

Nicole added there is another Hallmark film being shot in town. It was reviewed the City has a filming policy and no tax payer funds are used towards the film companies. Having these films come to town are a huge money generator into the community, of course with that comes some controversy with some of the business owners. Will look into update the film policy in the new year. A meeting will be held in January to speak with the business owners and see what improvements and/or changes could be made. General discussion on impact to businesses.

It was noted Nicole met with local realtors and Nigel Whitehead from the City, on ways to open up communication lines with the City. Processes and how to help smooth out specific issues with both sides was discussed. Discussed updates needed to the OCP, bylaw and zoning for the City.

Moved by Kevin Dorrius

Seconded by Nathan Weston

THAT the Economic Development Commission send a letter to council encouraging budget funds be allocated and resources necessary towards updating the OCP in 2018.

CARRIED

Moved by Nathan Weston

Seconded by Mark Baron

THAT the Economic Development Commission recommend council have the zoning bylaws updated in tandem with the OCP update in 2018 budget to be a better workable document.

CARRIED

6. OLD BUSINESS**a) Non-Attendance of Commission Member**

Nicole reported there still hasn't been any response back from commission member.

Moved by Kevin Dorrius

Seconded by Connie Brothers

THAT the Economic Development Commission agrees to remove Kristina Welch from the Economic Development Commission group due to lack of attendance according to the terms of reference.

CARRIED

7. NEW BUSINESS

a) Start Up Revelstoke Strategy – Nicole reviewed the strategy that will be presented to council. It was explained there would be a fabrication lab/makerspace for anyone to be able to use the equipment. General discussion held.

b) Rural Dividend Fund Application – Nicole reviewed the application is focused on creating a fabrication lab/makerspace/innovation centre. She has been working with KAST as they already have successful Midas Lab that is metal focused, as a possible partnership. The main focus would be the equipment for a smaller sized lab to start with, and then build from there. Focus for the lab in mind is sport tourism recreation and wood products. The Revelstoke School District sees huge value in a lab such as this and would like to see youth involvement as well. General discussion held.

8. ADJOURNMENT

Next meeting is February 7, 2018.

Connie Brothers moved to adjourn meeting at 5:40 pm.



Roberta Bobicki, Chair



BOARD REPORT

TO: Chair and Directors

File No: 0580 01

SUBJECT: Shuswap Tourism Creative Production Strategy Contract Award

DESCRIPTION: Report from Robyn Cyr, Economic Development Officer (EDO), dated February 13, 2018

RECOMMENDATION #1: THAT: the Board empower the authorized signatories to enter into an agreement with Destination Think Consulting to develop the Shuswap Tourism Creative Production Strategy for the amount of \$30,200.

SHORT SUMMARY:

The purpose of this request is for the CSR D Board to approve that the development of the Shuswap Tourism Creative Production project be awarded to Destination Think Consulting in the amount of \$30,200.00. This project has been funded through the 2017/2018 Destination BC Coop marketing funding (Tactic #2) and was approved in the 2017 Shuswap Tourism budget. Another company was asked to submit a proposal but did not respond to our request.

The objective of the strategy is to develop new video and photography assets relating to the winter seasonal attributes of the Shuswap Region to leverage for content channels and marketing efforts.

VOTING:

Unweighted
Corporate

☐

LGA Part 14
(Unweighted)

☐

Weighted
Corporate

☐

Stakeholder
(Weighted)

☒

BACKGROUND:

Destination Think has prepared a rolling tactical plan and the 2017 Shuswap Tourism Strategy for Shuswap Tourism. Destination Think is also currently working under contract to Shuswap Tourism to provide strategic consultation to support and guide Shuswap Tourism through various elements of the tactical plan and strategy implementation. The Shuswap Tourism Creative Production project is one of the initiatives outlined for implementation in the Shuswap Tourism Marketing Strategy and an approved project in the 2017/18 Destination BC Cooperative program funding (Tactic #2).

This project is included in the 2017/18 Destination BC Cooperative Program funding and the funding amount of \$30,200.00 (\$15,100.00 – Destination BC and \$15,100.00 Shuswap Tourism) was approved for this project in the 2017 Shuswap Tourism budget. This project is for the development of video and new imagery for the promotion of the Shuswap Tourism region. This video and imagery will showcase the 14 Shuswap itineraries with the primary focus on the spring, fall, and winter seasons.

In order to maintain project and strategy implementation consistency Destination Think has been chosen to develop the Shuswap Tourism Creative Production Project.

POLICY:

CSR D Purchasing Policy No. F-32 Procurement of Goods and Services, requires that Board authorization must be obtained for any purchase over \$25,000 where the recommended supplier is not the lowest priced submission.

FINANCIAL:

There was \$30,200 allocated in the 2017 Shuswap Tourism budget for the Shuswap Tourism Creative Production Strategy with the assistance of the Destination BC Co-operative Marketing Partnerships Program. As this project was not completed in 2017, both the project and resulting surplus from 2017 have been included in the 2018 budget.

KEY ISSUES/CONCEPTS:

This project was identified by Shuswap Tourism in the 2017/2018 Destination BC Coop Program Application and the 2017 Shuswap Tourism work plan as a priority project for the promotion of the Shuswap region.

SUMMARY:

The Shuswap Tourism Creative Production project will showcase the fourteen Shuswap itineraries/experiences with a main focus on experiences in the less busy seasons in fall, spring, and winter. This campaign will focus and align with the target markets identified in the Pacific NW US, BC, and Alberta.

IMPLEMENTATION:

Robyn Cyr, EDO, will work with Destination Think, CSRD Staff, tourism businesses, and community organizations to implement the Shuswap Tourism Creative Production project. The work on the Shuswap Tourism Creative Production project will begin as soon as the contract is signed.

COMMUNICATIONS:

The proponent will be notified of the Board's decision and project updates will be given to the Shuswap Tourism Advisory Committee at the quarterly meetings.

DESIRED OUTCOMES:

That the Board endorse the recommendation to enter into a contractual agreement with Destination Think for the Shuswap Tourism Creative Production Strategy in the amount of \$30,200.00.

BOARD'S OPTIONS:

1. *Endorse the Recommendation.*
2. *Deny the Recommendation.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. 2017/2018 Destination BC Co-operative Marketing Partnerships Program Application

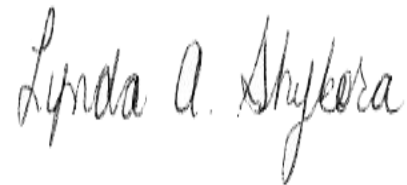
Report Approval Details

Document Title:	Shuswap Tourism Creative Production Contract.docx
Attachments:	- DBC Coop Marketing Application - Shuswap - 2017-18 - Revised 022817.docx
Final Approval Date:	Feb 14, 2018

This report and all of its attachments were approved and signed as outlined below:



Jodi Pierce - Feb 13, 2018 - 4:07 PM



Lynda Shykora - Feb 14, 2018 - 9:42 AM



Charles Hamilton - Feb 14, 2018 - 10:04 AM

Destination BC Co-operative Marketing Partnerships Program Application

You may fill in the form below or use the headings in a separate document. Please try to limit your application to a maximum of eight pages.

Contact Information:

Applicants:	Tourism Shuswap Columbia Shuswap Regional District Representing: Chase, CSRD Electoral Areas C, D, E, and F, Enderby, Salmon Arm, and Sicamous		
Representatives:	Robyn Cyr, EDO, Columbia Shuswap Regional District, Manager – Tourism Shuswap		
Lead Organization:	Columbia Shuswap Regional District		
Authorized Authority:	Robyn Cyr, EDO, Columbia Shuswap Regional District, Manager – Tourism Shuswap		
Mailing Address:	555 Harbourfront Drive NE, Box 978 Salmon Arm, BC V1E 4P1		
Telephone:	250-833-5928	Email:	rcyr@csrd.bc.ca
Contact Person: (if different from above)	Same as above		
Telephone:		Email:	

Applications are due by November 30th. Incomplete or late proposals will not be considered. All funding received for successful applications must be spent by the end of the contracted term.

Application Proposal:

Applications must be sent by email to coop@destinationbc.ca

Lead Organization	Columbia Shuswap Regional District
Name of Initiative	Shuswap Tourism: Shuswap Tourism Regional Marketing Campaign Project
Project Description	<p>The Shuswap Tourism Regional Marketing Campaign Project is intended to bolster and augment the existing Shuswap Tourism marketing activities and implement the 2016/2017 marketing projects. The project will include:</p> <ul style="list-style-type: none"> • A focus on increasing Shuswap brand Awareness and Alignment in new markets • Strengthening our brand from within: developing in-region communication and marketing materials • Defining experience: sharing our story's specifics and delivering on the experience • Planning for the future: readying the region for a 2018 Salute to the Sockeye • Measure for success: a continued focus on metrics <p>The intended actions are designed to leverage and build on the projects that were completed in the 2016/2017 marketing initiative and to create further opportunities for product promotion and development.</p> <p>The Shuswap has a solid brand that aligns with the Destination BC brand. Our tag line is: Beautiful, Casual, Down-to-Earth and our brand pillars are Lake (a distinct visual landscape that dominates our region and provides activities for recreation), Country (incredible wilderness surroundings that provide a backdrop for mountain biking, cycling, golf, camping, fishing, and more), and Culture (the fabric of our communities create a culture that visitors want to experience). Our current communication materials are comprised of a comprehensive website, experience brochures, a vacation planner, and various other marketing collateral.</p> <p>We also continue to develop marketing materials to enable the Shuswap region to engage visitors for the 2018 Adams River "Salute to the Sockeye". This event will draw visitors regionally, provincially, and internationally to the Shuswap region. We will have clear messaging and experiences that will showcase the region and provide the best economic impact for our tourism stakeholders throughout the Shuswap region, the Thompson Okanagan region, and the Province of BC.</p> <p>This project will increase visitation and in turn provide increased revenue for the tourism industry in the Shuswap. It is our responsibility as a destination marketing organization to ensure that we have clearly defined</p>

	marketing messages and experiences that showcase the Shuswap region and provide the best return on investment for our tourism industry.
Situation Analysis	<p>Over the past eight years, Shuswap Tourism has developed a strong regional brand that promotes the region and the communities in the Shuswap region. Communities and areas in the region include: Salmon Arm, Sicamous, Enderby, Chase, Sorrento, Blind Bay, Falkland, Scotch Creek, Celistia, Seymour Arm, Malakwa, Swansea Point, and other smaller unincorporated communities in this region.</p> <p>The Shuswap is located in the center of BC, and sees over 4 million travel directly through the region on the Trans-Canada (#1) Highway. The Shuswap is also located in the Thompson Okanagan Tourism region and sees increasing visitation to the region as a result of spill-over and additional interest from the southern communities in the Okanagan. Our region sees an increase in visitation due to developed experiences and consistent messaging and marketing. The Shuswap's lead experiences are accessible to a wide market and are comparatively value orientated.</p> <p>Immediate competitors and peers include the Okanagan and Kootenay Rockies areas. Their strengths are a higher calibre of developed experiences and greater recognition. However, the Shuswap still continues to offer more approachable, accessible and casual (or self-guided) experiences, with a lower cost of entry and a new fresh perspective.</p> <p>A solid foundation of marketing materials is in place but the region still needs to continue to increase awareness, alignment, and action in new and existing target regions. In region Shuswap brand awareness and alignment is also an ongoing project that requires further work to engage community and tourism stakeholders.</p> <p>Campaign advertising has been geographically, activity-interest and demographically targeted in order to provide the maximum return on investment.</p> <p>Statistics to showcase growth are mainly received from Google Analytics and our Visitor Centers. The Shuswap region communities, at this time, are not collecting the MRDT and therefore are not able to collect statistics from accommodators. However, the City of Salmon Arm currently has an application that is waiting for approval from Destination BC and will begin the collection of the MRDT in 2017. This data from the MRDT collection will be available to Shuswap Tourism in 2017.</p>

Traffic Growth In Targeted Geographic Markets

July 15, 2016 – November 27, 2016 vs. Same Time Last Year

US Pacific Northwest

Website traffic from the US Pacific Northwest (Washington, Oregon, Idaho) is up 103.2% year over year. Conversion goals from this group are up 364.5% over 2015.

Conversion goals are defined by website visitor activities such as clicking on a Member's listing link or viewing a visitor information guide.

British Columbia Interior

Website traffic from BC visitors outside of Metro Vancouver is up 42.3% year over year. Conversion goals from this group are up 73% over 2015.

Alberta

Website traffic from Alberta is up 36.5% year over year. Conversion goals from this group are up 54.9% over 2015.

Metro Vancouver

Website traffic from Metro Vancouver is up 32% year over year. Conversion goals from this group are up 94.9% over 2015.

Traffic Growth In Interest Segments and Demographic Markets

July 15, 2016 – November 27, 2016 vs. Same Time Last Year

Advertising has been directed at those groups with the strongest potential to convert into on-the-ground visitors to the Shuswap. We have seen significant growth in In-Market and Affinity audience groups that show a strong potential for ongoing growth in actual visitor numbers.

In Market Audiences

In-Market Audiences are researching products and are actively considering buying a service or product like these we offer. For Shuswap Tourism that meant advertising budget was weighted in favour of audiences actively planning vacations and travel.

Overall Growth

Website traffic from travel related In-Market Audiences is up 257.7% year over year. Conversion goals from this group are up 320.8% over 2015.

US Pacific Northwest

Website traffic from travel related In-Market Audiences in the Pacific Northwest is up 558.5% year over year. Conversion goals from this group are up 522.5% over 2015.

	<p>BC Interior Website traffic from travel related In-Market Audiences in the BC Interior is up 256.1% year over year. Conversion goals from this group are up 291.9% over 2015.</p> <p>Alberta Website traffic from travel related In-Market Audiences in Alberta is up 218.5% year over year. Conversion goals from this group are up 278.4% over 2015.</p> <p>Metro Vancouver Website traffic from travel related In-Market Audiences in Metro Vancouver is up 296% year over year. Conversion goals from this group are up 376% over 2015.</p> <p>Affinity Audiences</p> <p>Affinity audience targeting uses someone's overall interests, passions, and lifestyle to get a better sense of their overall identity. For Shuswap Tourism, advertising was weighted to family-related affinity audiences.</p> <p>Overall Website traffic from family related Affinity Audiences is up 153.5% year over year. Conversion goals from this group are up 211% over 2015.</p> <p>US Pacific Northwest Website traffic from family related Affinity Audiences in the Pacific Northwest is up 190% year over year. Conversion goals from this group are up 406% over 2015.</p> <p>BC Interior Website traffic from family related Affinity Audiences in the BC Interior is up 162% year over year. Conversion goals from this group are up 211% over 2015.</p> <p>Alberta Website traffic from family related Affinity Audiences in Alberta is up 147.5% year over year. Conversion goals from this group are up 160.7% over 2015.</p> <p>Metro Vancouver Website traffic from family related Affinity Audiences in Metro Vancouver is up 157% year over year. Conversion goals from this group are up 260.1% over 2015.</p>
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	<p>Shuswap Tourism Guides downloaded</p> <p>June 1 to September 30 2016 compared to same period in 2015.</p> <ul style="list-style-type: none"> • Shuswap Vacation Planner 3014 views vs. 752 – up 301% 558 PDF downloads vs. 231 - up 142% • Shuswap Trail Guide 2527 views vs. 407 – up 521% 330 PDF downloads vs. 150 - up 120% • Shuswap Cycling Tour Guide 1563 views vs. 203 – up 670% 186 PDF downloads vs. 77 - up 142% • Full Circle Farm Tour Guide 992 views vs. 133 – up 646% 137 PDF downloads vs. 52 - up 163% • Shuswap Wineries – 294 views vs. 82 – up 259% 184 PDF downloads vs. 68 - up 171% • Shuswap Motor Touring Guide 240 views vs. 75 - up 220% 102 PDF downloads vs. 45 - up 127% <p>Prevailing perceptions of the Shuswap center around ‘a nice place’ but visitors are still unsure of what activities or experiences are available, and what attitude exists. However, over the past two years, there have been a number of new experiences that have been developed and new businesses that are emerging, that are starting to interest new visitation to the region. However, the typical visitation still sees short stays – one to two nights. In order to ensure a strong economy for Tourism in the Shuswap, those stays need to increase.</p>
Objective(s)	<p>Our objectives for this project are:</p> <ul style="list-style-type: none"> • To create greater top-of-mind awareness for the Shuswap • To strengthen the distinctive, identifiable presence and sense-of-place within the region • To continue to foster the development of more sophisticated products and experiences in the region • To ignite imagination and compel curiosity: to encourage potential visitors to learn more about the region

	<p>This project continues to develop a long term ongoing sustainable relationship with visitors to the Shuswap region. We seek to improve our communication tools so that new and existing target audiences will recognize that we continue to create new experiences that will align with their interests. We also want to visualize that we are different or unique from others, and that we are an exemplary component of an authentic and remarkable interior BC experience.</p> <p>We will continue to develop assets that will build and maintain the Shuswap brand and aligns with our Regional and Provincial marketing organizations.</p> <p>Our ultimate goal is to increase awareness and perceptions that ultimately lead to increased visitation and a positive economic impact for the Tourism industry in the Shuswap region.</p>
Strategies	<p>The strategies that will be used to complete this project are:</p> <ul style="list-style-type: none"> • Reviewing past data • Carrying out the projects/tactics • Monitoring the use and circulation of communication tools • Circulating stories, experiences and itinerary with media (travel, tourism trades) • Delivering successes to stakeholders, and sharing the vision with them • Reaching new audiences through digital marketing (google, display & AdWords), in-region marketing (print media/planners, banners) engaging and connecting with them, and empowering them with compelling information (website, travel planners, partner referrals) <p>These marketing strategies will focus on the twelve identified itineraries/experiences. Itineraries include short, full days, and multi-day trips. Four half day trips are Water Activities, Taste of the Shuswap, Winter Activities, and Music. Five full-day experiences include the Adams River “Salute to the Sockeye” festival and the Adams River Salmon Run, Wineries, Land and Trails, and Golf. Two four-day itineraries focus on houseboats and family centered activities. One itinerary experience will be about a week-long Shuswap excursion.</p> <p>The strategy to deliver the initiatives as outlined in this project will not only be delivered by Shuswap Tourism, but through the businesses and stakeholders that we continue to collaborate and work with in the Shuswap region. It is always our intent to engage and collaborate with our stakeholders to maintain brand alignment and to engage them in the development of our marketing material, online and in print. We always strive to ensure that our experiences resonate with our visitors but they also resonate with our tourism industry.</p>

Markets/Segments	<p>Our primary opportunity for continued market development lies in the Pacific North West US, BC (including the Lower Mainland and metro Vancouver, and central and northern BC), and short haul markets (including Kelowna, Kamloops, Vernon). Our optimum PNW market is estimated to be 750,000 (out of 15 Million), that potentially align with our brand and experience.</p> <p>The Calgary-Edmonton corridor in Alberta continues to also be a strong target market. The reason for this is that they already know about the Shuswap but we continue to target this market as they continue to represent a large market for visitation to the Shuswap region and are continually seeking to engage in new and existing experiences in this region.</p> <p>Our EQ Audience is: Authentic Experiencers, Free Spirits, and Cultural Explorers.</p> <p>Shuswap Tourism has created a new data collection tool that will support the existing in-market research from our Visitor Centers. We will engage tourism operators to complete a comprehensive but efficient research tool that will give Shuswap Tourism information but also provide these businesses with useful information that they can also use in determining their marketing decisions. This will be available for use in 2017.</p> <p>Our demographic target market is primarily focused on an age group from 35-50 but the demographic statistics shown on our website in the past year states that our largest group is 25-35. Our outdoor adventures activities are attracting a larger younger audience and although we will continue to focus on that 35-50 age group we will start to look at some experiences that will focus on a younger audience as well.</p> <p>Focus areas for our marketing:</p> <ol style="list-style-type: none"> 1. The Pacific Northwest US and the Lower Mainland and Metro Vancouver market will focus leisure traveller looking to escape the city and looking for relaxation and rejuvenation and creating an experience so that they will want to return. Our optimal stay time would be three-five days. One day on each end of the trip to travel and three days to truly enjoy the region. Aboriginal Tourism Cultural experiences will also focus on this demographic. 2. Central and Northern BC, Edmonton and Calgary (Spring and Fall) <ul style="list-style-type: none"> - The ice melts earlier here – hiking and biking, cycle touring, golf, fishing – starts earlier than our northern communities.
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	<ol style="list-style-type: none"> 3. Edmonton, Calgary, Lower Mainland, Short haul markets – Winter – Sledding, Nordic skiing, snowshoeing. These activities will be the focus of new marketing material that will encourage visitation in the winter season. 4. Short haul markets (all seasons) – come to visit for dinner and theatre, experience live music “In the Bay”, or the Roots and Blues Festival, go for a ski at the Larch Hills Nordic Ski area, shop in our unique downtown, visit galleries, and other activities seasonally. 5. The key experiences (Spring and Fall) will be Touring and Exploring (focusing on mostly self-guided experiences), Outdoor Adventure (hiking and biking (mountain and trail), water based activities (kayaking, SUP, canoeing), Aboriginal Cultural Tourism, Wine Touring, Golfing, and an emerging experience – Fishing. Although we have long been known as a fishing destination it has mainly been self-guided and hidden. We now have new opportunities in this sector that can provide guided fishing tours.
Provincial Destination Brand Alignment	<p>The Shuswap has a solid brand that aligns with the Destination BC brand. Our tag line is: Beautiful, Casual, Down-to-Earth and our brand pillars are Lake (a distinct visual landscape that dominates our region and provides activities for recreation), Country (incredible wilderness surroundings that provide a backdrop for hiking, mountain biking, cycling, golf, camping, fishing, and more), and Culture (the fabric of our communities create a culture that visitors want to experience). Our brand creates a vision of natural landscape that urban visitors want to experience again and again. Our current communication materials are comprised of a comprehensive website, experience brochures, vacation planners, and experience guides. This material encourages our visitors to step out of their ordinary day and explore with our communities the culture and the beauty of this region.</p>
Tactic #1	<p>Digital/Online Marketing Campaign (Year 2)</p> <p>Description: This on-line marketing campaign will showcase the twelve identified Shuswap itineraries/experiences. The online marketing campaign will align with target markets in the Pacific NW US, BC, and Alberta. These online ads will be placed in the Province and Vancouver Sun, CNN, Castanet, Kamloops Daily News, Calgary Herald, Edmonton Journal, as well as other placements that are relevant to our target markets. Our focus will be on a Spring/Fall Campaign and Winter campaign.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$32,000.00 – DBC/Shuswap Tourism Contribution</p>

	<p>Partner Contribution: In kind contribution of tourism product for contests – Value - \$5000.00 – depending on the type of experience.</p> <p>Call to Action: Online marketing campaigns that will increase visitation to the Shuswap Tourism website and tourism industry partner websites. These campaigns will highlight the twelve identified itineraries/experiences and will be placed in the Province and Vancouver Sun, CNN, Castanet, Kamloops Daily News, Calgary Herald, Edmonton Journal, as well as other placements that are relevant to our target markets.</p> <p>Tracking Mechanisms to measure results: These marketing campaigns will be tracked through Google Analytics, and Social Media engagement on Facebook, Twitter, and Instagram.</p> <p>Tactic #2</p> <p>Video and imagery - Shuswap region</p> <p>Description: The development of a video and new imagery for promotional use of the Shuswap region. This video and imagery will showcase the 12 identified Shuswap itineraries/experiences. The imagery will mainly focus on images of the spring, fall, and winter activities. Video and imagery in this project will also include promotional material for the 2018 “Salute to the Sockeye” Festival on the Adams River and located at Roderick Haig Brown Provincial Park.</p> <p>Timing: April 1, 2017 – March 31, 2018– to capture all seasons – ready for the spring of 2018</p> <p>Budget: \$30,000.00</p> <p>Partner Contribution: In-kind tourism business staff time and product to capture experiences – approximately \$5,000.00.</p> <p>Call to Action: Video and imagery created to showcase the 12 identified Shuswap itineraries/experiences on the Shuswap Tourism website, social media channels, and partner/tourism businesses websites. Video and imagery for the 2018 “Salute to the Sockeye” Festival at the Roderick Haig Brown Park.</p> <p>Tracking Mechanisms to measure results: Tracking views through Google Analytics and social media channels, community stakeholder and tourism operator websites.</p>
<p>Tactic #3</p>	<p>Media Tours</p> <p>Description: To develop six media tours to showcase the 12 identified itineraries/experiences and the 2018 “Salute to the Sockeye” Festival at Roderick Haig Brown Provincial Park.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$5,000.00 – DBC/Shuswap Tourism Contribution</p>

	<p>Partner Contribution – In-kind contribution of tourism business staff time and product - \$5,000.00 – depending on product that is showcased.</p> <p>Call to Action: These media tours will increase awareness of the new twelve identified/experiences and the 2018 “Salute to the Sockeye” Festival at Roderick Haig Brown Park. The increased iTo increase awareness and showcase the type of tourist experience that is available in the Shuswap region.</p> <p>Tracking Mechanisms to measure results: Increase in visitation recorded through our visitor centers and key stakeholders and an increase in web activity and information requests. Increased number of editorial that is shown in various media as targeted by the visiting media. It is our intention to increase our media tours from 4 to 8 in 2017/2018. This will increase our editorial content in various media.</p> <p>Tactic #4</p> <p>Updating Experience Guides</p> <p>Description: To update and reprint experience guides to showcase the 12 identified itineraries/experiences. These guides will include the Cycle Touring Guide, Motor Touring Guide, Nordic and Snowshoe Guide, and the Sledding Guide. This will be printed and online.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$17,600.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: In kind contribution of tourism business staff time to collaborate with Shuswap Tourism on the development of the guides. Approximately - \$2,000.00 – depending on time required to complete.</p> <p>Call to Action: To update our experience guides to incorporate and showcase the twelve identified Shuswap itineraries/experiences.</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will track the numbers of guides distributed at consumer shows, in region through tourism businesses and visitors’ centers, and guide downloads from the Shuswap Tourism website.</p>
<p>Tactic #5</p>	<p>Trail Guide Update and Reprint</p> <p>Description: Hiking is the #1 activity in the Shuswap. The Shuswap Trail Guide is our #2 marketing product that we produce next to the Shuswap Vacation Planner. This guide will now be updated to showcase new trail itineraries/experiences and new online mapping is being developed so that all trail routes in the guide can be downloaded to various mobile formats. Shuswap Tourism will also reprint the Trail Guide but the print run will be</p>

	<p>smaller as Shuswap Tourism will encourage more online engagement to reduce print costs.</p> <p>Timing: April 1, 2017 – January 31, 2018 – to be ready for consumer shows in the spring of 2018.</p> <p>Budget: \$25,000.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: Staff time contribution from the Shuswap Trail Alliance to assist with mapping and trail description development. Approximately – 80 hours @ \$24.00/per hour = \$1,920.00</p> <p>Call to Action: To increase the distribution of the Shuswap Trail Guide by making the guide mobile and web friendly to increase downloads of the guide and maps online.</p> <p>Tracking Mechanisms to measure results: To track downloads of the guide and the maps through Google Analytics on the Shuswap Tourism, Shuswap Trail Alliance, and other community trail organizations websites. Shuswap Tourism will also track the number of Shuswap Trail Guides distributed at consumer shows and visitor centers.</p>
Tactic #6	<p>Consumer Shows</p> <p>Description: Shuswap Tourism and Tourism businesses on site at consumer shows in Seattle, Calgary, Edmonton, and Vancouver. Shuswap Tourism will distribute the new marketing collateral that will be created to showcase the new twelve identified itineraries/experiences.</p> <p>Timing: October 1, 2017 – March 31, 2018</p> <p>Budget: \$15,000.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: Tourism business staff time, travel costs to attend shows, product for visitation incentives - \$5,000.00 – depending on length of show and product showcased.</p> <p>Call to Action: To create awareness of the Shuswap region and showcase the twelve identified itineraries/experiences. To increase booked visits to our tourism businesses</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will use Google Analytics to track visitation from these key geographic markets. Tourism business will report on activity from their websites and the number of visits booked.</p>
Tactic #7	<p>Promotion of local music events</p> <p>Description: The Shuswap region has as emerging community music scene. Between June-August visitors to the Shuswap can experience live outdoor music events seven nights a week. Community organizations host</p>

	<p>these events and fund the artists and the venue. Shuswap Tourism's role is to create the marketing collateral and assist in the marketing of these events. Target markets for these events would be our close in markets of Kamloops, Kelowna, and Vernon.</p> <p>Timing: May 1, 2017 – September 30, 2017</p> <p>Budget: \$5,000.00 – Shuswap Tourism/DBC Contribution</p> <p>Partner Contributions: In Kind - Chambers of Commerce, Arts Councils, and other organizations host and fund the artists and the venue. Total amount: \$35,000.00</p> <p>Call to Action: To create awareness and attendance at these community events through developing and distributing marketing collateral in the Shuswap region and on the Shuswap Tourism website. Shuswap Tourism will also distribute the marketing collateral at consumer shows and local event and include awareness of these events in our weekly e-blasts.</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will track in partnership with community organizations the attendance at these events. Shuswap Tourism will also track the number of rack cards distributed at consumer shows and local events as well as downloads through the Shuswap Tourism website.</p>
<p>Membership Model</p>	<p>Shuswap Tourism is a community destination marketing organization that promotes visitation for recreational/leisure purposes for the communities of Salmon Arm, Chase, Enderby, Sicamous, and CSRD Electoral areas C, D, E, F. We are a stakeholder organization and do not charge a fee to be a member of Shuswap Tourism. Our Tourism Advisory Committee has representation from all communities in the Shuswap region and is a mixture of community organizations, tourism operators, and elected officials. Our marketing activities are defined in our Tourism Development Plan and Shuswap Tourism implements these initiatives in collaboration with tourism businesses, community organizations. We will be looking at a paid membership model in 2017 which will clearly define how our tourism operators engage in new marketing campaigns with Shuswap Tourism. These campaigns will include specific industry sector and online marketing campaigns.</p> <p>Although we do not charge a membership fee we do work with our businesses on specific marketing campaigns/projects that require a fee to be included. Examples of this are:</p>

	<ol style="list-style-type: none"> 1. Shuswap Tourism Vacation Planner – This project charges our tourism operators to advertising in this planner. In engaging with Shuswap Tourism in this marketing collateral, these operators are also identified as our most developed products/experiences and are showcased in our media and familiarization tours and other marketing opportunities as they become available. 2. Shuswap Winery consortium – Shuswap Tourism works with the local Shuswap wineries to engage in specific marketing campaigns for this sector. This is a partnership where Shuswap Tourism provides 50% of the funding and the wineries provide the other 50% of the funding for targeted marketing campaigns. 3. Shuswap Golf Consortium - Shuswap Tourism works with the local Shuswap signature golf courses to engage in specific marketing campaigns for this sector. This is a partnership where Shuswap Tourism provides 50% of the funding and the golf courses provide the other 50% of the funding for targeted marketing campaigns.
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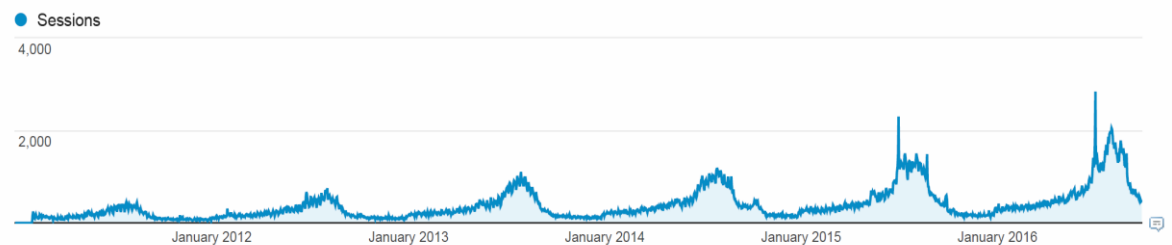
<p>Budget Summary and Funding Request</p>	<p>Provide a detailed budget that includes the estimated costs of each tactic, the amount for each tactic being contributed by the applicant, the amount of financial assistance for each tactic being requested by Destination BC and the total budget amount.</p> <p>Identify any assumptions used to develop the budget.</p> <table border="1"> <thead> <tr> <th>Marketing Tactic</th><th>Applicant \$</th><th>DBC \$</th><th>Total Budget</th></tr> </thead> <tbody> <tr> <td>Tactic 1</td><td>16,000</td><td>16,000</td><td>32,000</td></tr> <tr> <td>Tactic 2</td><td>15,000</td><td>15,000</td><td>30,000</td></tr> <tr> <td>Tactic 3</td><td>2,500</td><td>2,500</td><td>5,000</td></tr> <tr> <td>Tactic 4</td><td>8,800</td><td>8,800</td><td>17,600</td></tr> <tr> <td>Tactic 5</td><td>12,500</td><td>12,500</td><td>25,000</td></tr> <tr> <td>Tactic 6</td><td>7,500</td><td>7,500</td><td>15,000</td></tr> <tr> <td>Tactic 7</td><td>2,500</td><td>2,500</td><td>5,000</td></tr> <tr> <td>Total:</td><td>64,800</td><td>64,800</td><td>129,600</td></tr> </tbody> </table>	Marketing Tactic	Applicant \$	DBC \$	Total Budget	Tactic 1	16,000	16,000	32,000	Tactic 2	15,000	15,000	30,000	Tactic 3	2,500	2,500	5,000	Tactic 4	8,800	8,800	17,600	Tactic 5	12,500	12,500	25,000	Tactic 6	7,500	7,500	15,000	Tactic 7	2,500	2,500	5,000	Total:	64,800	64,800	129,600
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<p>Partner Organizations (if any) and Funding Request</p>	<p>Destination BC funding request: \$ 64,800</p> <p>Applicant funding contribution: \$ 64,800</p> <p>Community Organization Funding</p> <p>Tactic #7: \$ 35,000 (pending)</p> <p>Private sector businesses: \$ 23,920 (approximately – in kind contributions and staff time)</p> <p>Total Project including in-kind and cash contributions: \$ 188,520.00</p>																																				
<p>Evaluations</p>	<p>To determine whether the project objectives have been achieved will depend on the individual project so I have explained our methods of how we will indicate success on each tactic. Key measurable data is always a challenge for Destination Tourism Marketing organizations but we track, to the best of our ability, our Google Analytics on a monthly basis and ensure that all of the marketing material that we produce is strategic and meets the needs of our target markets. To date, our statistics have consistently increased as we have been able to ensure that our marketing campaigns are well delivered and are used by the consumer.</p> <p>Statistics to showcase growth are mainly received from Google Analytics and our Visitor Centers. The Shuswap region communities, at this time, are not collecting the MRDT and therefore are not able to collect statistics from accommodators. However, the City of Salmon Arm currently has an application that is waiting for approval from Destination BC and will begin the collection of the MRDT in 2017. This data from the MRDT collection will be available to Shuswap Tourism in 2017.</p>																																				

The statistics below show clearly that we have had good success with our online engagement but it could be better. Better and clearly defined marketing campaigns that target our key markets and focus on the twelve identified itineraries/experiences will increase our online presence and increase visitation to the Shuswap region

Shuswap Tourism online:

- Jan – Dec 2011 – 53,913 sessions, 42,332 Users, 266,207 page views
- Jan – Sept 2016 – 197,796 sessions, 149,589 Users, 580,242 page views
- 2,936,072 pages views from Jan 2011 – Sept 2016
- Average session duration – 3:15 minutes
- The graph below shows the increase of web activity year over year – but still peaks and valleys in the shoulder seasons. Shuswap Tourism has been working on increasing marketing activity in the spring and fall. Two Online Marketing campaigns running side by side from July – October 2016 in Pacific Northwest US, Metro Vancouver, Saskatchewan, Manitoba, BC and Alberta are showing significant traffic increase for the spring – now we need to focus on the fall and winter.
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Overview



We also provide annual reports to our community organizations, tourism operators, and elected officials on the success of our marketing campaigns. To date, satisfaction with our marketing campaigns has been well received by our tourism industry and visitors.



BOARD REPORT

TO: Chair and Directors

File No: 0580 01

SUBJECT: Shuswap Tourism Digital Marketing Promotion Project Contract Award

DESCRIPTION: Report from Robyn Cyr, Economic Development Officer (EDO), dated February 13, 2018

RECOMMENDATION #1: THAT: The Board empower the authorized signatories to enter into an agreement with Destination Think Consulting to develop the Shuswap Tourism Digital Marketing Promotion project for the amount of \$32,425.00.

SHORT SUMMARY:

The purpose of this request is for the CSR D Board is to approve that the development of the Shuswap Tourism Digital Marketing Promotion project be awarded to Destination Think Consulting in the amount of \$32,425.00. This project has been funded through the 2017/2018 Destination BC Coop marketing funding (Tactic #1) and was approved in the 2017 Shuswap Tourism budget. Another company was asked to submit a proposal but did not respond to our request.

The objective of the Shuswap Tourism Digital Marketing Promotion project is to increase brand awareness of year-round activities and experiences in the Shuswap region including alignment in new and existing markets.

VOTING:	Unweighted Corporate	<input type="checkbox"/>	LGA Part 14 (Unweighted)	<input type="checkbox"/>	Weighted Corporate	<input type="checkbox"/>	Stakeholder (Weighted)	<input checked="" type="checkbox"/>
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BACKGROUND:

Destination Think has prepared a rolling tactical plan and the 2017 Shuswap Tourism Strategy for Shuswap Tourism. Destination Think is also currently working under contract to Shuswap Tourism to provide strategic consultation to support and guide Shuswap Tourism through various elements of the tactical plan and strategy implementation. The Shuswap Digital Marketing Promotion project is one of the initiatives outlined for implementation in the Shuswap Tourism Marketing Strategy and an approved project in the 2017/18 Destination BC Cooperative program funding (Tactic #1).

This project is included in the 2017/18 Destination BC Cooperative Program funding and the funding amount of \$32,425.00 (\$16,212.50 – Destination BC and \$16,212.50 - Shuswap Tourism) was approved for this project in the 2017 Shuswap Tourism budget. This project is to increase brand awareness of year-round activities and experiences in the Shuswap region including alignment in new and existing markets.

In order to maintain project and strategy implementation consistency Destination Think has been chosen to develop the Shuswap Tourism Digital Marketing Promotion project.

POLICY:

CSRD Purchasing Policy No. F-32 Procurement of Goods and Services, requires that Board authorization must be obtained for any purchase over \$25,000 where the recommended supplier is not the lowest priced submission.

FINANCIAL:

There was \$32,425 allocated in the 2017 Shuswap Tourism budget for the Shuswap Tourism Digital Marketing Promotion Strategy. This project has been funded through the 2017/2018 Destination BC Co-operative Marketing Partnerships Program. As the project was not completed in 2017, both the project and the resulting surplus have been included in the 2018 budget.

SUMMARY:

The digital marketing campaign will showcase the fourteen Shuswap itineraries/experiences with a main focus on experiences in the less busy seasons in fall, spring, and winter. This campaign will focus and align with the target markets identified in the Pacific NW US, BC, and Alberta.

IMPLEMENTATION:

Robyn Cyr, EDO, will work with Destination Think, CSRD Staff, tourism businesses, and community organizations to implement the Shuswap Tourism Digital Marketing Promotion project. The work on the Shuswap Tourism Digital Marketing Promotion project will begin as soon as the contract is signed.

COMMUNICATIONS:

R. Cyr will provide updates on the Digital Marketing Promotion project to the Shuswap Tourism Advisory Committee at the quarterly meetings.

DESIRED OUTCOMES:

That the Board endorses the recommendation to enter into a contractual agreement with Destination Think for the Shuswap Tourism Digital Marketing Promotion project.

BOARD'S OPTIONS:

1. *Endorse the Recommendation.*
2. *Deny the Recommendation.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. Destination BC Co-operative Marketing Partnerships Program Application

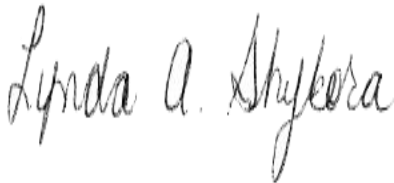
Report Approval Details

Document Title:	Shuswap Tourism Digital Marketing Promotion Contract.docx
Attachments:	- DBC Coop Marketing Application - Shuswap - 2017-18 - Revised 022817.pdf
Final Approval Date:	Feb 14, 2018

This report and all of its attachments were approved and signed as outlined below:



Jodi Pierce - Feb 13, 2018 - 4:48 PM



Lynda Shykora - Feb 14, 2018 - 9:34 AM



Charles Hamilton - Feb 14, 2018 - 10:07 AM

Destination BC Co-operative Marketing Partnerships Program Application

You may fill in the form below or use the headings in a separate document. Please try to limit your application to a maximum of eight pages.

Contact Information:

Applicants:	Tourism Shuswap Columbia Shuswap Regional District Representing: Chase, CSRD Electoral Areas C, D, E, and F, Enderby, Salmon Arm, and Sicamous		
Representatives:	Robyn Cyr, EDO, Columbia Shuswap Regional District, Manager – Tourism Shuswap		
Lead Organization:	Columbia Shuswap Regional District		
Authorized Authority:	Robyn Cyr, EDO, Columbia Shuswap Regional District, Manager – Tourism Shuswap		
Mailing Address:	555 Harbourfront Drive NE, Box 978 Salmon Arm, BC V1E 4P1		
Telephone:	250-833-5928	Email:	rcyr@csrd.bc.ca
Contact Person: (if different from above)	Same as above		
Telephone:		Email:	

Applications are due by November 30th. Incomplete or late proposals will not be considered. All funding received for successful applications must be spent by the end of the contracted term.

Application Proposal:

Applications must be sent by email to coop@destinationbc.ca

Lead Organization	Columbia Shuswap Regional District
Name of Initiative	Shuswap Tourism: Shuswap Tourism Regional Marketing Campaign Project
Project Description	<p>The Shuswap Tourism Regional Marketing Campaign Project is intended to bolster and augment the existing Shuswap Tourism marketing activities and implement the 2016/2017 marketing projects. The project will include:</p> <ul style="list-style-type: none"> • A focus on increasing Shuswap brand Awareness and Alignment in new markets • Strengthening our brand from within: developing in-region communication and marketing materials • Defining experience: sharing our story's specifics and delivering on the experience • Planning for the future: readying the region for a 2018 Salute to the Sockeye • Measure for success: a continued focus on metrics <p>The intended actions are designed to leverage and build on the projects that were completed in the 2016/2017 marketing initiative and to create further opportunities for product promotion and development.</p> <p>The Shuswap has a solid brand that aligns with the Destination BC brand. Our tag line is: Beautiful, Casual, Down-to-Earth and our brand pillars are Lake (a distinct visual landscape that dominates our region and provides activities for recreation), Country (incredible wilderness surroundings that provide a backdrop for mountain biking, cycling, golf, camping, fishing, and more), and Culture (the fabric of our communities create a culture that visitors want to experience). Our current communication materials are comprised of a comprehensive website, experience brochures, a vacation planner, and various other marketing collateral.</p> <p>We also continue to develop marketing materials to enable the Shuswap region to engage visitors for the 2018 Adams River "Salute to the Sockeye". This event will draw visitors regionally, provincially, and internationally to the Shuswap region. We will have clear messaging and experiences that will showcase the region and provide the best economic impact for our tourism stakeholders throughout the Shuswap region, the Thompson Okanagan region, and the Province of BC.</p> <p>This project will increase visitation and in turn provide increased revenue for the tourism industry in the Shuswap. It is our responsibility as a destination marketing organization to ensure that we have clearly defined</p>

	marketing messages and experiences that showcase the Shuswap region and provide the best return on investment for our tourism industry.
Situation Analysis	<p>Over the past eight years, Shuswap Tourism has developed a strong regional brand that promotes the region and the communities in the Shuswap region. Communities and areas in the region include: Salmon Arm, Sicamous, Enderby, Chase, Sorrento, Blind Bay, Falkland, Scotch Creek, Celistia, Seymour Arm, Malakwa, Swansea Point, and other smaller unincorporated communities in this region.</p> <p>The Shuswap is located in the center of BC, and sees over 4 million travel directly through the region on the Trans-Canada (#1) Highway. The Shuswap is also located in the Thompson Okanagan Tourism region and sees increasing visitation to the region as a result of spill-over and additional interest from the southern communities in the Okanagan. Our region sees an increase in visitation due to developed experiences and consistent messaging and marketing. The Shuswap's lead experiences are accessible to a wide market and are comparatively value orientated.</p> <p>Immediate competitors and peers include the Okanagan and Kootenay Rockies areas. Their strengths are a higher calibre of developed experiences and greater recognition. However, the Shuswap still continues to offer more approachable, accessible and casual (or self-guided) experiences, with a lower cost of entry and a new fresh perspective.</p> <p>A solid foundation of marketing materials is in place but the region still needs to continue to increase awareness, alignment, and action in new and existing target regions. In region Shuswap brand awareness and alignment is also an ongoing project that requires further work to engage community and tourism stakeholders.</p> <p>Campaign advertising has been geographically, activity-interest and demographically targeted in order to provide the maximum return on investment.</p> <p>Statistics to showcase growth are mainly received from Google Analytics and our Visitor Centers. The Shuswap region communities, at this time, are not collecting the MRDT and therefore are not able to collect statistics from accommodators. However, the City of Salmon Arm currently has an application that is waiting for approval from Destination BC and will begin the collection of the MRDT in 2017. This data from the MRDT collection will be available to Shuswap Tourism in 2017.</p>

Traffic Growth In Targeted Geographic Markets

July 15, 2016 – November 27, 2016 vs. Same Time Last Year

US Pacific Northwest

Website traffic from the US Pacific Northwest (Washington, Oregon, Idaho) is up 103.2% year over year. Conversion goals from this group are up 364.5% over 2015.

Conversion goals are defined by website visitor activities such as clicking on a Member's listing link or viewing a visitor information guide.

British Columbia Interior

Website traffic from BC visitors outside of Metro Vancouver is up 42.3% year over year. Conversion goals from this group are up 73% over 2015.

Alberta

Website traffic from Alberta is up 36.5% year over year. Conversion goals from this group are up 54.9% over 2015.

Metro Vancouver

Website traffic from Metro Vancouver is up 32% year over year. Conversion goals from this group are up 94.9% over 2015.

Traffic Growth In Interest Segments and Demographic Markets

July 15, 2016 – November 27, 2016 vs. Same Time Last Year

Advertising has been directed at those groups with the strongest potential to convert into on-the-ground visitors to the Shuswap. We have seen significant growth in In-Market and Affinity audience groups that show a strong potential for ongoing growth in actual visitor numbers.

In Market Audiences

In-Market Audiences are researching products and are actively considering buying a service or product like these we offer. For Shuswap Tourism that meant advertising budget was weighted in favour of audiences actively planning vacations and travel.

Overall Growth

Website traffic from travel related In-Market Audiences is up 257.7% year over year. Conversion goals from this group are up 320.8% over 2015.

US Pacific Northwest

Website traffic from travel related In-Market Audiences in the Pacific Northwest is up 558.5% year over year. Conversion goals from this group are up 522.5% over 2015.

	<p>BC Interior Website traffic from travel related In-Market Audiences in the BC Interior is up 256.1% year over year. Conversion goals from this group are up 291.9% over 2015.</p> <p>Alberta Website traffic from travel related In-Market Audiences in Alberta is up 218.5% year over year. Conversion goals from this group are up 278.4% over 2015.</p> <p>Metro Vancouver Website traffic from travel related In-Market Audiences in Metro Vancouver is up 296% year over year. Conversion goals from this group are up 376% over 2015.</p> <p>Affinity Audiences</p> <p>Affinity audience targeting uses someone's overall interests, passions, and lifestyle to get a better sense of their overall identity. For Shuswap Tourism, advertising was weighted to family-related affinity audiences.</p> <p>Overall Website traffic from family related Affinity Audiences is up 153.5% year over year. Conversion goals from this group are up 211% over 2015.</p> <p>US Pacific Northwest Website traffic from family related Affinity Audiences in the Pacific Northwest is up 190% year over year. Conversion goals from this group are up 406% over 2015.</p> <p>BC Interior Website traffic from family related Affinity Audiences in the BC Interior is up 162% year over year. Conversion goals from this group are up 211% over 2015.</p> <p>Alberta Website traffic from family related Affinity Audiences in Alberta is up 147.5% year over year. Conversion goals from this group are up 160.7% over 2015.</p> <p>Metro Vancouver Website traffic from family related Affinity Audiences in Metro Vancouver is up 157% year over year. Conversion goals from this group are up 260.1% over 2015.</p>
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	<p>Shuswap Tourism Guides downloaded</p> <p>June 1 to September 30 2016 compared to same period in 2015.</p> <ul style="list-style-type: none"> • Shuswap Vacation Planner 3014 views vs. 752 – up 301% 558 PDF downloads vs. 231 - up 142% • Shuswap Trail Guide 2527 views vs. 407 – up 521% 330 PDF downloads vs. 150 - up 120% • Shuswap Cycling Tour Guide 1563 views vs. 203 – up 670% 186 PDF downloads vs. 77 - up 142% • Full Circle Farm Tour Guide 992 views vs. 133 – up 646% 137 PDF downloads vs. 52 - up 163% • Shuswap Wineries – 294 views vs. 82 – up 259% 184 PDF downloads vs. 68 - up 171% • Shuswap Motor Touring Guide 240 views vs. 75 - up 220% 102 PDF downloads vs. 45 - up 127% <p>Prevailing perceptions of the Shuswap center around ‘a nice place’ but visitors are still unsure of what activities or experiences are available, and what attitude exists. However, over the past two years, there have been a number of new experiences that have been developed and new businesses that are emerging, that are starting to interest new visitation to the region. However, the typical visitation still sees short stays – one to two nights. In order to ensure a strong economy for Tourism in the Shuswap, those stays need to increase.</p>
Objective(s)	<p>Our objectives for this project are:</p> <ul style="list-style-type: none"> • To create greater top-of-mind awareness for the Shuswap • To strengthen the distinctive, identifiable presence and sense-of-place within the region • To continue to foster the development of more sophisticated products and experiences in the region • To ignite imagination and compel curiosity: to encourage potential visitors to learn more about the region

	<p>This project continues to develop a long term ongoing sustainable relationship with visitors to the Shuswap region. We seek to improve our communication tools so that new and existing target audiences will recognize that we continue to create new experiences that will align with their interests. We also want to visualize that we are different or unique from others, and that we are an exemplary component of an authentic and remarkable interior BC experience.</p> <p>We will continue to develop assets that will build and maintain the Shuswap brand and aligns with our Regional and Provincial marketing organizations.</p> <p>Our ultimate goal is to increase awareness and perceptions that ultimately lead to increased visitation and a positive economic impact for the Tourism industry in the Shuswap region.</p>
Strategies	<p>The strategies that will be used to complete this project are:</p> <ul style="list-style-type: none"> • Reviewing past data • Carrying out the projects/tactics • Monitoring the use and circulation of communication tools • Circulating stories, experiences and itinerary with media (travel, tourism trades) • Delivering successes to stakeholders, and sharing the vision with them • Reaching new audiences through digital marketing (google, display & AdWords), in-region marketing (print media/planners, banners) engaging and connecting with them, and empowering them with compelling information (website, travel planners, partner referrals) <p>These marketing strategies will focus on the twelve identified itineraries/experiences. Itineraries include short, full days, and multi-day trips. Four half day trips are Water Activities, Taste of the Shuswap, Winter Activities, and Music. Five full-day experiences include the Adams River “Salute to the Sockeye” festival and the Adams River Salmon Run, Wineries, Land and Trails, and Golf. Two four-day itineraries focus on houseboats and family centered activities. One itinerary experience will be about a week-long Shuswap excursion.</p> <p>The strategy to deliver the initiatives as outlined in this project will not only be delivered by Shuswap Tourism, but through the businesses and stakeholders that we continue to collaborate and work with in the Shuswap region. It is always our intent to engage and collaborate with our stakeholders to maintain brand alignment and to engage them in the development of our marketing material, online and in print. We always strive to ensure that our experiences resonate with our visitors but they also resonate with our tourism industry.</p>

Markets/Segments	<p>Our primary opportunity for continued market development lies in the Pacific North West US, BC (including the Lower Mainland and metro Vancouver, and central and northern BC), and short haul markets (including Kelowna, Kamloops, Vernon). Our optimum PNW market is estimated to be 750,000 (out of 15 Million), that potentially align with our brand and experience.</p> <p>The Calgary-Edmonton corridor in Alberta continues to also be a strong target market. The reason for this is that they already know about the Shuswap but we continue to target this market as they continue to represent a large market for visitation to the Shuswap region and are continually seeking to engage in new and existing experiences in this region.</p> <p>Our EQ Audience is: Authentic Experiencers, Free Spirits, and Cultural Explorers.</p> <p>Shuswap Tourism has created a new data collection tool that will support the existing in-market research from our Visitor Centers. We will engage tourism operators to complete a comprehensive but efficient research tool that will give Shuswap Tourism information but also provide these businesses with useful information that they can also use in determining their marketing decisions. This will be available for use in 2017.</p> <p>Our demographic target market is primarily focused on an age group from 35-50 but the demographic statistics shown on our website in the past year states that our largest group is 25-35. Our outdoor adventures activities are attracting a larger younger audience and although we will continue to focus on that 35-50 age group we will start to look at some experiences that will focus on a younger audience as well.</p> <p>Focus areas for our marketing:</p> <ol style="list-style-type: none"> 1. The Pacific Northwest US and the Lower Mainland and Metro Vancouver market will focus leisure traveller looking to escape the city and looking for relaxation and rejuvenation and creating an experience so that they will want to return. Our optimal stay time would be three-five days. One day on each end of the trip to travel and three days to truly enjoy the region. Aboriginal Tourism Cultural experiences will also focus on this demographic. 2. Central and Northern BC, Edmonton and Calgary (Spring and Fall) <ul style="list-style-type: none"> - The ice melts earlier here – hiking and biking, cycle touring, golf, fishing – starts earlier than our northern communities.
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	<ol style="list-style-type: none"> 3. Edmonton, Calgary, Lower Mainland, Short haul markets – Winter – Sledding, Nordic skiing, snowshoeing. These activities will be the focus of new marketing material that will encourage visitation in the winter season. 4. Short haul markets (all seasons) – come to visit for dinner and theatre, experience live music “In the Bay”, or the Roots and Blues Festival, go for a ski at the Larch Hills Nordic Ski area, shop in our unique downtown, visit galleries, and other activities seasonally. 5. The key experiences (Spring and Fall) will be Touring and Exploring (focusing on mostly self-guided experiences), Outdoor Adventure (hiking and biking (mountain and trail), water based activities (kayaking, SUP, canoeing), Aboriginal Cultural Tourism, Wine Touring, Golfing, and an emerging experience – Fishing. Although we have long been known as a fishing destination it has mainly been self-guided and hidden. We now have new opportunities in this sector that can provide guided fishing tours.
Provincial Destination Brand Alignment	<p>The Shuswap has a solid brand that aligns with the Destination BC brand. Our tag line is: Beautiful, Casual, Down-to-Earth and our brand pillars are Lake (a distinct visual landscape that dominates our region and provides activities for recreation), Country (incredible wilderness surroundings that provide a backdrop for hiking, mountain biking, cycling, golf, camping, fishing, and more), and Culture (the fabric of our communities create a culture that visitors want to experience). Our brand creates a vision of natural landscape that urban visitors want to experience again and again. Our current communication materials are comprised of a comprehensive website, experience brochures, vacation planners, and experience guides. This material encourages our visitors to step out of their ordinary day and explore with our communities the culture and the beauty of this region.</p>
Tactic #1	<p>Digital/Online Marketing Campaign (Year 2)</p> <p>Description: This on-line marketing campaign will showcase the twelve identified Shuswap itineraries/experiences. The online marketing campaign will align with target markets in the Pacific NW US, BC, and Alberta. These online ads will be placed in the Province and Vancouver Sun, CNN, Castanet, Kamloops Daily News, Calgary Herald, Edmonton Journal, as well as other placements that are relevant to our target markets. Our focus will be on a Spring/Fall Campaign and Winter campaign.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$32,000.00 – DBC/Shuswap Tourism Contribution</p>

	<p>Partner Contribution: In kind contribution of tourism product for contests – Value - \$5000.00 – depending on the type of experience.</p> <p>Call to Action: Online marketing campaigns that will increase visitation to the Shuswap Tourism website and tourism industry partner websites. These campaigns will highlight the twelve identified itineraries/experiences and will be placed in the Province and Vancouver Sun, CNN, Castanet, Kamloops Daily News, Calgary Herald, Edmonton Journal, as well as other placements that are relevant to our target markets.</p> <p>Tracking Mechanisms to measure results: These marketing campaigns will be tracked through Google Analytics, and Social Media engagement on Facebook, Twitter, and Instagram.</p> <p>Tactic #2</p> <p>Video and imagery - Shuswap region</p> <p>Description: The development of a video and new imagery for promotional use of the Shuswap region. This video and imagery will showcase the 12 identified Shuswap itineraries/experiences. The imagery will mainly focus on images of the spring, fall, and winter activities. Video and imagery in this project will also include promotional material for the 2018 “Salute to the Sockeye” Festival on the Adams River and located at Roderick Haig Brown Provincial Park.</p> <p>Timing: April 1, 2017 – March 31, 2018– to capture all seasons – ready for the spring of 2018</p> <p>Budget: \$30,000.00</p> <p>Partner Contribution: In-kind tourism business staff time and product to capture experiences – approximately \$5,000.00.</p> <p>Call to Action: Video and imagery created to showcase the 12 identified Shuswap itineraries/experiences on the Shuswap Tourism website, social media channels, and partner/tourism businesses websites. Video and imagery for the 2018 “Salute to the Sockeye” Festival at the Roderick Haig Brown Park.</p> <p>Tracking Mechanisms to measure results: Tracking views through Google Analytics and social media channels, community stakeholder and tourism operator websites.</p>
<p>Tactic #3</p>	<p>Media Tours</p> <p>Description: To develop six media tours to showcase the 12 identified itineraries/experiences and the 2018 “Salute to the Sockeye” Festival at Roderick Haig Brown Provincial Park.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$5,000.00 – DBC/Shuswap Tourism Contribution</p>

	<p>Partner Contribution – In-kind contribution of tourism business staff time and product - \$5,000.00 – depending on product that is showcased.</p> <p>Call to Action: These media tours will increase awareness of the new twelve identified/experiences and the 2018 “Salute to the Sockeye” Festival at Roderick Haig Brown Park. The increased iTo increase awareness and showcase the type of tourist experience that is available in the Shuswap region.</p> <p>Tracking Mechanisms to measure results: Increase in visitation recorded through our visitor centers and key stakeholders and an increase in web activity and information requests. Increased number of editorial that is shown in various media as targeted by the visiting media. It is our intention to increase our media tours from 4 to 8 in 2017/2018. This will increase our editorial content in various media.</p> <p>Tactic #4</p> <p>Updating Experience Guides</p> <p>Description: To update and reprint experience guides to showcase the 12 identified itineraries/experiences. These guides will include the Cycle Touring Guide, Motor Touring Guide, Nordic and Snowshoe Guide, and the Sledding Guide. This will be printed and online.</p> <p>Timing: April 1, 2017 – March 31, 2018</p> <p>Budget: \$17,600.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: In kind contribution of tourism business staff time to collaborate with Shuswap Tourism on the development of the guides. Approximately - \$2,000.00 – depending on time required to complete.</p> <p>Call to Action: To update our experience guides to incorporate and showcase the twelve identified Shuswap itineraries/experiences.</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will track the numbers of guides distributed at consumer shows, in region through tourism businesses and visitors’ centers, and guide downloads from the Shuswap Tourism website.</p>
<p>Tactic #5</p>	<p>Trail Guide Update and Reprint</p> <p>Description: Hiking is the #1 activity in the Shuswap. The Shuswap Trail Guide is our #2 marketing product that we produce next to the Shuswap Vacation Planner. This guide will now be updated to showcase new trail itineraries/experiences and new online mapping is being developed so that all trail routes in the guide can be downloaded to various mobile formats. Shuswap Tourism will also reprint the Trail Guide but the print run will be</p>

	<p>smaller as Shuswap Tourism will encourage more online engagement to reduce print costs.</p> <p>Timing: April 1, 2017 – January 31, 2018 – to be ready for consumer shows in the spring of 2018.</p> <p>Budget: \$25,000.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: Staff time contribution from the Shuswap Trail Alliance to assist with mapping and trail description development. Approximately – 80 hours @ \$24.00/per hour = \$1,920.00</p> <p>Call to Action: To increase the distribution of the Shuswap Trail Guide by making the guide mobile and web friendly to increase downloads of the guide and maps online.</p> <p>Tracking Mechanisms to measure results: To track downloads of the guide and the maps through Google Analytics on the Shuswap Tourism, Shuswap Trail Alliance, and other community trail organizations websites. Shuswap Tourism will also track the number of Shuswap Trail Guides distributed at consumer shows and visitor centers.</p>
Tactic #6	<p>Consumer Shows</p> <p>Description: Shuswap Tourism and Tourism businesses on site at consumer shows in Seattle, Calgary, Edmonton, and Vancouver. Shuswap Tourism will distribute the new marketing collateral that will be created to showcase the new twelve identified itineraries/experiences.</p> <p>Timing: October 1, 2017 – March 31, 2018</p> <p>Budget: \$15,000.00 – DBC/Shuswap Tourism Contribution</p> <p>Partner Contribution: Tourism business staff time, travel costs to attend shows, product for visitation incentives - \$5,000.00 – depending on length of show and product showcased.</p> <p>Call to Action: To create awareness of the Shuswap region and showcase the twelve identified itineraries/experiences. To increase booked visits to our tourism businesses</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will use Google Analytics to track visitation from these key geographic markets. Tourism business will report on activity from their websites and the number of visits booked.</p>
Tactic #7	<p>Promotion of local music events</p> <p>Description: The Shuswap region has as emerging community music scene. Between June-August visitors to the Shuswap can experience live outdoor music events seven nights a week. Community organizations host</p>

	<p>these events and fund the artists and the venue. Shuswap Tourism's role is to create the marketing collateral and assist in the marketing of these events. Target markets for these events would be our close in markets of Kamloops, Kelowna, and Vernon.</p> <p>Timing: May 1, 2017 – September 30, 2017</p> <p>Budget: \$5,000.00 – Shuswap Tourism/DBC Contribution</p> <p>Partner Contributions: In Kind - Chambers of Commerce, Arts Councils, and other organizations host and fund the artists and the venue. Total amount: \$35,000.00</p> <p>Call to Action: To create awareness and attendance at these community events through developing and distributing marketing collateral in the Shuswap region and on the Shuswap Tourism website. Shuswap Tourism will also distribute the marketing collateral at consumer shows and local event and include awareness of these events in our weekly e-blasts.</p> <p>Tracking Mechanisms to measure results: Shuswap Tourism will track in partnership with community organizations the attendance at these events. Shuswap Tourism will also track the number of rack cards distributed at consumer shows and local events as well as downloads through the Shuswap Tourism website.</p>
<p>Membership Model</p>	<p>Shuswap Tourism is a community destination marketing organization that promotes visitation for recreational/leisure purposes for the communities of Salmon Arm, Chase, Enderby, Sicamous, and CSRD Electoral areas C, D, E, F. We are a stakeholder organization and do not charge a fee to be a member of Shuswap Tourism. Our Tourism Advisory Committee has representation from all communities in the Shuswap region and is a mixture of community organizations, tourism operators, and elected officials. Our marketing activities are defined in our Tourism Development Plan and Shuswap Tourism implements these initiatives in collaboration with tourism businesses, community organizations. We will be looking at a paid membership model in 2017 which will clearly define how our tourism operators engage in new marketing campaigns with Shuswap Tourism. These campaigns will include specific industry sector and online marketing campaigns.</p> <p>Although we do not charge a membership fee we do work with our businesses on specific marketing campaigns/projects that require a fee to be included. Examples of this are:</p>

	<ol style="list-style-type: none"> 1. Shuswap Tourism Vacation Planner – This project charges our tourism operators to advertising in this planner. In engaging with Shuswap Tourism in this marketing collateral, these operators are also identified as our most developed products/experiences and are showcased in our media and familiarization tours and other marketing opportunities as they become available. 2. Shuswap Winery consortium – Shuswap Tourism works with the local Shuswap wineries to engage in specific marketing campaigns for this sector. This is a partnership where Shuswap Tourism provides 50% of the funding and the wineries provide the other 50% of the funding for targeted marketing campaigns. 3. Shuswap Golf Consortium - Shuswap Tourism works with the local Shuswap signature golf courses to engage in specific marketing campaigns for this sector. This is a partnership where Shuswap Tourism provides 50% of the funding and the golf courses provide the other 50% of the funding for targeted marketing campaigns.
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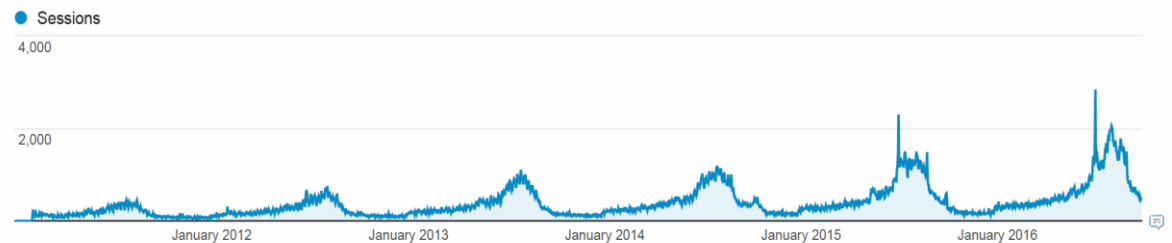
<p>Budget Summary and Funding Request</p>	<p>Provide a detailed budget that includes the estimated costs of each tactic, the amount for each tactic being contributed by the applicant, the amount of financial assistance for each tactic being requested by Destination BC and the total budget amount.</p> <p>Identify any assumptions used to develop the budget.</p> <table border="1"> <thead> <tr> <th>Marketing Tactic</th><th>Applicant \$</th><th>DBC \$</th><th>Total Budget</th></tr> </thead> <tbody> <tr> <td>Tactic 1</td><td>16,000</td><td>16,000</td><td>32,000</td></tr> <tr> <td>Tactic 2</td><td>15,000</td><td>15,000</td><td>30,000</td></tr> <tr> <td>Tactic 3</td><td>2,500</td><td>2,500</td><td>5,000</td></tr> <tr> <td>Tactic 4</td><td>8,800</td><td>8,800</td><td>17,600</td></tr> <tr> <td>Tactic 5</td><td>12,500</td><td>12,500</td><td>25,000</td></tr> <tr> <td>Tactic 6</td><td>7,500</td><td>7,500</td><td>15,000</td></tr> <tr> <td>Tactic 7</td><td>2,500</td><td>2,500</td><td>5,000</td></tr> <tr> <td>Total:</td><td>64,800</td><td>64,800</td><td>129,600</td></tr> </tbody> </table>	Marketing Tactic	Applicant \$	DBC \$	Total Budget	Tactic 1	16,000	16,000	32,000	Tactic 2	15,000	15,000	30,000	Tactic 3	2,500	2,500	5,000	Tactic 4	8,800	8,800	17,600	Tactic 5	12,500	12,500	25,000	Tactic 6	7,500	7,500	15,000	Tactic 7	2,500	2,500	5,000	Total:	64,800	64,800	129,600
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<p>Partner Organizations (if any) and Funding Request</p>	<p>Destination BC funding request: \$ 64,800 Applicant funding contribution: \$ 64,800 Community Organization Funding Tactic #7: \$ 35,000 (pending) Private sector businesses: \$ 23,920 (approximately – in kind contributions and staff time)</p> <p>Total Project including in-kind and cash contributions: \$ 188,520.00</p>																																				
<p>Evaluations</p>	<p>To determine whether the project objectives have been achieved will depend on the individual project so I have explained our methods of how we will indicate success on each tactic. Key measurable data is always a challenge for Destination Tourism Marketing organizations but we track, to the best of our ability, our Google Analytics on a monthly basis and ensure that all of the marketing material that we produce is strategic and meets the needs of our target markets. To date, our statistics have consistently increased as we have been able to ensure that our marketing campaigns are well delivered and are used by the consumer.</p> <p>Statistics to showcase growth are mainly received from Google Analytics and our Visitor Centers. The Shuswap region communities, at this time, are not collecting the MRDT and therefore are not able to collect statistics from accommodators. However, the City of Salmon Arm currently has an application that is waiting for approval from Destination BC and will begin the collection of the MRDT in 2017. This data from the MRDT collection will be available to Shuswap Tourism in 2017.</p>																																				

The statistics below show clearly that we have had good success with our online engagement but it could be better. Better and clearly defined marketing campaigns that target our key markets and focus on the twelve identified itineraries/experiences will increase our online presence and increase visitation to the Shuswap region

Shuswap Tourism online:

- Jan – Dec 2011 – 53,913 sessions, 42,332 Users, 266,207 page views
- Jan – Sept 2016 – 197,796 sessions, 149,589 Users, 580,242 page views
- 2,936,072 pages views from Jan 2011 – Sept 2016
- Average session duration – 3:15 minutes
- The graph below shows the increase of web activity year over year – but still peaks and valleys in the shoulder seasons. Shuswap Tourism has been working on increasing marketing activity in the spring and fall. Two Online Marketing campaigns running side by side from July – October 2016 in Pacific Northwest US, Metro Vancouver, Saskatchewan, Manitoba, BC and Alberta are showing significant traffic increase for the spring – now we need to focus on the fall and winter.
-

Overview



We also provide annual reports to our community organizations, tourism operators, and elected officials on the success of our marketing campaigns. To date, satisfaction with our marketing campaigns has been well received by our tourism industry and visitors.



BOARD REPORT

TO: Chair and Directors

File No: BL660

SUBJECT: Electoral Areas B, E and F: Building Bylaw No. 660 (CSR D)

DESCRIPTION: Report from Gerald Christie, Manager Development Services, dated February 13, 2018.

A bylaw to regulate building construction in Electoral Areas B, E and F and to replace existing Building Regulation Bylaw No. 630.

RECOMMENDATION #1: THAT: Second and Third readings given to “Building Bylaw No. 660” on the 18th day of January, 2018 hereby be rescinded, this 15th day of February, 2018.

RECOMMENDATION #2 THAT: “Building Bylaw No. 660” be read a Second time, as amended, this 15th day of February, 2018.

RECOMMENDATION #3: THAT: “Building Bylaw No. 660” be read a Third time, this 15th day of February, 2018.

RECOMMENDATION #4: THAT: “Building Bylaw No. 660” be adopted, this 15th day of February, 2018.

RECOMMENDATION #5: THAT: the Board resolve that for the purposes of clarification and enforcement of Bylaw No. 660 that every complete building permit application received for Electoral Area F prior to March 5, 2018 will be addressed by the CSR D through Building Regulation Bylaw No. 630.

SHORT SUMMARY:

At the January 15, 2018 Board meeting the proposed Building Bylaw No. 660 was presented and given three readings. As discussed and recommended by staff, after Bylaw 660 received three readings CSR D staff met and corresponded with professionals involved in the construction industry in the service areas, including meeting with representatives from the Shuswap Construction Industry Professionals (SCIP). In light of the comments received and additional staff and legal review, minor amendments to the bylaw are, therefore, proposed prior to adoption.

VOTING:	Unweighted Corporate	<input checked="" type="checkbox"/>	LGA Part 14 (Unweighted)	<input type="checkbox"/>	Weighted Corporate	<input type="checkbox"/>	Stakeholder (Weighted)	<input type="checkbox"/>
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BACKGROUND:

Proposed Building Bylaw No. 660 has been developed in consultation with the Municipal Insurance Association of BC (MIABC), the Housing Branch of the Province of BC, and CSR D legal counsel. Development Services staff have also reviewed the bylaw and made amendments to make the bylaw regulations more applicable and specific to the small community and rural environment found in the CSR D. Upon the bylaw receiving three readings at the January 15, 2018 Board meetings, staff have liaised with professionals involved in the local construction industry, including meeting with representatives from the Shuswap Construction Industry Professionals (SCIP) to hear their concerns and comments with regard to the proposed bylaw. Most of the comments provided to the CSR D recommended minor changes to the bylaw and included better wording for clarity, removal of duplicated regulation, inclusion of radon gas BC Building Code requirements, and changes to professional liability insurance coverage.

POLICY:

There are no new associated policies required at this time for the implementation of Building Bylaw No. 660.

FINANCIAL:

An allocation was made starting in the 2017 budget for two additional staff to be hired in the last quarter of the year to assist with the implementation and administration of a building regulation service in Electoral Areas B and E. A new Building Inspector started in November and a Building Inspection Assistant started in December 2017. A sub regional building inspection budget has been created for Electoral Areas B and E, and a separate budget continues for the existing Electoral Area F building inspection service. The proposed 2018 budget discussed at the February 7, 2018 Committee of the Whole meeting has provided further details about the budget for the building regulation service in Electoral Areas B, E and F.

KEY ISSUES/CONCEPTS:

In discussion with staff, construction industry professionals, and further review by CSRD legal counsel, MIABC and the provincial Housing Branch, several changes have been incorporated into the final version of Building Bylaw No. 660:

- Minor word usage changes, e.g. Building Inspector to Building Official; parcel lines to parcel boundaries, etc.;
- Further clarity as to when a building permit is required;
- Additional details as to when a registered professional is required and what information they are to provide to the Building Official;
- Wording changes to allow for concurrent processing of development permits and land use applications with a building permit application, but such approvals must be met prior to building permit issuance;
- Reduction in requirements for professional liability insurance;
- Allowances for partial occupancy of a building if it meets health and safety code requirements; and,
- Miscellaneous minor grammatical and wording changes.

These amendments do not change the overall intent of the bylaw or the BC Building Code requirements that need to be met. As the bylaw is utilized by staff and construction professionals over the next year additional refinements may be necessary to better reflect the administration and field use of the bylaw.

It has also been deemed necessary for clarification purposes to have the Board pass a resolution noting that any complete building permit applications received prior to March 5, 2018 will be processed under the regulations contained within existing Building Regulation Bylaw No. 630. This resolution is made in the recommendations section of this report.

SUMMARY:

Feedback has now been received from construction industry professionals in the service areas, from legal counsel, and received further review by CSRD building department staff, all of which has resulted in additional refinements to Building Bylaw No. 660. The bylaw incorporates the latest requirements of the Building Act, and has also received several reviews by MIABC and the provincial Housing Branch. The bylaw is the most up to date and first of its kind Building Bylaw template in the province for a primarily rural regional district. It is now appropriate to adopt Building Bylaw No. 660 which will become effective on March 5, 2018 in Electoral Areas B, E and F.

IMPLEMENTATION:

Existing Building Regulation Bylaw No. 630 will continue to apply to complete building permit applications received prior to March 5, 2018. If adopted, Building Bylaw No. 660 will then come into effect on March 5, 2018; any new building permit applications applied for on or after March 5, 2018 will then be required to meet the regulations of Bylaw No. 660 and the BC Building Code in the service areas.

Staff will continue to monitor the implementation of the new building regulation service and will inform the Board as to its progress over the coming months.

COMMUNICATIONS:

The following communications have been or will be undertaken for the implementation of the building regulation service:

- December 2017 – newspaper advertising, CSRD website notices and webpage, and social media advertising noting that Building Inspection will be in effect in Electoral Areas B and E on March 5, 2018. Advertising in Electoral Area F that the existing building regulations will be changing starting March 5, 2018 from three (3) to six (6) inspections.
- January – CSRD staff met with local construction industry professionals and received feedback on the bylaw.
- February – advertising in local newspapers in Electoral Areas B, E and F continues along with information on the CSRD website, and on social media.
- February – Electoral Areas B and E:
 - Posters noting the requirements of the new service have been put up in various locations;
 - Radio advertising will also be used a week prior and a week after implementation to notify residents of the new service.
 - Letters about the new service have been mailed to each property owner.

DESIRED OUTCOMES:

That the Board adopt Building Bylaw No. 660 and that the Board also approve a resolution clarifying that complete building permit applications received in Electoral Area F prior to March 5, 2018 will be subject to Building Regulation Bylaw No. 630.

BOARD'S OPTIONS:

1. *Endorse the Recommendations.*
2. *Deny the Recommendations.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. N/A

Report Approval Details

Document Title:	2018-02-15_Board_DS_BL660_Building_Bylaw.docx
Attachments:	- 2018-01-18_Board_DS_BL660_Building_Bylaw_ADOPTION.pdf
Final Approval Date:	Feb 13, 2018

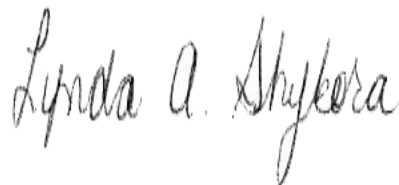
This report and all of its attachments were approved and signed as outlined below:



Corey Paiement - Feb 13, 2018 - 2:27 PM



Jodi Pierce - Feb 13, 2018 - 2:50 PM



Lynda Shykora - Feb 13, 2018 - 3:27 PM



Charles Hamilton - Feb 13, 2018 - 4:02 PM

COLUMBIA SHUSWAP REGIONAL DISTRICT

BUILDING BYLAW NO. 660

A Bylaw for Administration of the British Columbia Building Code

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COLUMBIA SHUSWAP REGIONAL DISTRICT

BUILDING BYLAW NO. 660

A Bylaw for Administration of the British Columbia Building Code

WHEREAS the Province of British Columbia has adopted a *Building Act* and *Building Code* in respect of construction, alteration, repair and demolition of buildings and structures;

AND WHEREAS the Columbia Shuswap Regional District provides a service in relation to building inspection in Electoral Areas B, E and the portion of F shown on Appendix E;

AND WHEREAS the Board of the Columbia Shuswap Regional District wishes to adopt Building Bylaw No. 660 by adding Electoral Areas and amending the content consistent with the *Building Act* and *Building Code*;

AND WHEREAS a local government may, by bylaw, regulate construction, alteration, repair and demolition of buildings and structures for the following purposes:

- (a) the provision of access to a building or other structure, or to part of a building or other structure, for a person with disabilities;
- (b) the conservation of energy or water;
- (c) the reduction of greenhouse gas emissions;
- (d) the health, safety or protection of persons or property;

NOW THEREFORE the Board of the Columbia Shuswap Regional District, in open meeting assembled, HEREBY ENACTS as follows:

1. Building Regulation Bylaw No. 630 and amendments thereto are repealed;
2. Building Bylaw No. 660 is adopted as follows:

PART 1: TITLE

Citation

- 1.1 This bylaw may be cited as “Building Bylaw No. 660”.

PART 2: PURPOSE OF BYLAW

- 2.1 Despite any other provision in this bylaw, this bylaw must be interpreted in accordance with this Part.
- 2.2 Every permit issued under this bylaw is issued expressly subject to the provisions of this Part.
- 2.3 This bylaw is enacted to regulate, prohibit and impose requirements in regard to *construction* in the Regional District in the public interest.
- 2.4 The purpose of this bylaw does not extend to:
- (a) the protection of *owners* or *constructors* from economic loss;
 - (b) the assumption by the Regional District or any *building official* of any responsibility for ensuring the compliance by any *owner*, his or her representatives or any employees, *constructors* or *designers* retained by the *owner*, with the *building code*, the requirements of this bylaw, or other applicable enactments, codes or standards;
 - (c) providing any person a warranty of design or workmanship with respect to any *building* or *structure* for which a *building permit* or *occupancy permit* is issued under this bylaw;
 - (d) providing a warranty or assurance that *construction* undertaken under *building permits* issued by the Regional District is free from latent, or any, defects; or
 - (e) the protection of adjacent real property from incidental damage or nuisance.

PART 3: SCOPE AND EXEMPTIONS

Application

- 3.1 This bylaw applies to the geographical area, including land, the surface of water, air space, *buildings* and *structures*, in Electoral Areas ‘B’ and ‘E’ and the areas of Electoral Area ‘F’ identified on Appendix E.
- 3.2 This bylaw applies to the design, construction or *occupancy* of new *buildings* or *structures*, and the *alteration*, reconstruction, demolition, removal, relocation or *occupancy* or change of use or *occupancy* of *existing buildings* and *structures*.

3.3 This bylaw does not apply to:

- (a) except as set out in Part 11 [*Retaining Walls*] of this bylaw, a fence;
- (b) an accessory *building* with a floor area of less than 10 square metres, unless the *building* contains an *unsafe condition*, hazard or home occupation, if the *building* complies with the siting requirements of the Regional District's zoning bylaw;
- (c) a trellis, an arbour, a wall supporting soil that is less than 1.22 metres in height, or other similar landscape *structures* on a parcel zoned for single-family *residential occupancy* uses under the Regional District's zoning bylaw, if the *building* or *structure* complies with the siting requirements of the zoning bylaw; or
- (d) a *building* or *structure* commonly known as "Canadian Standards Association Z240 MH series" or "Z241 Park Model series, except as regulated by the *building code*.

Limited Application to Existing Buildings

- 3.4 Except as provided in the *building code* or to the extent an *existing building* is under *construction* or does not have an *occupancy permit*, when an *existing building* has been *constructed* before the enactment of this bylaw, the enactment of this bylaw is not to be interpreted as requiring that the *building* must be *reconstructed* and *altered*, unless it is expressly so provided by this or another bylaw, regulation or statute.
- 3.5 This bylaw applies if the whole or any part of an *existing building* is moved either within or into the Regional District areas to which this bylaw applies, including relocation relative to parcel boundary created by subdivision or consolidation. Part 12 applies to *building* moves.
- 3.6 If an *alteration* is made to an *existing building* the *alteration* must comply with this bylaw and the *building code*.
- 3.7 If an *alteration* creates an *addition* to an *existing building*, the *alteration* or *addition* must comply with this bylaw and the *building code*.

PART 4: PROHIBITIONS

- 4.1 A person must not commence or continue any *construction*, *alteration*, *excavation*, *reconstruction*, *demolition*, *removal*, *relocation* or change the use or *occupancy* of any *building* or *structure*, including other work related to construction:
 - (a) except in conformity with the requirements of the *building code* and this bylaw; and
 - (b) unless a *building official* has issued a valid and subsisting *permit* for the work under this bylaw.

- 4.2 A person must not *occupy* or *permit* the *occupancy* of any *building* or *structure* or part of any *building* or *structure*:
- (a) unless a subsisting final inspection notice has been issued by a *building official* for the *building* or *structure* or the part of the *building* or *structure*; or
 - (b) contrary to the terms of any *permit* issued or any notice given by a *building official*.
- 4.3 A person must not knowingly submit false or misleading information to a *building official* in relation to any *permit* application or construction undertaken under this bylaw.
- 4.4 Except in accordance with this bylaw, including acceptance of revised plans or supporting documents, a person must not erase, alter or modify plans and supporting documents after the same have been reviewed by the *building official*, or plans and supporting documents which have been filed for reference with the *building official* after a *permit* has been issued.
- 4.5 A person must not, unless authorized in writing by a *building official*, reverse, alter, deface, cover, remove or in any way tamper with any notice, *permit* or certificate posted or affixed to a *building* or *structure* pursuant to this bylaw.
- 4.6 A person must not do any work that is substantially at variance with the *accepted* design or plans of a *building*, *structure* or other works for which a *permit* has been issued, unless that variance has been authorized in writing by a *building official*.
- 4.7 A person must not interfere with or obstruct the entry of a *building official* or other authorized official of the Regional District on property in the administration of this bylaw.
- 4.8 A person must not *construct* on a *parcel* unless the civic address is conspicuously posted on the front of the premises or on a sign post so it may be easily read from the public highway from which it takes its address.
- 4.9 A person must not contravene a notice of a *building official* issued under section 6.6.
- 4.10 A person must not change the use, *occupancy* or both of a *building* or *structure* or a part of a *building* or *structure* without first applying for and obtaining a *building permit* under this bylaw.

PART 5: PERMIT CONDITIONS

- 5.1 A *permit* is required if work regulated under this bylaw is to be undertaken.

- 5.2 Neither the issuance of a *permit* under this bylaw, nor the acceptance or review of plans, drawings, specifications or supporting documents, nor any inspections made by or on behalf of the Regional District will in any way
- (a) relieve the *owner* (and if the *owner* is acting through a representative, the representative of the *owner*) from full and sole responsibility to perform the work in respect of which the *permit* was issued in strict compliance with this bylaw, the *building code*, this bylaw and all other applicable codes, standards and enactments;
 - (b) constitute a representation, warranty, assurance or statement that the *building code*, this bylaw or any other applicable enactments respecting safety, protection, land use and zoning have been complied with; or
 - (c) constitute a representation or warranty that the *building or structure* meets any standard of materials or workmanship.
- 5.3 No person shall rely on any *permit* as establishing compliance with this bylaw or assume or conclude that this bylaw has been administered or enforced according to its terms.
- 5.4 Without limiting section 5.2(a), it is the full and sole responsibility of the *owner* (and if the *owner* is acting through a representative, the representative of the *owner*) to carry out the work in respect of which the *permit* was issued in compliance with the *building code*, this bylaw and all other applicable codes, standards and enactments.

PART 6: POWERS OF A BUILDING OFFICIAL

Administration

- 6.1 Words defining the authority of a *building official* are to be construed as internal administrative powers and not as creating a duty.
- 6.2 A *building official* may
- (a) administer this bylaw, but owes no public duty to enforce or administer this bylaw;
 - (b) keep records of applications received, *permits*, notices and orders issued, inspections and tests made, and may retain copies of all papers and documents connected with the administration of this bylaw;
 - (c) establish or require an *owner* to establish whether a method or type of construction or material used in the construction of a *building or structure* complies with the requirements and provisions of this bylaw and the *building code*; and
 - (d) direct that tests of materials, equipment, devices, construction methods, structural assemblies or *foundations* be carried out, or that sufficient evidence or proof be

submitted by the *owner*, at the *owner's* sole expense, where such evidence or proof is necessary to determine whether the material, equipment, device, construction or *foundation* condition complies with this bylaw and the *building code*.

Refusal and Revocation of Permits

- 6.3 A *building official* may refuse to issue a *permit* if the proposed work will contravene the requirements of the *building code* or the provisions of this or any other bylaw of the Regional District, and must state the reason in writing.
- 6.4 A *building official* may revoke a *permit* if, in their opinion, the results of tests on materials, devices, construction methods, structural assemblies or *foundation* conditions contravene the *building code* or the provisions of this bylaw, or both, or if all *permits* required under this bylaw have not been obtained.

Right of Entry

- 6.5 Subject to the *Local Government Act*, a *building official* may enter on property at any time to ascertain whether the requirements of this bylaw are being met.

Powers

- 6.6 Subject to applicable enactments, a *building official* may by notice in writing require
- (a) a person who contravenes any provision of this bylaw to comply with that provision within the time ordered;
 - (b) an *owner* to stop work on a *building* or *structure*, or any part of a *building* or *structure*, if the work is proceeding in contravention of this bylaw, the *building code*, or any other enactment of the Regional District or other applicable enactments, or if there is deemed to be an *unsafe condition*, and may enter on property to affix or post a stop work order in the form prescribed by the *building official*;
 - (c) an *owner* to remove or prevent any unauthorized encroachment on a public parcel, a statutory right of way or easement, or a setback or yard required under an enactment;
 - (d) an *owner* to remove any *building* or *structure*, or any part of a *building* or *structure*, *constructed* in contravention of a provision of this bylaw;
 - (e) an *owner* to have work inspected by a *building official* prior to covering;
 - (f) an *owner* to uncover any work that has been covered without inspection contrary to this bylaw or an order issued by a *building official*;
 - (g) a person to cease any *occupancy* in contravention of a provision of this bylaw;

- (h) a person to cease any *occupancy* if any *unsafe condition* exists because of work being undertaken but not complete and where the *building official* has not issued a final inspection notice for the work;
 - (i) an *owner* to correct any *unsafe condition*; and
 - (j) an *owner* to correct any work that contravenes this bylaw, the *building code*, or any other enactment.
- 6.7 Every reference to “*owner*” in section 6.6 includes a reference to the *owner’s agent* or *constructor*.
- 6.8 Every person served with an order under this Part must comply with that order:
- (i) within the time ordered, or
 - (ii) if no time is ordered, immediately.

PART 7: OWNER’S RESPONSIBILITIES

Permit Requirements

- 7.1 Subject to Part 10 of this bylaw, every *owner* must apply for and obtain a *permit*, and if applicable under an enactment must obtain a *permit*, prior to
- (a) *constructing*, repairing or *altering* a *building* or *structure*, including a *retaining wall*;
 - (b) moving a *building* or *structure* into or within the Regional District;
 - (c) demolishing a *building* or *structure*;
 - (d) *occupying* a new *building* or *structure*;
 - (e) *constructing* a masonry fireplace or installing a solid fuel appliance or chimney, whether attached to, part of or detached from a *building*;
 - (f) installing plumbing systems related to the inspections undertaken under this bylaw;
 - (g) a *building* undergoing a change in use or *occupancy*,
- unless the works are the subject of another valid *building permit*, and for certainty the building official will prescribe the form and content of a permit for the purposes of paragraphs (e) and (f).
- 7.2 Every *owner* must apply for and obtain a *permit* in the applicable form prescribed by the *building official*.

- 7.3 Every *owner* must ensure that plans submitted with a *permit* application bear the name, phone number, address and email address of the *designer* of the *building* or *structure*.

Owner's Obligations

- 7.4 Every *owner* must
- (a) comply with the *building code*, the requirements of this bylaw and the conditions of a *permit*, and must not omit to do any work required by the *building code*, this bylaw or the conditions of a *permit*;
 - (b) ensure that all *permits*, all plans and specifications and supporting documents on which a *permit* was based, all Regional District inspection certificates, and all professional *field reviews* are available at the site of the work for inspection during working hours by the *building official*, and that all *permits* are posted conspicuously on the site during the entire execution of the work; and
 - (c) prior to the issuance of a *building permit*, execute and submit to the Regional District an *owner's* undertaking in the form attached as Appendix C, where required by the *building official*.
- 7.5 Every *owner*, or their *agent*, must carry out *construction* or have the *construction* carried out in accordance with the requirements of the *building code*, this bylaw and other bylaws of the Regional District and neither the issuance of a *permit* under this bylaw, the review of plans and supporting documents, nor inspections made by a *building official* or a *registered professional* relieve the *owner*, or their *agent*, from full and sole responsibility to perform the work in strict accordance with this bylaw, the *building code* and all other applicable codes, standards and enactments.
- 7.6 Every *owner* must allow a *building official* to enter any *building* or premises at any reasonable time to administer and enforce this bylaw.
- 7.7 Every *owner* to whom a *permit* is issued must, during construction,
- (a) post the civic address on the property so that it may be easily read from the public highway from which the property takes its address; and
 - (b) post the *permit* on the property so that it may be easily read from the public highway from which the property takes its address.

Damage to Regional District Works

- 7.8 Every *owner* to whom a *permit* is issued is responsible for the cost to repair any damage to Regional District or other public works or land that occurs during the work authorized by the *permit*.

- 7.9 In addition to payment of a security deposit under sections 10.8 to 10.12, every *owner* must pay to the Regional District, within 30 days of receiving an invoice for same from the Regional District, the cost to repair any damage to public property or works located on public property arising directly or indirectly from work for which a *permit* was issued.

Demolition

- 7.10 Prior to obtaining a *permit* to demolish a *building* or *structure*, the *owner* must
- (a) provide to the Regional District a vacancy date; and
 - (b) ensure that all Regional District services and other services are capped and terminated at the parcel line in a Regional District standard inspection chamber and valve arrangement.
- 7.11 Every *owner* must ensure that, on completion of all demolition procedures, all debris and fill are cleared and the *site* is levelled or graded, or made safe if levelling and grading are not possible.

Notice

- 7.12 Every *owner* must, at least 48 hours prior to commencing work at a *building site*, give written or online notice to a *building official* of the date on which the *owner* intends to begin such work.
- 7.13 Every *owner* must give written or online notice to a *building official* of any change in or termination of engagement of a *registered professional*, including a *coordinating registered professional*, during construction, within 24 hours of when the change or termination occurs.
- 7.14 If an *owner* terminates the engagement of a *registered professional*, including a *coordinating registered professional*, the *owner* must terminate all work under a *building permit* until the *owner* has engaged a new *registered professional*, including a *coordinating registered professional*, and has delivered to a *building official* new letters of assurance.
- 7.15 Without limiting sections 10.28 to 10.44, every *owner* must give at least 48 hours' online or written notice to a *building official*:
- (a) of intent to do work that is required or ordered to be corrected during *construction*;
 - (b) of intent to cover work that has been ordered to be inspected prior to covering; and
 - (c) when work has been completed so that a final inspection of the work can be made.

- 7.16 Every *owner* must give notice in writing to a *building official* and pay the non-refundable fee set out in Appendix A immediately upon any change in ownership or change in the address of the *owner* which occurs prior to the issuance of an *occupancy permit*.
- 7.17 Every *owner* must give such other notice to a *building official* as may be required by the *building official* or by a provision of this bylaw.

PART 8: OBLIGATIONS OF OWNER'S CONSTRUCTOR

- 8.1 Every *owner* and *owner's constructor* must ensure that all *construction* is done in compliance with all requirements of the *building code*, this bylaw and all other applicable, codes, standards and enactments.
- 8.2 Every *owner* and *owner's constructor* must ensure that no *excavation* or other work is undertaken on public property, and that no public land is disturbed, no *building* or *structure* erected, and no materials stored thereon, in whole or in part, without first having obtained approval in writing from the appropriate authority over such public property.
- 8.3 For the purposes of the administration and enforcement of this bylaw, every *constructor* is responsible jointly and severally with the *owner* for all work undertaken.

PART 9: REGISTERED PROFESSIONAL'S RESPONSIBILITIES

Professional Design and Field Review

- 9.1 Without limiting section 9.4, a *building official* may require a geotechnical engineer to determine bearing capacity for a parcel of land by providing *design* and plan certification.
- 9.2 The provision by the *owner* to the Regional District of letters of assurance in accordance with the requirements of the building code shall occur
- (a) prior to the pre-occupancy site review coordinated by the *coordinating registered professional* or other *registered professional* for a *complex building*, or
 - (b) prior to a final inspection for a *simple building* in circumstances where letters of assurance have been required in accordance with the requirements of the *building code*.
- 9.3 If a *registered professional* provides letters of assurance in accordance with the requirements of this bylaw, they must also provide proof of professional liability insurance to the *building official* in the form and amount set by Appendix D to this bylaw.

Requirement for a Registered Professional

- 9.4 The *owner* must retain a *registered professionals* to provide a *professional design* and plan certification and letters of assurance in the form of Schedules A, B, C-A and C-B referred to in subsection 2.2.7, Division C, of the *building code*, in respect of a *permit* application
- (a) prior to the pre-occupancy site review coordinated by the *coordinating registered professional* or other *registered professional* for a *complex building*, or
 - (b) prior to a final inspection for a *simple building* in circumstances where letters of assurance have been required in accordance with the requirements of the *building code*;
 - (c) except for garages, carports and garden structures, *foundation* and *excavation* components of new *simple buildings*, and *additions* greater than 55 square metres to *simple buildings*, in accordance with the *building code*;
 - (d) for a *building* that is designed with common egress systems for the occupants and requires the use of *firewalls* in accordance with the *building code*;
 - (e) for *alterations* to a *building*, or to a *structural* component of a *building* described in paragraph (a);
 - (f) for a *building* in respect of which the *building official* determines that site conditions, size or complexity so warrant in the interests of safety of persons or protection of property;
 - (g) for the *building* envelope components of all *buildings* that fall under Division B Part 3 of the *building code*, all residential *buildings* that contain more than two dwellings, and all other *buildings* whose *building* envelopes do not comply with the prescriptive requirements of Division B Part 9 of the *building code*;
 - (h) in regard to a parcel of land on which a *building* or *structure* is proposed, if the *building official* believes it is or is likely to be subject to flooding, mud flows, debris flows, debris torrents, erosion, land slip, rock falls, subsidence or avalanche, and the requirement for a *professional design* and plan certification is in addition to a requirement under applicable enactments
 - (i) for a report certified by a professional engineer with experience in geotechnical engineering that the parcel may be used safely for the use intended, and
 - (ii) that the plans submitted with the application comply with the relevant provisions of the *building code* and applicable bylaws of the Regional District.

- 9.5 The *building official* may require any *registered professional* carrying out the *professional design* and *field review* required under section 9.4 to provide evidence that he or she has experience and expertise in respect of the *professional design* and *field review* of the context and scope required.

Professional Plan Certification

- 9.6 The letters of assurance in the form of Schedules A and B as referred to in subsection 2.2.7, Division C, of the *building code* are relied upon by the Regional District and *its building officials* as certification that the design and plans to which the letters of assurance comply with the *building code*, this bylaw and other applicable enactments.
- 9.7 Letters of assurance must be in the form of Schedules A and B referred to in subsection 2.2.7, Division C, of the *building code*.
- 9.8 A *building permit* issued for the construction of a *complex building* includes a notice to the *owner* that the *building permit* is issued in reliance on the certification of the *registered professional* that the *professional design* and plans submitted in support of the application for the *building permit* comply with the *building code* and other applicable enactments.
- 9.9 If a *building permit* is issued under section 9.8 for a *construction* of a *complex or simple building*, or for a *building* that is so remote that the *building official* cannot access the parcel, the *permit* fee is reduced by 5% of the fees payable pursuant to Appendix A to this bylaw, up to a maximum reduction of \$500.00 (five hundred dollars).

PART 10: BUILDING APPLICATION REQUIREMENTS

Requirements Before Applying for a Building Permit

- 10.1 Prior to applying for or receiving a *building permit*, the *owner* must satisfy the following requirements or conditions:
- (a) the *owner* must ensure that the proposed *building* or *structure* complies with all bylaws of the Regional District, except to the extent a variance of a bylaw is authorized by a development permit, development variance permit or order of the Board of Variance;
 - (b) the *owner* must provide evidence to the *building official* showing that the person applying for the *building permit* is either the *owner* of the parcel that is the subject of the proposed *building permit*, or is the *agent* of the *owner*, in which case, the agent must provide the name and contact information of the *owner*.

Building Permit Applications for Complex Buildings

10.2 An application for a *building permit* with respect to a *complex building* must:

- (a) be made in the form prescribed by the *building official* and signed by the *owner*, or the *owner's agent* or a signing officer if the *owner* is a corporation;
- (b) be accompanied by the *owner's* acknowledgement of responsibility and undertaking made in the form attached as Appendix C to this bylaw and signed by the *owner*, or the *owner's agent* or a signing officer if the *owner* is a corporation;
- (c) include a copy of a title search for the relevant parcel made within 30 days of the date of the *permit* application;
- (d) include a *building code* compliance summary including the applicable edition of the *building code*, such as without limitation whether the building is designed under Part 3 or Part 9 of the *building code*, *major occupancy* classification(s) of the *building*, *building area* and *building height*, number of streets the *building* faces, and *accessible* entrances, work areas, washrooms, firewalls and facilities;
- (e) include a copy of a survey plan prepared by a British Columbia land surveyor;
- (f) include a site plan prepared by a *registered professional* showing:
 - (i) the bearing and dimensions of the parcel taken from the registered subdivision plan;
 - (ii) the legal description and civic address of the parcel;
 - (iii) the location and dimensions of *existing* and proposed statutory rights of way, easements and setback requirements, adjacent street and lane names;
 - (iv) the location and dimensions of *existing* and proposed *buildings* or *structures* on the parcel;
 - (v) setbacks to the natural boundary of any lake, swamp, pond or watercourse;
 - (vi) north arrow;
 - (vii) if applicable, location of an approved *existing* or proposed private or other alternative sewage disposal system, water supply system or storm water drainage system;
 - (viii) zoning compliance summary;
 - (ix) the location, dimensions and gradient of parking and parking access;

- (x) proposed and *existing* setbacks to parcel boundary;
- (xi) natural and finished grade at *building* corners and significant breaks in the building plan and proposed grade around the *building* faces in order to ascertain *foundation* height;
- (xii) first storey floor elevation;
- (xiii) location, setbacks and elevations of all *retaining walls*, steps, stairs and decks;
- (xiv) line of upper floors;
- (xv) location and elevation of curbs, sidewalks, manholes, and service poles;
- (xvi) location of *existing* and proposed service connections;
- (xvii) location and species of all trees greater than 10 centimetres in diameter;
- (xviii) location of top bank and water courses;
- (xix) access routes for firefighting;
- (xx) *accessible* paths of travel from the street to the *building*;
- (xxi) geodetic elevation of the underside of a wood floor system or the top of a finished concrete slab of a *building* or *structure* where the Regional District's land use regulations or provincial flood mapping regulations establish siting requirements related to minimum floor elevation,

except that the *building official* may waive, in whole or in part, the requirements for a site plan, if the *permit* is sought for the repair or *alteration* of an *existing building* or *structure*;

- (g) include floor plans showing the dimensions and uses and *occupancy* classification of all areas, including: the dimensions and height of crawl and roof spaces; the location, size and swing of doors; the location, size and opening of windows; floor, wall, and ceiling finishes; fire separations; plumbing fixtures; structural elements; and stair dimensions;
- (h) include a cross-section through the *building* or *structure* in sufficient detail and locations to illustrate *foundations*, drainage, ceiling heights and constructions systems;
- (i) include elevations of all sides of the *building* or *structure* showing finish details, roof slopes, windows, doors, natural and finished *grade*, spatial separations and ridge

height to comply with the *building code* and to illustrate that the *building* or *structure* conforms with the Regional District zoning bylaw and development permit;

- (j) include cross-sectional details drawn at an appropriate scale and at sufficient locations to illustrate that the *building* conforms to the *building code*;
- (k) include all other requirements of sections 2.2.1, 2.2.3, 2.2.4, 2.2.5, 2.2.6 and 2.2.9, Division C of the *building code*;
- (l) include copies of approvals required under any enactment relating to health or safety, including, without limitation, sewage disposal *permits*, highway access *permits* and ministry of health approvals;
- (m) include a letter of assurance in the form of Schedule A referred to in subsection 2.2.7 Division C, of the *building code*, signed by the *owner*, or a signing officer if the *owner* is a corporation, and the *coordinating registered professional*;
- (n) include letters of assurance in the form of Schedule B referred to in subsection 2.2.7 Division C, of the *building code*, each signed by such *registered professionals* as the *building official* or *building code* may require to prepare the design for and conduct *field reviews* of the construction of the *building*;
- (o) include two sets of drawings at a suitable scale of the design prepared by each *registered professional* containing the information set out in (g) to (k) of this section; and
- (p) include illustration of any slopes on the subject parcel that exceed 30%.

10.3 In addition to the requirements of section 10.2 of this bylaw, a *building official* may require the following to be submitted with a *permit* application for the construction of a *complex building* if the complexity of the proposed *building* or *structure* or siting circumstances warrant

- (a) site servicing drawings, including sufficient detail of off-site services to indicate locations at the parcel boundary, prepared and sealed by a *registered professional*, in accordance with the Regional District's subdivision and development servicing bylaw;
- (b) a section through the site showing grades, *buildings*, *structures*, parking areas and driveways; and
- (c) any other information required by the *building official* or the *building code* to establish substantial compliance with this bylaw, the *building code* and other bylaws and enactments relating to the *building* or *structure*.

Building Permit Applications for Simple Buildings

10.4 An application for a *building permit* with respect to a *simple building* must

- (a) be made in the form prescribed by the *building official* and signed by the *owner*, or the *owner's agent* or a signing officer if the *owner* is a corporation;
- (b) be accompanied by the *owner's* acknowledgment of responsibility and undertaking made in the form attached as Appendix C and signed by the *owner*, or the *owner's agent* or a signing officer if the *owner* is a corporation;
- (c) include a copy of a title search for the relevant parcel made within 30 days of the date of the *permit* application;
- (d) include a copy of a survey plan prepared by a British Columbia land surveyor except that the *building official* may waive the requirement for a survey plan, in whole or in part, where conditions warrant;
- (e) include a site plan showing
 - (i) the bearing and dimensions of the parcel taken from the registered subdivision plan;
 - (ii) the legal description and civic address of the parcel;
 - (iii) the location and dimensions of *existing* and proposed statutory rights of way, easements and setback requirements, adjacent street and lane names;
 - (iv) the location and dimensions of *existing* and proposed *buildings* or *structures* on the parcel;
 - (v) setbacks to the natural boundary of any lake, swamp, pond or watercourse;
 - (vi) north arrow;
 - (vii) if applicable, location of an approved *existing* or proposed alternative private or other sewage disposal system, water supply system or storm water drainage system;
 - (viii) the location, dimensions and gradient of parking and parking access;
 - (ix) proposed and *existing* setbacks to parcel boundary;
 - (x) natural and finished grade at *building* corners and datum determination points;
 - (xi) *first storey* floor elevation;

- (xii) location, setbacks and elevations of all *retaining walls*, steps, stairs and decks;
- (xiii) line of upper floors;
- (xiv) location and elevation of curbs, sidewalks, manholes and service poles;
- (xv) location of *existing* and proposed service connections;
- (xvi) location and species of all trees greater than 10 centimetres in diameter;
- (xvii) location of top bank and water courses;
- (xviii) access routes for firefighting;
- (xix) *accessible* paths of travel from the street to the *building*;
- (xx) zoning compliance summary; and
- (xxi) the geodetic elevation of the underside of a wood floor system or the top of a finished concrete slab of a *building* or *structure* where the Regional District's land use regulations or provincial flood mapping regulations establish siting requirements related to minimum floor elevation,

except that for a *simple building* the *building official* may waive, in whole or in part, the requirements for a site plan, if the *permit* is sought for the repair or *alteration* of an *existing building*;

- (f) include floor plans showing the dimensions and uses of all areas, including: the dimensions and height of crawl and roof spaces; the location, size and swing of doors; the location, size and opening of windows; floor, wall, and ceiling finishes; plumbing fixtures; structural elements; and stair dimensions;
- (g) include a cross-section through the *building* illustrating *foundations*, drainage, ceiling heights and construction systems;
- (h) include elevations of all sides of the *building* showing finish details, roof slopes, windows, doors, the *grade*, the maximum *building height* line, ridge height, spatial separations and natural and finished *grade* to comply with the *building code* and to illustrate that the *building* or *structure* conforms with the Regional District zoning bylaw and development permit;
- (i) include cross-sectional details drawn at an appropriate scale and at sufficient locations to illustrate that the *building* or *structure* substantially conforms to the *building code*;

- (j) include copies of approvals required under any enactment relating to health or safety, including, without limitation, sewage disposal *permits*, highway access *permits* and Ministry of Health approvals;
 - (k) except for garages, carports and garden structures located on land, include a *foundation* and *excavation* design prepared by a *registered professional* in accordance with the *building code*;
 - (l) include geotechnical letters of assurance, in addition to a required geotechnical report, if the *building official* determines that the site conditions so warrant;
 - (m) include two sets of drawings at a suitable scale of design including the information set out in (f) to (i) of this section; and
 - (n) include a *building code* compliance summary including the applicable edition of the *building code*, such as, without limitation, whether the *building* is designed under Part 3 or Part 9 and compliance with article 2.2.2.1(2), Division C of the *building code*.
- 10.5 In addition to the requirements of section 10.4 of this Part, a *building official* may require the following be submitted with a *permit* application for the construction of each *simple building* in the *project* if a *project* involves:
- (a) two or more *buildings*, the gross floor areas of which in the aggregate total more than 1000 square metres, or
 - (b) two or more *buildings* that will contain four or more dwelling units, or
 - (c) otherwise if the complexity of the proposed *building* or *structure* or siting circumstances warrant,
 - (d) a section through the site showing grades, *buildings*, *structures*, parking areas and driveways;
 - (e) a roof plan and roof height calculations;
 - (f) structural, electrical, plumbing, mechanical or fire suppression drawings prepared and sealed by a *registered professional*;
 - (g) letters of assurance in the form of Schedule B referred to in Division C of the *building code*, signed by a *registered professional*; and
 - (h) any other information required by the *building official* or the *building code* to establish substantial compliance with this bylaw, the *building code* and other bylaws and enactments relating to the *building* or *structure*.

Site and Location Information

- 10.6 Without limiting sections 10.2(f) or 10.4(d) of this Part, the *building official* may in writing require an *owner* to submit an up-to-date plan or survey prepared by a registered British Columbia land surveyor which contains sufficient information respecting the site and location of any *building* to
- (a) establish, before *construction* begins, that all the provisions of this bylaw in relation to this information will be complied with;
 - (b) verify, on completion of the *construction*, that all provisions of this and other applicable bylaw have been complied with;
 - (c) in relation to an *existing building*, substantiate its location, size, including appurtenances whether above, at or below ground level, relative to the site or its relationship to neighbouring grades; and
 - (d) in relation to *construction* of a new *building*, or *addition* to an *existing building*, prior to and after the placement of concrete for *foundations* and footings, show the *elevation* at proposed top of concrete on all *building* elevations and at all significant changes of elevation to substantiate its size, location and elevation,
- and every person served with a written requirement under this section must comply with the requirement.

Building Permit Fee

- 10.7 Before receiving a *building permit* for a *building* or *structure*, the *owner* must first pay to the Regional District
- (a) the *building permit* fee prescribed in Appendix A; and
 - (b) any fees, charges, levies or taxes imposed by the Regional District and payable under an enactment at the time of issuance of the *building permit*.

Security Deposit with Building Permit Application

- 10.8 An applicant for a *building permit* must pay to the Regional District, at the time of the permit issuance, a security deposit as prescribed in Appendix A.
- 10.9 The security deposit sum set out in section 10.8 of this Part
- (a) covers the cost borne by the Regional District to maintain, restore or replace any public works or public lands which are destroyed, damaged or otherwise impaired in the carrying out of the work referred to in any *building permit* held by the applicant;

- (b) covers the cost borne by the Regional District to make the site safe if the *permit* holder abandons or fails to complete the work as designated on the *permit*;
- (c) serves as the security deposit for a provisional certificate of *occupancy* when such a certificate makes provision for a security deposit; or
- (d) serves as a security deposit to effect compliance with any condition under which the *permit* was issued.

10.10 The security deposit or applicable portion must be returned to the applicant when

- (a) the *building official* is satisfied that no further damage to public works or public lands will occur;
- (b) the inspections required by this bylaw are complete and acceptable to the *building official*; or
- (c) the conditions or provisions of a provisional certificate of *occupancy* are completed to the satisfaction of the *building official*.

10.11 Subject to section 10.10, any credit greater than the amount of the security deposit used by the Regional District for the purposes described in sections 10.8 to 10.10 of this Part will be returned to the *permit* holder unless otherwise so directed by the *permit* holder. Any amount in excess of the security deposit required by the Regional District to complete corrective work to public lands, public works, or the site is recoverable by the Regional District from the *permit* holder, the *constructor* or the *owner* of the property.

10.12 If the proposed work includes *excavation* or construction on lands within 10 metres of works or services owned by the Regional District, the *owner* must deliver to the *building official* a signed agreement in a form prescribed by the Regional District under which the *owner* acknowledges and agrees that any damage to Regional District works or services arising from the construction associated with the *building permit* will be repaired by the *owner* at its expense and to the satisfaction of the Public Works Superintendent. The *owner* must deposit with the Regional District security in accordance with sections 10.8 to 10.10 of this Part.

Permit Fee Refunds

10.13 No fee or part of a fee paid to the Regional District may be refunded if construction of the *building* has started.

10.14 A *building permit* or other *permit* fee may be partially refunded as set out in this Part 10, only if

- (a) the *owner* has submitted a written request for a refund;

- (b) the *building official* has certified a start has not been made on the construction of the *building* or *structure*; and
- (c) the *permit* has not expired.

10.15 A *building permit* or other *permit* fee is not refundable after the *permit* has been extended under section 10.46 of this Part.

Design Modification

10.16 If an issued *building permit* or other *permit* is active and the *owner* proposes modification to the *building* design whereby the value of the work does not increase or the value of the work decreases, the *owner* must pay to the Regional District a *building permit* fee prescribed in Appendix A.

Construction Before Permit Issued

10.17 The *building permit* or other *permit* fee is doubled for every *permit* application if construction commenced before the *building official* issued a *permit*, to a maximum of \$10,000.00.

Expiration of Application for a Permit

10.18 A *building permit* application expires 180 days from the date a complete application is received under this Part if the *building permit* is not issued by the application expiration date, unless the *permit* is not issued only due to delays caused by the Regional District.

Issuance of a Building Permit

10.19 If:

- (a) a completed application in compliance with sections 10.1, 10.2 and 10.3 or sections 10.4 and 10.5 of this Part, including all required supporting documentation, has been submitted;
- (b) the *owner* has paid all applicable fees set out in sections 10.7 to 10.17 of this Part and Appendix A;
- (c) the *owner* or his or her representative has paid all charges and met all requirements imposed by any other statute or bylaw;
- (d) the *owner* has retained a professional engineer or geoscientist if required under this bylaw;
- (e) the *owner* has retained an architect if required under this bylaw; and

- (f) no covenant, agreement, resolution or regulation of the Regional District requires or authorizes the *permit* to be withheld,
- (g) the *owner* has obtained a development permit if the *building* or *structure* is in an area designated by the Regional District's Official Community Plan as a development permit area;
- (h) an approving officer has approved the subdivision plan that, once registered, would create the parcel on which the proposed *building* or *structure* will be *constructed*, and the subdivision plan must have been registered in the Land Title Office;
- (i) if the parcel that is the subject of the *building permit* application is not intended to be connected to a *community sewer system*, the *owner* must apply for and obtain approval from the Regional District and other applicable public authorities for an alternate *private sewage disposal system*;
- (j) if the parcel that is the subject of the *building permit* application is not intended to be connected to the Regional District's waterworks system, the *owner* certify in a statutory declaration that there is approval from applicable public authorities for an alternate water supply system;
- (k) if the parcel that is the subject of the *building permit* application is not intended to be connected to the Regional District's storm water drainage system, the *owner* must apply for and obtain approval from the Regional District and other applicable public authorities for the alternate storm water drainage and detention system; and
- (l) if all on site and off site works and services required by a Regional District bylaw or other enactments have not been completed in accordance with the enactments, the *owner* must enter into a completion agreement with the Regional District and deliver to the Regional District letters of credit or cash security for completion of the works and services,

and if the *owner* has delivered to the *building official* a current land title search to evidence compliance with this bylaw and the *Community Charter* and *Local Government Act*, as applicable, the *building official* must issue the *permit*, in a form prescribed by the *building official*, for which the application is made, and the date of issuance is deemed to be the date the Regional District give written notice to the *owner* that the *permit* is ready to be picked up by the *owner*.

Compliance with the *Homeowner Protection Act*

- 10.20 Despite section 10.19, the *building official* may refuse to issue a *permit* when the *owner* has been notified of a violation of this bylaw about the construction of another *building* or *structure* by the *owner*.

- 10.21 If the application is in respect of a *building* that includes, or will include, a *residential occupancy* governed by the *Homeowner Protection Act*, the *building permit* must not be issued unless the *owner* provides evidence under section 30(1) of the *Homeowner Protection Act*, that the proposed *building*:
- (a) is covered by home warranty insurance; and
 - (b) the *constructor* is a licensed “residential builder” as defined in that Act.
- 10.22 Section 10.21 of this Part does not apply if the *owner* is not required to be licensed and to obtain home warranty insurance in accordance with sections 20(1) or 30(1) of the *Homeowner Protection Act*.
- 10.23 Every *permit* is issued subject to the *owner* and *constructor* maintaining compliance with the *Homeowner Protection Act* and regulations under it during the term of the *permit*.

Partial Construction

- 10.24 If a *building permit* has expired and partial construction has occurred, with no extension requested of the *building official* under section 10.46, permanent type fencing with privacy screen complying with the Regional District’s zoning bylaw, must be erected around the *building* site for protection to the public.

Conditions of a Building Permit

- 10.25 A *building permit* or an application for a *building permit* that is in process may not be transferred or assigned until the *owner* has notified the *building official* in writing, the *building official* has authorized the transfer or assignment in writing and the *owner* has paid the non-refundable fee required under Appendix A. The transfer or assignment of a *building permit* is not an extension of a *building permit*.
- 10.26 The review of plans and supporting documents and issuance of a *building permit* do not prevent the *building official* from subsequently requiring the correction of errors in the plans and supporting documents, or from prohibiting *building* construction or *occupancy* being carried on when in violation of this or another bylaw.

Inspections

- 10.27 If a *registered professional* provides letters of assurance in accordance with this Part, the Regional District will rely solely on *field reviews* undertaken by the *registered professional* and the letters of assurance submitted pursuant to this bylaw and the *building code* as assurance that the construction substantially conforms to the design, plans and specifications and that the construction complies with the *building code*, this bylaw and other applicable enactments respecting safety.

- 10.28 Despite section 10.28 of this Part, a *building official* may attend the site from time to time during the course of construction to ascertain that the *field reviews* are taking place and to monitor the *field reviews* undertaken by the *registered professionals*.
- 10.29 A *building official* may attend periodically at the site of the construction of *simple buildings* or *structures* to ascertain whether the work is being carried out in substantial conformance with the *building code*, this bylaw and any other applicable enactments concerning safety.
- 10.30 For all work in respect of *simple buildings* the *owner* must give at least 48 hours' online or written notice to the Regional District when requesting an inspection and must obtain an inspection and receive a *building official's* written acceptance of the following aspects of the work prior to concealing them:
- (a) Footing construction (before concrete)
 - (i) site preparation and excavation to good native bearing;
 - (ii) footing forms, before concrete is poured;
 - (iii) prior to inspection under section 10.31(c) of this Part, plumbing located below the finished slab level;
 - (b) Pre-Backfill
 - (i) installation of perimeter drainage pipe and drain rock (if required);
 - (ii) the preparation of ground, including ground cover when required, perimeter insulation of concrete foundation walls, and damp proofing if required;
 - (c) Under slab plumbing rough-in
 - (i) installation of a sanitary or storm sewer and any part of the plumbing system and *building* services prior to backfilling or covering;
 - (ii) installation of subfloor depressurization system and rough-in for soil gas control;
 - (iii) after inspection under section 10.31 (a) of this Part, hydronic heating pipes and below slab insulation;
 - (d) Framing construction
 - (i) framing, sheathing, fire stopping (including drywall in fire separations), bracing, chimney and ductwork, rough-in of factory built chimneys and

fireplaces and solid fuel burning appliances, rough wiring, rough plumbing, rough heating, gas venting, exterior doors and windows, but prior to the installation of insulation, interior finishes, sheathing paper or exterior finishes which would conceal such work;

(ii) decking where a deck serves as a roof

(e) Insulation and vapour barrier and air barrier

(i) the installation of wall sheathing membrane

(ii) e, internally and externally applied vapour or air barrier, stucco wire or lath, and flashings, but prior to the installation of interior and exterior finishes which could conceal such work;

(f) Final Inspection

(i) the health and safety aspects of the work when the building or structure is substantially complete, ready for *occupancy* but prior to *occupancy*.

10.31 A *building official* will only carry out an inspection under section 10.31 if the *owner* or the *owner's agent* has requested the inspection online or in writing in accordance with this bylaw:

(a) in the order specified in section 10.31; and

(b) if the *owner* or the *owner's agent* has requested the inspection,

and despite section 10.32(a) and (b), unscheduled audit inspections may be carried out on the construction at the discretion of the *building official*.

10.32 Despite the requirement for the *building official's* acceptance of the work outlined in section 10.31, if a *registered professional* provides letters of assurance, the Regional District will rely solely on *field reviews* undertaken by the *registered professional* and the letters of assurance submitted pursuant to this bylaw as assurance that the aspects of the construction referenced by those letters of assurance substantially conform to the *design*, plans and specifications and that the construction complies with the *building code*, this bylaw and other applicable enactments respecting safety.

10.33 No person may conceal any aspect of the work referred to in section 10.31 of this bylaw until a *building official* has *accepted* it in writing.

10.34 For work in respect of *complex buildings*, the *owner* must:

(a) give at least 48 hours' online or written notice to the Regional District when requesting a preconstruction meeting with the *building official* prior to the start of

construction, and the *owner* or his or her representative must ensure that the *coordinating registered professional*, the *constructor*, as well as representatives of major trades, are in attendance;

- (b) give at least 48 hours' online or written notice to the Regional District when requesting a pre-occupancy coordinated by the *coordinating registered professional* or other *registered professional* to have the *owner*, the *constructor* and the *registered professionals* demonstrate to the *building official* and Fire Services the compliance with *the health and safety aspects of the work*, the coordination and integration of the fire and life safety system, applicable Regional District requirements and other enactments respecting safety and the conservation, GHG emission and accessibility aspects of the work; and
- (c) cause the *coordinating registered professional*, at least 48 hours prior to the pre-occupancy coordinated site review coordinated by the *coordinating registered professional*, to deliver to the *building official* the Confirmation of Required Documentation in the form prescribed by the *building official*, complete with all documentation in a hard covered three ring binder and in digital pdf format on a memory stick.

Stop Work Order

- 10.35 The *building official* may direct the immediate suspension or correction of all or a portion of the construction on a *building* or *structure* by attaching a stop work order notice in the form prescribed by the *building official* on the premises whenever it is found that the work is not being performed in accordance with the requirements of the *building code*, any applicable bylaw of the Regional District or the applicable provisions of the *Homeowner Protection Act*.
- 10.36 The *coordinating registered professional* may request, in writing, that the *building official* order the immediate suspension or correction of all or a portion of the construction on a *building* or *structure* by attaching a stop work order notice on the premises. The *building official* must consider such a request and, if not acted upon, must respond, in writing, to the *coordinating registered professional* and give reasons.
- 10.37 If a *registered professional's* services are terminated, the *owner* must immediately stop any work that is subject to his or her *design* or *field review* and the *building official* is deemed to have issued a stop work order under section 10.36.
- 10.38 The *owner* must immediately, after the posting of a notice under section 10.36, secure the construction and the lands and premises surrounding the construction in compliance with the safety requirements of every statute, regulation or order of the Province or of a provincial agency and of every applicable bylaw of the Regional District.

- 10.39 Subject to section 10.36, no work other than the required remedial measures may be carried out on the parcel affected by the notice referred to in section 36 until the stop work order notice has been removed by the *building official*.
- 10.40 The *owner* must keep the notice referred to in section 10.36 posted on the parcel until that which is contrary to the enactments has been remedied.

Do Not Occupy Notice

- 10.41 If a person occupies a *building* or *structure* or part of a *building* or *structure* in contravention of this bylaw, a *building official* may post a Do Not Occupy Notice in the form prescribed by the *building official* on the affected part of the *building* or *structure*.
- 10.42 If a notice is posted under section 10.42, the *owner* of a parcel on which a Do Not Occupy Notice in the form prescribed by the *building official* has been posted, and every other person, must cease *occupancy* of the *building* or *structure* immediately and refrain from further *occupancy* until all applicable provisions of the *building code* and this bylaw have been substantially complied with and the Do Not Occupy Notice has been rescinded in writing by a *building official*.

Inspection and Other Fees

- 10.43 In addition to the fees required under other provisions of this bylaw, the *owner* must pay the non-refundable fee set out in Appendix A for
- (a) a second and each subsequent re-inspection where it has been determined by the *building official* that due to non-compliance with the provisions of this bylaw or due to non-complying work, more than one site visit is required for any required inspection;
 - (b) a special inspection during the Regional District's normal business hours to establish the condition of a *building*, or if an inspection requires special arrangements because of time, location or construction techniques;
 - (c) an inspection required under this bylaw which cannot be carried out during the Regional District's normal business hours;
 - (d) a request from the *owner* or *agent* that the *building official* review an application or part of an application that has already been reviewed by the *building official*.

Permit Expiration

- 10.44 Every *permit* is issued on the condition that the *permit* expires and the rights of the *owner* under the *permit* terminate if

- (a) the work authorized by the *permit* is not commenced within 180 days from the date of issuance of the *permit*;
- (b) work is discontinued for a period of 180 days; or
- (c) the work is not completed within three years of the date of issuance of the *permit*.

Permit Extension

10.45 A *building official* may extend the period set out under section 10.45 for only one period, not to exceed twelve months, if construction has not been commenced or has been discontinued, due to adverse weather, strikes, material or labour shortages, other similar hardship beyond the *owner's* control, or if the size and complexity of the construction warrants, if

- (a) application for the extension is made at least 30 days prior to the date of *permit* expiration; and
- (b) the non-refundable fee set out in Appendix A has been paid.

Building Permit Revocation

10.46 The *building official* may revoke a *building permit* if there is a violation of

- (a) a condition under which the *permit* was issued; or
- (b) a requirement of the *building code* or of this or another bylaw of the Regional District,

such *permit* revocation must be in writing and sent to the *permit* holder by registered mail to, or personal service on, the *permit* holder.

Building Permit Cancellation

10.47 A *building permit*, or a *building permit* application, may be cancelled by the *owner*, or their *agent*, on delivery of written notification of the cancellation to the *building official*.

10.48 On receipt of the written cancellation notice, the *building official* must mark on the application, and a *permit* if applicable, the date of cancellation and the word "cancelled".

10.49 If the *owner*, or their *agent*, submits changes to an application after a *permit* has been issued and the changes, in the opinion of the *building official*, substantially alter the scope of the work, design or intent of the application in respect of which the *permit* was issued, the *building official* may cancel or amend the *permit* and mark on the *permit* the date of cancellation or amendment and the word "cancelled" or "amended".

10.50 If a *building permit* application or *permit* is cancelled, and construction has not commenced under the *permit*, the *building official* must return to the *owner* any fees deposited under Appendix A, less:

- (a) any non-refundable portion of the fee; and
- (b) 15% of the refundable portion of the fee.

Occupancy Permit

10.51 No person may occupy a *building* or *structure* or part of a *building* or *structure* until a final inspection notice authorizing *occupancy* has been issued by a *building official*.

10.52 A final inspection notice authorizing *occupancy* will not be issued unless:

- (a) all letters of assurance have been submitted when required in accordance with this bylaw;
- (b) all aspects of the work requiring inspection and acceptance pursuant to sections 7.12 to 7.17 of this bylaw have both been inspected and *accepted* or the inspections and acceptance are not required in accordance with this bylaw;
- (c) the *owner* has delivered to the Regional District as-built plans of works and *services* in digital format as required by the Regional District;
- (d) the *owner* has provided to the Regional District a *building* survey prepared by a British Columbia Land Surveyor showing the *building* height, size, location and elevation determined in accordance with the Regional District's land use regulations;
- (e) all other documentation required under applicable enactments has been delivered to the Regional District; and
- (f) the *owner* has delivered to the Regional District as-built drawings of the *building* or *structure* in digital format as required by the Regional District.

10.53 When a *registered professional* provides letters of assurance in accordance with this bylaw, the Regional District will rely solely on the letters of assurance when issuing a final report authorizing *occupancy* as assurance that the items identified on the letters of assurance substantially comply with the *building code*, this bylaw and other applicable enactments respecting safety.

10.54 A *building official* may issue a final inspection notice authorizing *occupancy* for partial *occupancy* of a portion of a *building* or *structure* under construction when:

- (a) that portion of the *building* or *structure* is self-contained and provided with essential services respecting *health and safety aspects* of the work, and if applicable reporting accessibility, GHG emissions and conservations; and
- (b) the requirements set out in section 10.53 have been met with respect to it.

10.55 A final inspection notice authorizing *occupancy* may not be issued unless:

- (a) all letters of assurance and the Confirmation of Required Documentation in the form prescribed by the *building official* have been submitted when required in accordance with the requirements of this bylaw;
- (b) all aspects of the work requiring inspection and review pursuant to Part 9 of this bylaw and sections 10.28 through 10.35 of this bylaw have both been inspected and *accepted*;
- (c) the *owner* has executed and delivered to the Regional District every agreement, instrument or form required by the Regional District in relation to the work or the site; and
- (d) all required offsite works respecting safety have been completed.

Temporary Buildings

10.56 Subject to the bylaws of the Regional District and notices issued by the *building official*, the *building official* may issue a *building permit* for the erection or placement of a *temporary building* or *structure* for *occupancy* if:

- (a) the *permit* is for a period not exceeding one year; and
- (b) the *building* or *structure* is located in compliance with the Regional District's zoning bylaw, built in compliance with the *building code* and this bylaw, and connected, as required by enactments, to Regional District utility services.

10.57 An application for a *building permit* for the erection or placement of a *temporary building* or *structure* must be made in the form of a temporary *permit* application in the form prescribed by the *building official*, signed by the *owner* or *agent*, and must include

- (a) plans and supporting documents showing the location and *building height* of the *building* or *structure* on the parcel;
- (b) plans and supporting documents showing construction details of the *building* or *structure*;
- (c) a statement by the *owner* indicating the intended use and duration of the use;

- (d) plans and supporting documents showing the proposed parking and loading space;
 - (e) a written description of the *project* explaining why the *building* is temporary;
 - (f) a copy of an issued development *permit*, if required;
 - (g) in the case of a manufactured *building*, a CSA label in respect of manufacture and, without limitation, a Quonset or other steel *building* must be certified in accordance with CSA Standard A660;
 - (h) a report or drawing by an engineer, architect or designer confirming compliance with the *building code*, this bylaw, the Regional District's zoning bylaw and other applicable bylaws;
 - (i) security in the form of cash or a letter of credit for 10% of the value of the *temporary building*, which security:
 - (i) may be used by the Regional District to remove the *building* after one year of the date of the final inspection required under this bylaw; or
 - (ii) must be returned to the *owner* if the *owner* removes the *temporary building* within one year of the date of the final inspection of the *temporary building* required under this bylaw; and
 - (j) in the case of a *temporary building*, information to comply with article 1.1.1.1(2)(f), Division C of the *Building Code*.
- 10.58 Before receiving a *building permit* for a *temporary building* or *structure* for *occupancy*, the *owner* must pay to the Regional District the applicable *building permit* fee set out in Appendix A.
- 10.59 A *permit fee* for a *temporary building* or *structure* is not refundable.

PART 11: RETAINING WALLS AND GRADES

- 11.1 No person may construct, or structurally repair, a *retaining wall* without a *building permit*.
- 11.2 Except as certified by a professional engineer with expertise in geotechnical engineering registered in the province of British Columbia, fill material placed on a parcel, unless restrained by permitted *retaining walls*, must not have a surface slope exceeding a ratio of one linear unit vertically to two linear units horizontally.
- 11.3 Without limiting section 11.2, no person may occupy a *building* unless the finished *grade* complies with all applicable enactments.

PART 12: BUILDING MOVE

- 12.1 No person may move a *building* or *structure* into or within a service area of the Regional District to which this bylaw applies:
- (a) except where certified by a *registered professional* that the *building*, including its *foundation*, will substantially comply with the current version of the *building code*; and
 - (b) a *building permit* has been issued for the *building* or *structure*.

PART 13: NUMBERING OF BUILDINGS

- 13.1 A Regional District employee may, on the issuance of a *building permit*, designate a house number or set of house numbers related to the *building* authorized by the *permit*. The *owner* or occupier must post the number or numbers on the site immediately after obtaining the *building permit* and keep the numbers posted in a conspicuous location at all times during *construction* and after *occupancy*.

PART 14: OFFENCES

Violations

- 14.1 Without limiting Part 4 of this bylaw, every person who:
- (a) violates a provision of this bylaw;
 - (b) *permits*, suffers or allows any act to be done in violation of any provision of this bylaw; and
 - (c) neglects to do anything required to be done under any provision of this bylaw,
- commits an offence and on summary conviction by a court of competent jurisdiction, the person is subject to a fine of not more than \$10,000.00, or a term of imprisonment not exceeding three months, or both, in addition to the costs of prosecution. Each day during which a violation, contravention or breach of this bylaw continues is deemed to be a separate offence.
- 14.2 Every person who fails to comply with any order or notice issued by a *building official*, or who allows a violation of this bylaw to continue, contravenes this bylaw.
- 14.3 Every person who commences work requiring a *building permit* without first obtaining such a *permit* must, if a Stop Work notice is issued and remains outstanding for 30 days, pay an additional fee required under Appendix A of this bylaw.

Deemed Offence

- 14.4 An *owner* is deemed to have knowledge of and be liable under this bylaw in respect of any *construction* on the parcel the *owner* owns and any change in the use, *occupancy* or both of a *building* or *structure* or part of a *building* or *structure* on that parcel.
- 14.5 No person is deemed liable under section 14.4 who establishes, on a balance of probabilities, that the *construction* or change of use or *occupancy* occurred before he or she became the *owner* of the parcel.
- 14.6 Nothing in section 14.5 affects:
- (a) the Regional District's right to require and the *owner's* obligation to obtain a *permit*; and
 - (b) the obligation of the *owner* to comply with this bylaw.

PART 15: INTERPRETATION

Definitions

- 15.1 In this bylaw:

accepted means reviewed by the *building official* under the applicable provisions of the *building code* and this bylaw;

addition means an *alteration* to any building which will increase the total aggregate floor area or the *building height* (in storeys), and includes the provision of two or more separate *buildings* with openings between each other for intercommunication;

agent includes a firm, corporation or other person representing the *owner*, by written designation or contract, and includes a hired tradesperson or *constructor* who may be granted a *permit* for work within the limitations of his or her licence;

alternative solution means an alternative solution authorized under the *building code*;

alteration means a change, repair or modification of the *construction* or arrangement of or use of any *building* or *structure*, or to an *occupancy* regulated by this bylaw;

Architects Act means the *Architects Act* RSBC 1996, c. 17;

board means *Board* of the *Regional District*;

building code means the *British Columbia Building Code* as adopted by the Minister responsible under provincial legislation, as amended or re-enacted from time to time;

building official means the person designated in or appointed to that position by the Regional District, and includes a building inspector, plan checker, plumbing inspector, gas inspector, or electrical inspector designated or appointed by the Regional District, and for certainty the *building official* is the “building inspector” referred to in the *Community Charter* and *Local Government Act*;

community sewer system means a system of works owned operated and maintained by the *Regional District*, Strata Corporation, Improvement District, Utility or Corporation (Private or Public) and which is established and operated under the Public Health Act and regulations, or Environmental Management Act and regulations or any other provincial legislation that may apply, for the collection, treatment and disposal of sanitary sewage, which serves more than one *Parcel*, or *Dwelling Unit*;

complex building means:

(a) a *building* used for a *major occupancy* classified as:

- (i) *assembly occupancy*;
- (ii) *care occupancy*;
- (iii) *detention occupancy*;
- (iv) *high hazard industrial occupancy*,
- (v) *treatment occupancy*; or
- (vi) *post-disaster building*,

(b) a *building* exceeding 600 square metres in *building area* or exceeding three storeys in *building height* used for a *major occupancy* classified as:

- (i) *residential occupancy*;
- (ii) *business and personal services occupancy*;
- (iii) *mercantile occupancy*; or
- (iv) *medium and low hazard industrial occupancy*,

coordinating registered professional means a *registered professional* retained pursuant to the *building code* to coordinate all design work and field reviews of the *registered professionals* required for a development;

construct includes build, erect, install, repair, alter, add, enlarge, move, locate, relocate, reconstruct, demolish, remove, *excavate* or shore;

constructor means a person who *constructs*;

dwelling unit means one (1) or more rooms in a detached *building* with self-contained eating, living, sleeping and sanitary facilities and not more than one kitchen, used or intended to be used as a residence for no more than one (1) household;

Engineers and Geoscientists Act means the *Engineers and Geoscientists Act* RSBC 1996, c. 116;

existing, in respect of a *building*, means that portion of a *building constructed* prior to the submission of a *permit* application required under this bylaw;

field review means reviews of the work (a) at a project site of a development to which a building permit relates, and (b) where applicable, at fabrication locations where building components are fabricated for use at the project site;

foundation means a system or arrangement of *foundation* units through which the loads from a *building* are transferred directly to supporting soil or rock;

GHG means greenhouse gas;

health and safety aspects of the work means design and construction regulated by Parts 3, 4, 5, 6, 7, 8, 9 and 10, Division B, of the *building code*; and subject to Parts 1 and 2 in relation to Parts 3 through 10, Division B, of the *building code*;

occupancy is the *use* of a *building* as declared on the *permit* and that complies with the *Building Code* and this Bylaw;

occupancy permit refers to the final inspection notice of the *building official* authorizing *occupancy*;

owner means the registered owner of an estate in fee simple or an *agent* duly authorized by the registered owner in writing in a form prescribed by the *building official*, and for certainty, in the case of a *shared interest* in the subject parcel, means the *agent* or the person who holds a controlling interest in the ownership of the subject *building* or *structure*;

permit means permission or authorization in writing by the *building official* to perform work regulated by this bylaw and, in the case of a final inspection notice, to occupy a *building* or part of a *building*;

private sewage disposal system means a system, other than a *community sewer system*, that complies with all enactments governing such a private system;

professional design means the plans and supporting documents bearing the date, seal or stamp, and signature of a *registered professional*;

project means any construction operation;

recreational vehicle is a vehicular-type of portable *structure* on wheels, without permanent foundation, that can be towed, hauled or driven and that is primarily designed for *use* as temporary living accommodation for the purposes of recreation, camping and travel, including, but not limited to, travel trailers, truck campers, camper vans, tent trailers and self-propelled motor homes;

retaining wall means a wall, or a series of walls *constructed* to support or confine earth, water or other material and restraining it from moving:

- (a) if the wall exceeds 1.22 metres in height above the lower of natural or finished grade; or
- (b) in the case of a series of walls, if any of the walls extend above a line commencing 1.22 metres above the lower of natural or finished grade at the base of any of the walls and projected at an angle of less than one linear unit vertically to one unit horizontally;

shared interest means ownership of a parcel by more than one individual or other person other than by way of joint tenancy or tenancy in common or ownership by society or cooperative, and includes ownership or interest in the parcel by way of a coparcenary interest, ownership of shares, a commune, a lease, a licence of occupation, a tenancy of the entireties or other similar interest;

simple building means a *building* of three storeys or less in *building height*, having a *building area* not exceeding 600 square metres and used for a *major occupancy* classified as:

- (a) *residential occupancy*;
- (b) *business and personal services occupancy*;
- (c) *mercantile occupancy*;
- (d) *medium hazard industrial occupancy*; or
- (e) *low hazard industrial occupancy*,

structure means a *construction* or portion of *construction*, of any kind, whether fixed to, supported by or sunk into land or water, except landscaping, fences, paving, or retaining *structures* less than 1.22 meters in height;

temporary building includes a sales office, construction office or a *structure* in which tools are stored during construction of a *building* or other *structure*;

use is purpose or function to which land, *buildings* and *structures* are put to and if not in *use*, then the purpose they are designed or intended to be put to;

value of the work means that amount that is calculated as follows:

- (a) for construction of a *building* containing a *residential occupancy* that is served by only one stove, or two stoves if permitted as an auxiliary and secondary *residential occupancy*, the greater of
 - (i) the declared *value of the work*; or
 - (ii) the value calculated using Appendix B; or
- (b) for all other construction, the greater of
 - (i) the declared *value of the work*; or
 - (ii) the value calculated using a method stipulated in the “Marshall Valuation Service”.

15.2 In this bylaw the following words and terms have the meanings

- (a) set out in section 1.4.1.2 of the *building code* as of the date of the adoption of this bylaw: *accessible assembly occupancy, building, building area, building height, business and personal services occupancy, care occupancy, constructor, coordinating registered professional, designer, detention occupancy, excavation, field review, firewall, first storey, grade, high hazard industrial occupancy, industrial occupancy, low hazard industrial occupancy, major occupancy, medium hazard industrial occupancy, mercantile occupancy, occupancy, post disaster occupancy, private sewage disposal system, registered professional, residential occupancy, treatment occupancy or unsafe condition*;
- (b) subject to this bylaw, set out in the Schedule to the *Community Charter*: *assessed value, highway, land, occupier, parcel, public authority, service and soil*; and
- (c) subject to this bylaw, set out in section 29 of the *Interpretation Act*: *may, must, obligation, person, property, writing, written and year*.

- 15.3 Every reference to this bylaw in this or another bylaw of the Regional District is a reference to this bylaw as amended to the date of the reference.
- 15.4 Every reference to:
- (a) the *building code* is a reference to the current edition; and
 - (b) a section of the *building code* is a reference to the applicable successor sections, as the code or section may be amended or re-enacted from time to time.
- 15.5 Definitions of words and phrases used in this bylaw that are not included in the definitions in this Part have the meanings commonly assigned to them in the context in which they are used in this bylaw, considering the specialized use of terms with the various trades and professions to which the terminology applies.

Appendices

- 15.6 Appendices A through E are attached to and form part of this bylaw.

Severability

- 15.7 If a section, subsection, paragraph, subparagraph or phrase of this bylaw is for any reason declared invalid by a court of competent jurisdiction, the decision will not affect the validity of the remaining portions of this bylaw.

PART 16: IN FORCE

- 16.1 This bylaw comes into force on *March 5, 2018*.

READ A FIRST TIME this __18th__ day of __January_____, 2018.

READ A SECOND TIME this __18th__ day of __January_____, 2018.

READ A THIRD TIME this __18th__ day of __January_____, 2018.

SECOND AND THIRD READING RESCINDED, AND READ AGAIN AT SECOND READING this ____ day of _____, 2018.

READ A THIRD TIME this ____ day of _____, 2018.

ADOPTED this ____ day of _____, 2018.

IN FORCE this 5th day of March, 2018.

CHIEF ADMINISTRATIVE OFFICER

CHAIR

CERTIFIED a true copy of Bylaw No. 660, as adopted.

(Deputy) Manager of Corporate
Administration Services

Columbia Shuswap Regional District

BUILDING BYLAW NO. 660

Appendix A – Fees

A-1 PERMIT APPLICATION FEE

Upon Application for a Building Permit, a non-refundable Application Fee shall be paid to the Regional District as follows;

1.1	For a single or two family residential dwelling	\$72.00
1.2	For a single or two family residential accessory use	\$72.00
1.3	For a single or two family residential alteration or repair	\$72.00
1.4	For a commercial, multi-family, industrial or institutional use	\$288.00
1.5	For a commercial, multi-family, industrial or institutional accessory use	\$72.00
1.6	For a commercial, multi-family, industrial or institutional alteration or repair	\$72.00
1.7	For a change to any use or occupancy	\$72.00

The application fee may be credited toward the final Permit fees, provided no changes to the application documentation or drawings are made prior to the issuance

A-2 PERMIT FEES AND CHARGES

Permit fees and charges shall be paid to the Regional District at issuance of the Permit and shall be calculated on the total *value of the work* as follows;

2.1	For the first \$1,000.00 or fraction thereof:	\$72.00
2.2	For each additional \$1,000.00 or fraction thereof up to \$100,000.00	\$7.20
2.3	For each additional \$1,000.00 or fraction thereof exceeding \$100,000.00	\$6.00
2.4	For the first five(5) plumbing fixtures	\$72.00
2.5	For each plumbing fixture after the first five	\$7.20
2.6	For the installation of a mobile home designated as Can/CSA Z240 MH Series or a manufactured home designated as CSA A277-M1990	\$216.00
2.7	For a temporary building or to renew a temporary building permit	\$72.00
2.8	For a permit to demolish a building	\$72.00
2.9	For a permit to move a building	\$72.00
2.10	For a masonry chimney or solid fuel fired fireplace insert or stove	\$72.00
2.11	For a change in use or occupancy	\$216.00

A-3 OTHER FEES AND CHARGES

3.1	For special inspection	\$216.00
3.2	For each recall inspection	\$216.00
3.3	For CSRD Board discharge of a Community Charter Section 57 Notice on Title	\$650.00
3.4	Land Title Office (LTO) legal Notation/Covenant Registration	\$150.00
3.5	For Permit Extension	\$72.00
3.6	For change in ownership on open permit file	\$236.00
3.7	For additional plan review due to change in design	\$216.00
3.8	Additional fee if Stop Work Order not rescinded due to compliance within 30 days of being issued, and for each additional 30 day period thereafter	\$216.00

A-4 SECURITY DEPOSIT

4.1	For a single family dwelling parking structure, combination parking structure/accessory building or an accessory building greater than 25 square meters	\$250.00
4.2	For a single family dwelling addition, alteration, renovation, demolition	\$250.00
4.3	For a new single family dwelling or simple building	\$500.00
4.4	For a complex building	\$1,000.00

Columbia Shuswap Regional District

BUILDING BYLAW NO. 660

Appendix B – Value of Work

Use or Occupancy	Unit Value Per:	
	Sq. Ft.	Sq. M.
(a) Single and Two-Family Dwellings		
i. Single level with crawl space or slab on grade	\$108.00	\$1162.80
ii. single level with unfinished basement level	\$115.20	\$1240.80
iii. Second and/or third levels	\$57.60	\$619.20
iv. Finished basement level	\$36.00	\$387.60
v. Permanent foundations for factory built/manufactured homes	\$10.80	\$108.00
(b) Multi-Family Dwellings – Townhouse or Row Housing		
i. Single level with crawl space or slab on grade	\$93.60	\$1006.80
ii. Single level with unfinished basement level	\$100.80	\$1084.80
iii. Second and/or third levels	\$57.60	\$619.20
iv. Finished basement level	\$36.00	\$387.60
(c) Multi-Family Dwelling – Apartment and/or Condominium		
i. With crawl space or slab on grade	\$100.80	\$1084.80
ii. With unfinished basement level	\$108.00	\$1162.80
iii. Below grade parking level	\$50.40	\$542.40
iv. Finished basement level	\$36.00	\$387.60
(d) Residential Accessory Buildings		
i. Finished attached garage	\$36.00	\$387.60
ii. Finished detached garage	\$40.80	\$434.40
iii. Carport structure	\$28.80	\$309.60
iv. Open balcony and decks	\$21.60	\$232.80
v. Roofed balcony and decks	\$28.80	\$309.60
vi. Miscellaneous shelters and sheds	\$14.40	\$154.80

Columbia Shuswap Regional District

BUILDING BYLAW NO. 660

Appendix C – Owner’s Undertaking

Property Address: _____ PID: _____

Legal Description: _____

Building Permit Application Number: _____

1. This undertaking is given by the undersigned, as the owner of the property described above, with the intention that it be binding on the owner and that the Regional District will rely on same.
2. I confirm that I have applied for a building permit pursuant to “Building Bylaw No. 660” (the “Bylaw”) and that I have carefully reviewed and fully understand all of the provisions of the Bylaw and in particular, understand, acknowledge and accept the provisions describing the purpose of the Bylaw, the conditions under which permits are issued, the disclaimer of warranty or representation and the limited extent of the scope of the Bylaw and inspections thereunder.
3. Without in any way limiting the foregoing, I acknowledge fully that it is my responsibility, whether or not any work to be performed pursuant to the permit applied for is done by me, a contractor or a registered professional, to ensure compliance with the Building Code and the Bylaw.
4. I am not in any way relying on the Regional District or its building officials, as defined under the Bylaw, to protect the owner or any other persons as set out in Part 3 of the Bylaw and I will not make any claim alleging any such responsibility or liability on the part of the Regional District or its building officials.
5. I hereby agree to indemnify and save harmless the Regional District and its employees from all claims, liability, judgments, costs and expenses of every kind which may result from negligence or from the failure to comply fully with all bylaws, statutes and regulations relating to any work or undertaking in respect of which this application is made.
6. I am authorized to give these representations, warranties, assurance and indemnities to the Regional District.

Owner or Owner's Authorized Agent Information:

Name: _____

(PRINT)

Mailing Address: _____

Tel. No.: _____ Cell No.: _____ Fax No.: _____

Email: _____

This undertaking is executed by the owner this _____ day of _____, _____.

(Day)

(Month)

(Year)

1. Where owner is an individual:

Owner's Signature

Owner's Name

(PRINT)

Signed, sealed and delivered in the presence
of:

Witness's Signature

Witness's Name

(PRINT)

Witness's Address

2. Where owner is a corporation:

Name of Corporation

Per:

Authorized Signatory

Name

(PRINT)

Signed, sealed and delivered in the presence
of:

Witness's Signature

Witness's Name

(PRINT)

Witness's Address

3. Where owner is a partnership:

Name of Partnership

Per:

Authorized Signatory

Name

(PRINT)

Signed, sealed and delivered in the presence

of:

Witness's Signature

Witness's Name

(PRINT)

Witness's Address

Columbia Shuswap Regional District

BUILDING BYLAW NO. 660

Appendix D– Confirmation of Professional Liability Insurance

1. *This Confirmation letter must be submitted along with each BC Building Code Schedule A and Schedule B before issuance of a building permit. A separate Confirmation Letter must be submitted for each registered professional.*
2. *This Confirmation Letter must be submitted with each BC Building Code Schedule C after completion of the building but before a final inspection is made by the building official. A separate Confirmation Letter must be submitted for each registered professional.*
3. *Only an original Confirmation Letter, printed by the Regional District or an unaltered photocopy of this document is to be completed and submitted.*

Attention: Building Official

Property Address: _____

Legal Description: _____

PID: _____

The undersigned hereby gives assurance that:

- a) I have fulfilled my obligation for insurance coverage as outlined in Building Bylaw No.660;
- b) I am insured by a policy of insurance covering liability to third parties for errors and omissions in respect to the above project, in the amount of at least One Million Dollars (\$1,000,000) in respect of a *complex building* or Five Hundred Thousand Dollars (\$500,000) in respect of another *building* or *structure* under this bylaw;
- c) I have enclosed a copy of my certificate of insurance coverage indicating the particulars of such coverage;
- d) I am a registered professional; and
- e) I will notify the building official in writing immediately if the undersigned's insurance coverage is reduced or terminated at any time during construction.

Name (PRINT)

Signature

Date

Address (PRINT)

Phone

If the registered professional is a member of a firm, complete the following

I am a member of this firm:

(Affix professional seal here)

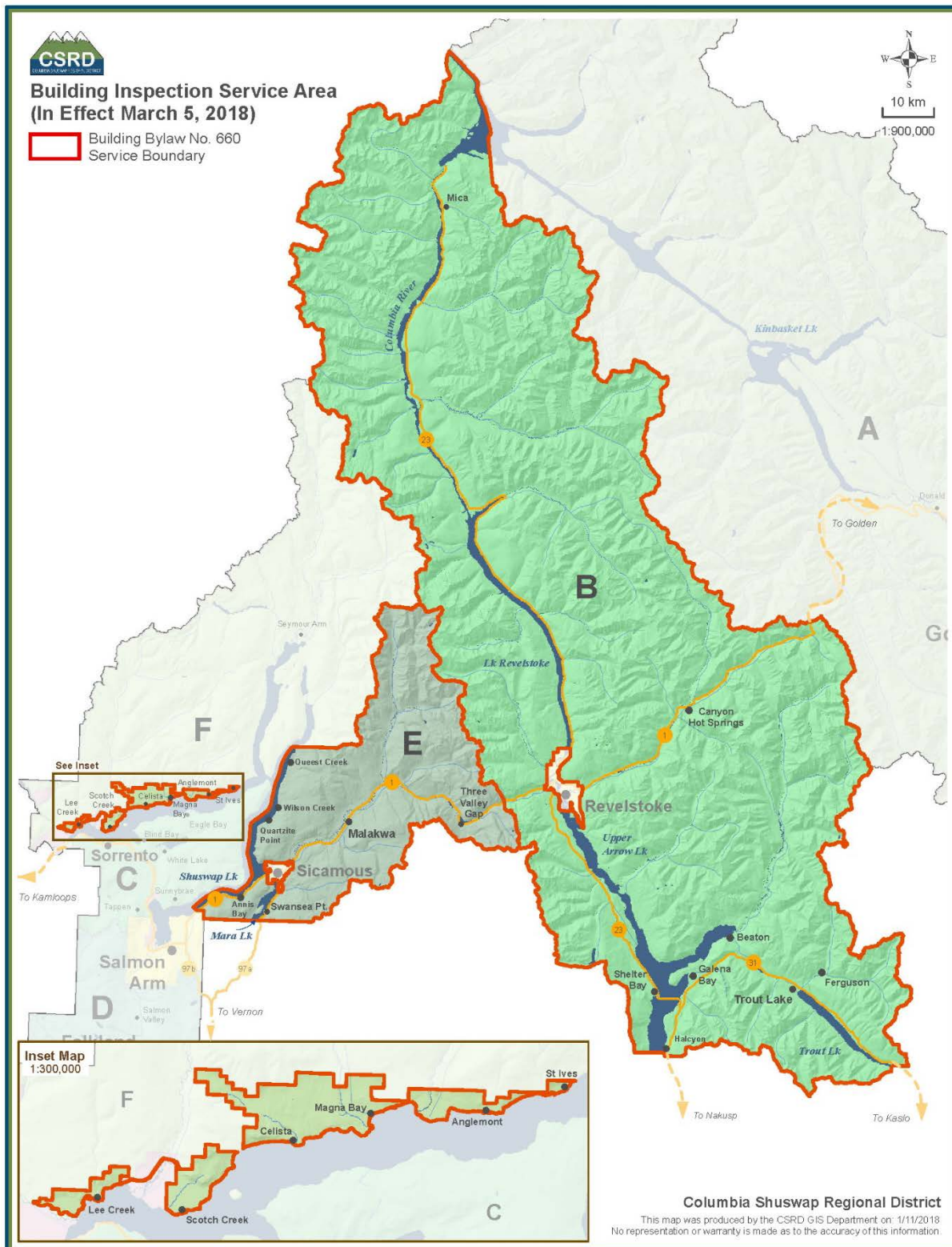
Name of Firm (PRINT)

Address (PRINT)

I sign this letter on behalf of myself and the firm.

Note: This Confirmation letter must be signed by a registered professional. The BC Building Code defines a registered professional as a person who is registered or licensed to practice (a) as an architect under the Architects Act, or (b) as a professional engineer under the Engineers and Geoscientists Act

Columbia Shuswap Regional District
BUILDING BYLAW NO. 660
Appendix E – Service Area





BOARD REPORT

TO: Chair and Directors

File No: LC2545
PL20180009

SUBJECT: Electoral Area C: Agricultural Land Commission (ALC) Application
Section 30 (1) Exclusion from the ALR - LC2545 (Shuswap Lake Estates Ltd. & Shuswap West Development Ltd.

DESCRIPTION: Report from Dan Passmore, Senior Planner, dated January 23, 2018.
Balmoral Road, Blind Bay.

RECOMMENDATION: THAT: Application No. LC2545, Section 30 (1) Exclusion, for Part SW 1/4, Section 8, Township 22, Range 10, West of the 6th Meridian, Kamloops Division Yale District, Except Plans 36962, H425, H944, KAP58710, KAP67184, and EPP3456, be forwarded to the Provincial Agricultural Land Commission with the recommendation of approval on this 15th day of February, 2018.

SHORT SUMMARY:

The applicant is requesting an exclusion of the subject property from the Agricultural Land Reserve (ALR) for the purpose of furthering the goal of providing a Columbia Shuswap Regional District (CSR D) community sewer system for the Blind Bay and Sorrento communities by developing effluent retention ponds on a portion of the site. The western one third portion of the site, if studies indicate it is able to be used for the intended purpose, would then be subdivided from the subject property, acquired by the CSR D, and developed to receive effluent in holding ponds from the existing Shuswap Lake Estates community sewer treatment facility, which is also proposed to be acquired by the CSR D, provided it can be expanded to support the broader community beyond Shuswap Lake Estates.

The treated effluent would then be available for the larger agricultural community in the area as a source of nutrient rich irrigation water, to enhance agricultural production in the area.

The property owner has plans to pursue the development of a Village Centre on the remaining two thirds of the subject property, should the property be excluded from the ALR.

VOTING:	Unweighted Corporate	<input checked="" type="checkbox"/>	LGA Part 14 (Unweighted)	<input type="checkbox"/>	Weighted Corporate	<input type="checkbox"/>	Stakeholder (Weighted)	<input type="checkbox"/>
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BACKGROUND:

REGISTERED OWNERS/APPLICANT:

Shuswap Lake Estates Ltd. & Shuswap West Development Ltd.

AGENT:

Columbia Shuswap Regional District

ELECTORAL AREA:

C

LEGAL DESCRIPTION:

The South West 1/4, Section 8, Township 22, Range 10, West of the 6th Meridian, Kamloops Division Yale District, Except Plans 36962, H425, H944, KAP58710, KAP67184, and EPP3456.

PID:

004-612-710

CIVIC ADDRESS:

Balmoral Road, Blind Bay

SURROUNDING LAND USE PATTERN:

North = Residential, Wastewater Treatment Facility, Golf Course

South = Trans-Canada Highway, Commercial, ALR, Light Industrial

East = Rural Residential, Agriculture, Commercial, ALR

West = ALR, Rural Residential, Agriculture

CURRENT USE:

Vacant land

PROPOSED USE:

CSRD Community Sewer Effluent Retention Facility

PARCEL SIZE:

49.01 ha

OCP DESIGNATION:

Electoral Area C Official Community Plan Bylaw No. 725

AG – Agriculture

ZONE:

South Shuswap Zoning Bylaw No. 701

AR2 – Agriculture (4 ha)

AGRICULTURAL LAND RESERVE:

100 %

SOIL CAPABILITY:

According to the Canada Land Inventory mapping, there are 2 separate soil classifications affecting the property, as follows:

1. Approximately 20% of the subject property is Class 5 soils with topography as the limiting factor. The soils are not improvable.
2. The remaining approximately 80% of the property are 70% Class 2, with soil density as the limiting factor and 30 % Class 2, with topography as the limiting factor. The bulk of the soils are not improvable while the 30% Class 2 is improvable in terms of the limiting factor which changes to cumulative and minor adverse characteristics.

See "Maps_Plans_LC2545.pdf" attached.

The applicant had an Agrologist's report done to more fully analyze the soils present on the subject property. The report is attached to the application package.

The applicant also had a Waste Management Opportunities and Benefits to Agriculture report done, that in part assesses the agricultural capacity and feasibility of the subject property. The report is attached to the application package

See "ALC_Application_LC2545.pdf" attached.

HISTORY:

There have been a number of applications in the area:

- #1007 (1975) allowed exclusion of all lands lying east of the existing airstrip including the airstrip. The land lying west of the airstrip remains in the ALR and is to be developed as a golf course only. (1975) allowed to exclude a small portion of land containing a rock bluff.
- #1014 (1975) allowed a portion of land to be excluded with conditions – inclusion. (1996) reconsideration - allowed to fully exclude.
- #1060 (1975) refused exclusion but allowed subdivision of the 110 ac on the east side of Balmoral Road into 5 parcels of 20 ac each.

- #1244 (1976) refused a 2 lot subdivision. Class 2 soils and the ALC wants to maintain large lots. Leasehold by explanatory plan suggested.
- #1378 (1977) allowed subdivision of 14 ac including the home and homesite from the subject property.
- #1436 (1978) allowed subdivision into 1 ac and a 32 ac parcels.
- #1549 (1986) allowed exclusion of 34 ha. ALC is opposed to the creation of residential lots west of the north-south extension of the proposed connector road. Also required fencing.
- #1558 (1979) allowed exclusion.
- #1590 (1979) allowed exclusion.
- #1591 (1979) allowed exclusion.
- #1592 (1979) allowed exclusion.
- #1625 (1979) allowed exclusion of area east of Hendrickson Road subject to the area west of Hendrickson Road being included into ALR.
- #1642 (1984) allowed a second hand and antique outlet within a concrete building.
- #1652 (1980) refused a non-farm use for a shopping mall because of Class 2 soils.
- #1706 (1981) refused a nonfarm use for a 30 ac area for a shopping centre because of agricultural potential and possible intrusion into the ALR.1251 (1976) refused 2 lot subdivision because there is some capability for agricultural use.
- #1727 (1981) allowed a subdivision of 2 ac parcel from the subject properties with conditions.
- #1908 (1984) allowed subdivision of 16 ha lot from the subject property containing hog operation, subject to consolidation.
- #1955 (1984) allowed subdivision to create a 11 ha parcel south of the TCH and the 47 ha subject property north of the TCH.
- #2069 (1990) allowed exclusion of a 50 ha property. (1990) reconsideration to allow an amendment to permit the use of a portion of the land to be used for a private aircraft landing strip.
- #2074 (1990) application to subdivide withdrawn.
- #2079 (1990) allowed non-farm use of 4 ac of the property for a log home building for 2 years with conditions. (1996) rescinded condition about topsoil stockpiling and extended approval of operation for a 5 year period subject to conditions.
- #2125 (1992) refused subdivision into 1.6 ha and 3.23 ha parcels, as the smaller parcels would reduce the overall agricultural potential of the land.
- #2186 (1995) allowed exclusion.
- #2221 (1998) allowed exclusion subject to fencing and the registration of a covenant on the south boundary.
- #2231 (1998) allowed subdivision of a 2.3 ha lot.

- #2247 (2002) refused exclusion of a 47 ha property because the ALC believes allowing urban development would result in continued pressure on remaining ALR lands in the area to the detriment of agriculture. (2003) reconsideration – confirmed refusal.
- #2270 (2002) approved a non-farm use to expand existing storage compound as well as recognizing other non-farm uses on the property.
- #2287 (2003) refused a non-farm use to use 4.5 ha of an 8.9 ha property as a storage facility because the land has agricultural capability.
- #2302 (2004) refused the subdivision of 4 lots (3 lots of 7ha and one 9.6 ha lot) because of the good quality of soils. Allowed a 2 lot subdivision, as divided by Highway #1. (2004) reconsideration – allowed a 4 lot subdivision of 32 ha property.
- #2387 (2008) allowed to construct a second single family dwelling on the 10.6 ha property subject to the removal/demolition of the existing house upon its vacancy.
- #2424 (2010) refused exclusion, consolidation, and subdivision application because the land has agricultural capability and is suitable for agricultural use. The ALC said the proposal would have a negative impact on agriculture. (2010) reconsideration – confirmed refusal.
- #2460 (2012) refused exclusion of 8-10 ac to facilitate a place of worship and accessory uses because the land has good agricultural capability. 1691 (1980) approved 2 lot subdivision.
- #2475 (2015) allowed subdivision.
- #2477 (2013) refused inclusion into the ALR as the land was not suitable for agriculture.
- #2494 (2015) refused subdivision into 4 ha and 6 ha parcels.

See "Maps_Plans_LC2545.pdf" attached.

SITE COMMENTS:

The site was formerly tree-covered, but the owner has recently clear-cut the property. It has not been used for agricultural purposes and remains vacant.

See "Maps_Plans_LC2545.pdf" attached.

ALC APPLICATION INFORMATION (completed by applicant):

Proposal:

To exclude 45.1 hectares from the ALR at the northwest corner of the Trans-Canada Highway and Balmoral Road. Of the parcel, a 13.5 hectare section in the north west corner of the property is to be utilized by the CSRD as a wastewater storage effluent lagoon for the purposes of a spray irrigation program on local farm land, and the balance of the land would be developed as a Balmoral Village Centre as identified in Electoral Area C OCP Bylaw.

Current agriculture that takes place on the parcel:

None

Agricultural improvements made to the parcel:

None (parcel has recently been cleared of trees)

Non-agricultural uses that are currently taking place on the parcel:

None

Explain why you believe that the parcel(s) should be excluded from the ALR:

The subject property is located at the intersection of the Trans-Canada Highway and Balmoral Road and directly south of the existing Shuswap Lake Estates sewage treatment facility. The exclusion of the lands from the ALR would allow the CSRD to expand the capacity of the existing sewage facility, service a greater area of the community, allow the densification of residential parcels, reduce the amount of effluent entering Shuswap Lake and allowing CSRD to provide the surrounding farms with nutrient rich spray irrigation from the new storage lagoons. In addition, the exclusion will allow the development of a Village Centre to bring services closer to Blind Bay and reduce traffic trips. Finally, the agricultural capability of the subject property is predominately Class 4 due to the heavy clayey glacial lacustrine blanket.

POLICY:

Electoral Area 'C' Official Community Plan Bylaw No. 725

1.1 Vision Statement

In the next 20 years, development is anticipated to be at a moderate scale, and less intensive than the Okanagan Valley. Small pockets of settlement along Shuswap Lake will stay much as they are today. Sunnybrae, White Lake, and Eagle Bay will likely be serviced with sewer and water, making way for a modest amount of primarily residential development. The Sorrento Village Centre will be serviced with sewer and water, allowing for detached and multi-unit residential, commercial, and business-industrial uses. These uses will be concentrated around the Village Centre and away from the lakeshore. Higher density residential, commercial and industrial development outside the Village Centre and 'Balmoral Corner' will be strongly discouraged; although the OCP supports such uses at the 'Balmoral Corner', the lands are in the ALR and previous applications to exclude the land for uses other than agriculture have been refused by the ALC.

1.2 Sustainable Planning Principles

Principle 7

A region-wide approach to correct inferior water and sewage treatment systems and a comprehensive, affordable liquid waste management plan that takes into account the latest technologies is supported, in order to fully protect groundwater, lakes and streams.

Principle 8

A concentration of community facilities in the Sorrento and Balmoral areas, including retail, cultural, health and emergency services is supported.

Principle 9

Active community involvement within the South Shuswap, including planning decisions related to land use, housing, servicing, parks and transportation is supported.

3.1 General Land Use Management

3.1.2 Policies

.2 The Sorrento Village Centre, established on Schedules B and C, will accept much of the residential, retail and business development in Area C and will be connected to community water and sewer systems. Future development of a Balmoral Village Centre, at the northwest corner of the Balmoral Road/Highway #1 intersection, is dependent on approval from the ALC, as it lies within the ALR; this

plan does not presume the ALC's position on the future uses of this land and does not support development pressure or speculation based on the plan's support of this area as a Village Centre as previous applications to exclude these ALR lands have been refused by the ALC.

.7 Agricultural uses on ALR lands are supported in all land use designations. Agricultural uses on non-ALR lands may be supported in all land use designations subject to compatibility with adjacent land uses and setbacks set out in the zoning bylaw.

3.10 Agriculture (AG)

3.10.1 Policies

.1 The lands designated as Agriculture (AG) are shown on Schedules B and C. In general these are lands with half or more of their area lying within the Provincially designated Agricultural Land Reserve at the time of writing of this Plan. Land lying within the Agricultural Land Reserve is identified on Schedule E – ALR Map. Agriculture is the primary and dominant land use, with a full range of crop and livestock production activities permissible, as well as homes, buildings and structures associated with agricultural operations.

.2 The minimum parcel size of land for subdivision within the Agricultural land use designation is 60 hectares (148 acres).

.3 New subdivision is discouraged within the Agriculture designation, other than subdivision along ALR boundaries or subdivision or parcel consolidations demonstrated not to have an intrusive or conflicting impact on the surrounding agricultural community.

.4 The Agriculture land use designation encompasses agricultural uses, and uses accessory to agriculture. Subject to the guidelines of the Agricultural Land Commission and the zoning bylaw the following uses are appropriate in lands designated Agriculture: agri-tourism operations and agri-accommodation, and uses which will not affect the long-term agricultural capability of the land.

Agricultural Land Commission Act

Rules for exclusion applications:

Form and filing of exclusion application

- 15 (1) An exclusion application under section 30 of the Act must be in a form acceptable to the commission and must be filed,
 - (a) if the exclusion application is one referred to in section 34 (3.1) of the Act, with the commission, or
 - (b) in any other case, with the applicable local government or treaty first nation government.
- (2) An exclusion application must be accompanied by the following when submitted for filing under subsection (1):
 - (a) an original copy of each advertisement required under section 16 (1) (a), as published with the date of publication clearly indicated;
 - (b) a photograph clearly indicating the manner in which the notice was posted under section 16 (1) (b);
 - (c) a signed statement by the owner of the land stating
 - (i) the name and address of each person served under section 16 (1) (c),
 - (ii) the date of service, and
 - (iii) the manner of service.

Notice of exclusion application

- 16 (1) Before filing an exclusion application under section 15 (1), an owner must give notice of the exclusion application by doing all of the following:
- (a) publishing a notice of the exclusion application in at least 2 issues of a newspaper published or circulated in the municipality, regional district or treaty settlement lands within which the land to which the exclusion application relates is located, not less than 7 days and not more than 14 days apart, inclusive of the day of publication;
 - (b) posting on the land that is the subject of the exclusion application, on a sign measuring at least 60 cm by 120 cm and positioned at the midpoint of a boundary of that land that is adjacent to a constructed road right of way if one exists,
 - (i) a copy of the signed exclusion application, and
 - (ii) a copy of the notice of exclusion application;
 - (c) serving, personally or by registered mail, a copy of the signed exclusion application and a copy of the notice of exclusion application on each owner of land, in an agricultural land reserve, that
 - (i) shares a common boundary with the land for which the exclusion application is being made, or
 - (ii) is separated by a public road right of way from the land for which the exclusion application is being made.
- (2) Each advertisement under subsection (1) (a) and copy of the notice posted under subsection (1) (b) must be in a form acceptable to the commission.
- (3) Despite subsections (1) and (2), if the requirements of those subsections are not practical, the notice may be given in an alternative means acceptable to the commission.
- (4) If an owner of land who files an exclusion application under section 15 (1) receives a response to a notice given under this section, the owner must,
- (a) if the application was filed with the commission under section 15 (1) (a), forward a copy of the response to the commission, or
 - (b) if the application was filed with a local government or treaty first nation government under section 15 (1) (b), forward a copy of the response to that local government or treaty first nation government.

FINANCIAL:

There are no financial implications to the CSRD with regard to this application.

KEY ISSUES/CONCEPTS:

The Agrologist's report indicates that soil classifications for portions of the property may be higher (worse) than previously identified in the Agricultural Capability mapping from the Province of BC. The Waste Management Opportunities and Benefits to Agriculture report indicates that the subject property has limited feasibility as an agricultural operation, but that the availability to neighbouring properties of effluent irrigation would benefit agricultural production in the area.

The Agricultural Land Commission has previously refused applications to exclude the subject property from the ALR. However, in the last application, (LC2247C) in their 2002 initial consideration, the ALC advised that it may be willing to review its decision (to refuse exclusion) in consideration of some net benefit for agriculture to offset the loss of 47 ha of ALR land. The decision went further to add that the ALC did not consider the offer of treated effluent as an irrigation source as a sufficient offset.

The owner of the subject property requested that the ALC reconsider this decision based on the inclusion into the ALR of 3 other properties located elsewhere totalling 19 ha and provision of an irrigation source (spray effluent) to nearby agricultural lands. The ALC reviewed this request and requested additional information, including a commitment on the part of the CSRD to support the spray irrigation proposal by acquiring the Shuswap Lake Estates (SLE) sewage treatment facility. Finally in 2008, the CSRD responded to the ALC's requests for a commitment by requesting that a decision on the exclusion be postponed until such time as a Liquid Waste Management Plan and an Official Community Plan for Electoral Area C could be completed.

The current application proposes that approximately one-third of the subject property would be acquired by the CSRD to foster effluent holding ponds essential to the provision of spray irrigation to farm land.

In support of the concept of spray irrigation of treated effluent, the CSRD has adopted the Electoral Area C Liquid Waste Management Plan (LWMP) in 2009 to include alternative options for various dispersal methods. After various studies determined that there were no viable locations in the Sorrento/Blind Bay area for rapid infiltration basin dispersal methods, the CSRD is left with consideration of spray Irrigation as one of the few viable solutions to servicing the area. The LWMP has also been supplemented by a 2014 report (Community Sewer System Plan for Sorrento/Blind Bay Area 'C' - Summary Report, available on the CSRD website) further recognizing the need for a wastewater treatment facility in the Balmoral area to service the Reedman Point/Blind Bay catchment areas.

CSRD staff have approached Shuswap Lake Estates Ltd. regarding the acquisition of the Wastewater treatment facilities, but to date has been unable to come to an agreement with the owner for acquisition.

The property owner is willing to consider the CSRD acquiring the northeast portion of the subject property, and the SLE wastewater treatment facility, should the application for exclusion from the ALR come to a successful conclusion. To fulfill the CSRD's goal of fostering a community sewer system, and to support nearby agricultural operations, the entire property must be excluded.

Electoral Area 'C' Official Community Plan Bylaw No. 725 was adopted March 20, 2014. The OCP reflects the framework for development endorsed by the Board of the CSRD, and the people who provided their input into the lengthy process of review. In the instance of the Balmoral Corner area, the OCP was, in the final analysis, required to recognize the authority of the ALR. However, throughout the process the community indicated that other more intensive uses than agriculture more accurately reflect the community's interest for this area.

SUMMARY:

Agriculture policies within the Electoral Area 'C' Official Community Plan Bylaw No. 725 do not support uses other than agriculture on properties designated as Agriculture. However, in the case of the Balmoral Corner area, the OCP also contains broader statements which at the same time as reiterating the inclusion of the property in the ALR also lend support to the community's input to allow for higher intensity use of the subject property.

The Agrologist's report indicates that soil classifications for portions of the property may be higher (worse) than previously identified. The Waste Management Opportunities and Benefits to Agriculture report indicates that the subject property has limited feasibility as an agricultural operation, but that the addition of a source of nutrient rich irrigation water, would be a benefit to agricultural operations in the area.

In light of the broader statements in the OCP about higher intensity use of the subject property, the information included in the two agricultural reports and the broader community objective to pursue a

viable community sewer system for the Sorrento/Blind Bay communities, staff is recommending that the Board consider approval of the application for exclusion for the entire property.

IMPLEMENTATION:

If the exclusion application is successful, the CSRD will conduct an engineering assessment of the Shuswap Lake Estates wastewater treatment facility to determine residual values and upgrades required. The CSRD would then be in a position to advance negotiations regarding the acquisition of the northeast corner of the property and of the Shuswap Lake Estates wastewater treatment facility.

If the exclusion application is unsuccessful, the CSRD will need to consider other options going forward.

COMMUNICATIONS:

The recommendation of the Board will be forwarded to the ALC for consideration during its review of this application, together with all background information, including this staff report.

As noted above, the applicant/agent is required to advertise, post notice, and serve property owners notice of an exclusion application. This process occurred and a total of 5 letters were received. Of the 5, 3 were opposed to the exclusion application while the remaining 2 expressed concerns over the use of the northeast corner of the property for effluent storage lagoons.

See "Public_Submissions_LC2545.pdf" attached.

DESIRED OUTCOMES:

That the Board endorse the staff recommendation.

BOARD'S OPTIONS:

1. *Endorse the Recommendation.*
2. *Deny the Recommendation.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. Electoral Area C Official Community Plan Bylaw No. 725
2. South Shuswap Zoning Bylaw No. 701

Report Approval Details

Document Title:	2018-02-15_Board_DS_LC2545_ShuswapLakeEstatesLtd_ShuswapWestDevelopmentsLtd_v2.docx
Attachments:	<ul style="list-style-type: none"> - InCamera_Resolution_2018-01-25_5301-01.pdf - ALC_Application_LC2545.pdf - Public_Submissions_LC2545.pdf - Maps_Plans_LC2545.pdf
Final Approval Date:	Feb 14, 2018

This report and all of its attachments were approved and signed as outlined below:



Corey Paiement - Feb 13, 2018 - 11:17 AM



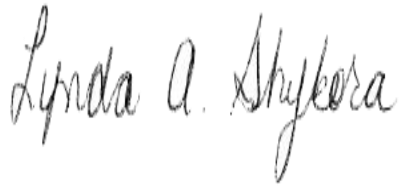
Gerald Christie - Feb 13, 2018 - 11:19 AM



Jodi Pierce - Feb 13, 2018 - 11:29 AM

No Signature - Task assigned to Darcy Mooney was completed by assistant Phaedra Turner

Darcy Mooney - Feb 14, 2018 - 8:18 AM

A handwritten signature in cursive script, reading "Lynda A. Shykora".

Lynda Shykora - Feb 14, 2018 - 8:21 AM

A handwritten signature in cursive script, reading "Charles Hamilton".

Charles Hamilton - Feb 14, 2018 - 9:27 AM



COLUMBIA SHUSWAP REGIONAL DISTRICT

PO Box 978, 555 Harbourfront Drive NE, Salmon Arm, BC V1E 4P1
T: 250.832.8194 | F: 250.832.3375 | TF: 1.888.248.2773 | www.csrdd.bc.ca

CERTIFIED RESOLUTION

Moved by Director Demenok, Seconded by Director Parker:

THAT: the following resolution adopted at the June 15, 2017 In Camera meeting of the CSRD Board be authorized for release from In Camera, this 20th day of July, 2017:

THAT: the Board empower the authorized signatories to act as the agent for Shuswap Lake Estates Ltd. and Shuswap West Development Ltd., owners of the 48.4 hectare parcel of land described as SW ¼ Section 8, Township 22, Range 10, W6M, KDYD except plans 36962, H425, H944, KAP58710, KAP67184 & EPP3456 in an application to the Agricultural Land Commission to exclude the land in its entirety from the Agricultural Land Reserve;

AND THAT: if the Agricultural Land Commission approves the application to exclude the land from the Agricultural Land Reserve it is conditional upon the 13.5 hectare section in the north west corner of the property to be utilized by the CSRD as a wastewater storage effluent lagoon for the purposes of a spray irrigation program on local farm land;

AND FURTHER THAT: with the owners of the property to be responsible for all costs associated with the application to exclude the land from the Agricultural Land Reserve.

CARRIED

I hereby certify the foregoing to be a true and correct copy of a Resolution adopted by the Board of Directors of the Columbia Shuswap Regional District at its In Camera meeting held on the 15th day of June, 2017 and authorized for release from In Camera to the July 20, 2017 Regular Meeting.

Deputy Manager of Corporate Administration Services

Dated this 25th day of January, 2018

ELECTORAL AREAS

A GOLDEN-COLUMBIA
B REVELSTOKE-COLUMBIA

C SOUTH SHUSWAP
D FALKLAND-SALMON VALLEY

E SICAMOUS-MALAKWA
F NORTH SHUSWAP-SEYMOUR ARM

MUNICIPALITIES

GOLDEN
REVELSTOKE

SALMON ARM
SICAMOUS

ALR EXCLUSION APPLICATION

45.1 ± hectares

*NW Corner of Trans-Canada Highway and Balmoral Road
Columbia Shuswap Regional District*

PREPARED FOR:

Agricultural Land Commission



Kent Macpherson



Kent Macpherson

January 19, 2018

Agricultural Land Commission
133-4940 Canada Way
Burnaby, BC
V5G 4K6

Attention: Tony Pellett, Regional Planner

Re: Agricultural Land Commission - ALR Exclusion Application
Proposed ALR Exclusion: The South West 1/4 Section 8 Township 22 Range 10 West of the
6th Meridian Kamloops Division Yale District Except Plans 36962, H425, H944, KAP58710,
KAP67184 and EPP3456

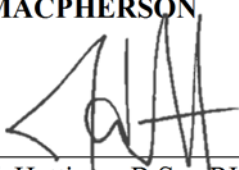
This document is to summarize the work completed by the Columbia Shuswap Regional District (CSRD) and Shuswap Lake Estates (SLE) pertaining to the ALR Exclusion Application for 45.1 hectares of land located at the NW Corner of the Trans-Canada Highway and Balmoral Road located in Balmoral, BC.

If you have any questions pertaining to this Application, please do not hesitate to contact us.

Sincerely,

KENT-MACPHERSON

Per:



J. Hettinga, B.Sc., RI

/jh

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Letter of Interest – Village Ranch LTD
Letter of Support – South Shuswap Chamber of Commerce
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Executive Summary

Sorrento and Blind Bay have evolved over the last 100 years from a small meeting place known as Trapper's Landing, to a community of approximately 7,800 (with surrounding area). The South Shuswap has historically been a vacation spot which has now progressed into a vibrant lifestyle community with infrastructure and amenity demands from residents and businesses that have made this area their full-time home.

Over the past number of years, the growth of the Blind Bay/Sorrento community has created demands for various community provisions such as a Town Centre and related amenities that could provide various health and community related services. The Electoral Area C Official Community Plan (OCP) has identified the desire for a Town Centre as well as for increased density in the area. The OCP has also recognized that the increased density would necessitate the need for a community sewer system.

As the community developed over time, residential density concentrated along Shuswap Lake, and a proliferation of on-site sewer systems emerged. In 2002, the Columbia Shuswap Regional District developed its first formal Liquid Waste Management Plan (LWMP) which recognised the need for a community sewer system in the Blind Bay/Sorrento area. As the mass of development was located north of productive farm land and adjacent to the lake, the foreshore became increasingly at risk of contamination from aging on-site septic systems, and the groundwater being polluted. The 2002 LWMP identified that the propensity of on-site sewer systems in the area was an environmental problem in the making.

In 2008 a comprehensive review of the 2002 LWMP occurred which identified viable options to develop a community sewer system for the area. The LWMP as well as subsequent studies involved numerous investigations related to the identification of an appropriate treatment and deposition site. After a thorough and exhaustive process, the CSRD has recently identified that the only available option to advance a community sewer system for the communities of Reedman Point/Blind Bay/Sorrento would be the acquisition of the existing Shuswap Lake Estates private community sewer system and the acquisition of suitable land (in proximity to this treatment plant as well as local farmers) to develop an effluent storage pond for the purpose of supplying spray irrigation effluent to neighbouring farmland. The CSRD focused its attention on the Balmoral Corner as a solution that could meet these community objectives.

The subject property is located directly south of the existing Shuswap Lake Estate (SLE) sewer system. With the exclusion of the subject property, ~30% of the land would be owned by CSRD as an irrigation

storage area, and the existing SLE sewer system would be transferred to the CSRD and expanded to accept effluent from the surrounding community. This effluent would be treated and directed to the irrigation ponds to be utilized by adjacent farm land for crop irrigation and enhancement.

With the CSRD owning and operating the community sewer system and administering the spray irrigation program, long term agricultural benefit would be maintained for the surrounding farmland. The irrigation ponds are located close to existing farms that have expressed considerable interest in spray irrigation with expectations of significant increases in crop yields.

The exclusion of these lands from the Agricultural Land Reserve provides an opportunity for the CSRD and the communities of Blind Bay/Sorrento to advance its long awaited and publicly desired local government owned and operated community sewer system. In addition, the balance of the site would provide for a Town Centre as desired in the OCP, with community amenities. This Town Centre will support the surrounding agricultural community, and in combination with the development of the CSRD effluent storage and spray irrigation program, the agricultural community will thrive with the substantial increase in crop productivity and increased liveability in the community.

Section 1

History and Current Application

1.1 Town Center and Original ALR Application

Over the past 20 years, Shuswap Lake Estates (SLE) has been in conversation with the Agricultural Land Commission (ALC) and Columbia Shuswap Regional District (CSRD) regarding the property at the NW corner of the Trans-Canada Hwy and Balmoral Road.

In 1999, SLE applied to exclude the subject property for the purposes of private recreation, multi-family, single family, and commercial development. At the time of this application, the CSRD decided against forwarding the application to the ALC until an Official Community Plan (OCP) Review and Town Center Location Study was completed. There were a number of questionnaires and surveys completed within the community that showed over 90% of the respondents supported the development of a Balmoral Village on the subject property.

In August 2001, CSRD staff sent a letter and Board Resolution to the ALC that recommended the approval of the Balmoral Exclusion application. Although support was given by the CSRD, the exclusion application was refused in late 2002. The ALC indicated that the application did not preserve and protect farmland and encourage farming. However, the ALC did confirm its willingness to review future proposals that provide a net benefit for agriculture.

In 2005, the ALC indicated to the CSRD that, “The Commission believes that the proposed irrigation system could have long term benefits to agriculture in the Balmoral area, and as such is willing to continue discussions with the Regional District and the application as to how a spray irrigation infrastructure can be developed and administered that is supported by the Regional District, so that irrigation benefits will remain available to local farmers in the long term.”

In 2006, an adjacent property of 450 acres within the ALR was purchased by the Born family (within 500 feet from the subject property). Mr. Born expressed interest in using treated effluent from SLE for spray irrigation. This information was provided to the ALC and the Commission stated its interest in seeing a program developed.

In 2005 and in 2008, the ALC sent letters to the CSRD (Exhibits 1&2) summarizing the previous exclusion applications. The letters requested additional information related to the proposed exclusion including

development and administration aspects of how the spray irrigation program would benefit local farmers. Although the letters confirmed that the ALC saw the agricultural benefits of the spray irrigation program, there was concern expressed related to the long-term viability of this program if left under private ownership. The commitment from the ALC was that with further information and security, the ALC would reconsider the exclusion application from 2004.

1.2 CSRD Liquid Waste Management Plan

As the population increased along the South Shuswap shores, so did community concern of the impact of on-site septic systems to the groundwater and ongoing deterioration of water quality around Blind Bay and Sorrento. To track these concerns, the CSRD had 8 groundwater monitoring wells installed in 1995 which have been monitored over the past 20 years (Exhibit 16) for signs of influence from on-site septic systems.

In 2002, the CSRD developed a Liquid Waste Management Plan (LWMP) that identified the potential options for management of municipal liquid waste generated in the area, and recognised the need for a community sewer system in the Blind Bay/Sorrento area. The LWMP underwent a comprehensive review and rewrite in 2009. The 2009 LWMP identified that a community sewer system with effluent irrigation on farm land would be a preferred solution, specifically using SLE wastewater treatment plant as a “Regional Facility” for Sorrento, Blind Bay and Reedman Point (Exhibit 17).

In the 2009 LWMP, the CSRD identified technical information pertaining to a potential community sewer system including cost and flows. In 2017 (Exhibit 5), the CSRD through its consultant (Opus), determined that the estimated wastewater flow at buildout of a community sewer system would be 10,304 m³/day (assuming a population of 23,158).

After a number of years without an associated senior government grant intake, a general downturn in the economy, a change in Electoral Area Director at the CSRD, and recognition of the high capital costs of a spray irrigation system identified in the 2009 LWMP, the CSRD commissioned geological consultants to determine if any lower cost solutions such as rapid infiltration of effluent into the ground was a viable alternative. After completing significant research and investigation (including test pits) into possible sites (all within the ALR) that could potentially accommodate infiltration of effluent through rapid infiltration in the area, it was determined that there were no sites suitable for a stand-alone rapid infiltration system. One of the major issues identified in the Sorrento area was the shallow depth of bedrock on a number of sites and the reduced ability to incorporate rapid infiltration of effluent. In the Blind Bay area, the limiting factor was the lack of sandy granular soils that would be conducive to rapid infiltration.

Gentech Engineering was retained by the CSRD to summarize the findings of these studies (Exhibit 7). Based on numerous land and sewer system alternatives that were explored, the option to use the existing SLE system with an irrigation pond, and upgrade the system as additional properties connect to the community system has been identified as the lowest cost and best remaining option.

1.3 Current Application

During the summer of 2017, CSRD staff approached SLE to discuss the potential for acquisition of the existing community sewer system (owned and operated by SLE) as well as the acquisition of a portion of the Balmoral corner property for use to develop an effluent storage pond for use in a spray irrigation program. Based on the previous letters with the ALC, it was recognised that the agricultural capability to utilize the effluent would need to be studied, along with the potential benefits and feasibility of spray irrigation.

Two reports were commissioned to determine the potential impacts to agriculture should the exclusion application be approved. The first report was an updated agrologist report completed by Wayne Blashill (Exhibit 3), and the second report was a Waste Management Opportunities and Benefits to Area Agriculture by AG Consulting (Exhibit 4).

Wayne Blashill inspected the subject property in July 2017 and dug 6 test pits to determine soil structure and capability on various sections of the site. It was determined that the site was predominantly clayey glacial lacustrine blanket. The westerly portion of the property has significant limitations due to slope and the location of a low-lying pond. This depression and wetland is all Class 5 - Class 7 in agricultural capability, but lends itself to the use as an irrigation pond. The area to the east was substantially different from findings of previous reports as the soil structure was significantly worse than originally estimated.

AG Consulting researched the benefits of a proposed spray irrigation system by interviewing surrounding land owners, exploring typical nutrient amounts that spray irrigation would have, and determining the impact to the farming community. The final report is extremely detailed and provides significant information pertaining to the benefits of spray irrigation. Some of the relevant findings are:

- Surrounding properties have a lack of water to irrigate their lands
- Spray irrigation would allow for reduced reliance on area creeks and groundwater
- Spray irrigation would provide greater control over irrigation timing and an ability for farmers to diversify their crops

- An estimated 60% - 80% increase in yield with irrigation
- Increase in crop yield due to the nutrients in the effluent water
- 9 of 11 area farmers were very interested in spray irrigation
- 1,830 acres available for irrigation within the Balmoral area (6 km radius)
- At full buildout, a total of 3,050-acre feet of irrigation (annually)

The various historical reports completed in addition to reports prepared specific to this application, in addition to the history of dialogue with the ALC and previous exclusion applications for this subject property indicate that the exclusion of subject lands from the ALR has not been taken lightly by the applicant. The studies conducted leading to this application indicate that the ALC exclusion, if granted, will provide for many community needs as well as enhance and provide opportunities to improve agricultural activities in the area. In combination, the enhancement and improvement of agricultural activities and the improvements to environmental and social health and well-being provides the clear rationale for the overall support of this application to exclude the subject property from the Agricultural Land Reserve.

Section 2

Exhibits

Included in this document are the following attachments:

- Letter from Erik Karlsen (ALC) to Ted Bacigalupo (Director for CSRD) – Oct 20, 2005
- Letter from Erik Karlsen (ALC) to Jay Simons (CSRD) – Jan 21, 2008
- Agrologist's Report – Wayne Blashill
- Balmoral Waste Management Opportunities and Benefits to Area Agriculture – AG Consulting
- Sorrento/Blind Bay Community Sewer System Flow Data Plan – Opus International
- Field Investigation and Preliminary Assessment of Sewage Disposal; 874 Dilworth Road – Piteau Associates
- Sorrento Community Sanitary Sewer Opportunities – Gentech Engineering
- Concept Plan for Balmoral Property
- Letter of Support from Paul Demenok, CSRD Electoral Area C Director
- Letter of Interest in Spray Irrigation for ~500 acres of land
- Letter of Support from the South Shuswap Chamber of Commerce
- Letter of Support from Mel Arnold, MP
- Letter of Support from Greg Kylo, MLA
- Letter of Support from Shuswap Watershed Council
- CSRD – Electoral Area C Official Community Plan
- Western Water Associates – 2016 Groundwater Monitoring Report
- Earth Tech / AECOM – Liquid Waste Management Plan – Stage 3 Report

2.1 Letter from Erik Karlsen (ALC) to Ted Bacigalupo (Area Director for CSRD)

This letter dated October 20, 2005 from Erik Karlsen, Chair of the ALC to Ted Bacigalupo, Area Director of Area C – CSRD, following up on their meeting from the previous week. The ALC recognised the agricultural benefit that a spray irrigation could have and was encouraged to know that the CSRD may be involved in the administering of the system.

The ALC expressed concern of the 'effectiveness and durability of such a program' if it were not to be wholly owned and operated by the local government.

This letter is found in the Addenda as Exhibit 1.

2.2 Letter from Erik Karlsen (ALC) to Jay Simons (CSR D)

This letter dated January 21, 2008 from Erik Karlsen, Chair of the ALC to Jay Simons, Development Services Manager of the CSR D regarding the exclusion application (at that time) for Balmoral Corner. The ALC requested additional information regarding the proposed exclusion, as well additional information pertaining to the development and administration of a spray irrigation program and how the program would benefit farmers in the Balmoral area. The commitment from the ALC was that with this information, the ALC would reconsider the application from 2004. The ALC expressed interest in the treated effluent spray irrigation as a benefit to agriculture.

This letter is found in the Addenda as Exhibit 2.

2.3 Agrologist's Report – Wayne Blashill

This report is a thorough agricultural capability study of the subject property and includes the complete analysis of 6 test pits. The table below summarizes the findings in the report.

Polygon #	Agricultural Capability	Landform	Acres
1	4D	Level glacial lacustrine with heavy clay in Bt.	55
2	$4^T_D : 3^T_D$	Sloping glacial lacustrine with silty clay in Bt.	34
3	6T	Steep & gullied glacial lacustrine blanket.	14
4	5W	Wetland adjacent to south side of pond.	2
5	7W	Pond in depression on west side of parcel.	4
6	5T	Moderately steep glacial lacustrine NW of pond.	11
		Total	120

The agrologist found that “The 4D rating in polygon 1 is substantially different from that stated in the previous report by R&H Services Ltd (1980). They rated polygon 1 as $2D^7 : 3D^3$. They did not recognize the heavy clay and did not correctly evaluate the effect of that texture on the D limitation. The D limitation is worse than originally estimated.”

As further evidence of the 4D rating (heavy clay), the agrologist completed a lab test of a soil sample (last 2 pages of the agrologist report) and the results confirmed the presence of heavy clay. Mr. Blashill also states, “The project is considered a benefit to agriculture” and “The wastewater will become cost effective crop

fertilizer. Hay and forage yields are expected to increase with the irrigation of nutrient-rich wastewater (Rusan et al, 2006)” and “The existing pond will act as a natural reservoir for the wastewater”.

This report is found in the Addenda as Exhibit 3.

2.4 Balmoral Waste Management Opportunities and Benefits to Area Agriculture – AG Consulting

This report prepared by Andrea Gunner, P.Ag. identifies the opportunities of using the subject site as a retention irrigation storage pond, as well as provides the agricultural benefits of using the treated effluent as spray irrigation for the farmland within the area. The report contains information gathered from direct interviews with surrounding farmers, and quantifies the agricultural benefits of using spray effluent in the area.

The three main benefits of spray irrigation determined by the report are:

- A reduced reliance on area creeks and groundwater
- A greater control over irrigation timing
- Increased yields for farming

AG Consulting recognises that a major limitation to agricultural productivity generally is a lack of water. The additional water (especially water rich in nutrients) from the proposed treatment plant is a highly valuable resource to the farming community.

AG Consulting states, “The nearby communities of Vernon, Kamloops and Armstrong have been providing treated effluent from their municipal wastewater treatment plants as irrigation water for various landowners since 1977, 1984 and 1995 respectively.”

The report contains the following information in Table 1 that shows the Amount of Nutrients from Effluent from the City of Armstrong:

City of Armstrong 2012 Nutrients from the Effluent (in pounds per acre)		Amount of effluent irrigated onto land		
		6 inches	9 inches	12 inches
Nitrogen (as N)		28	40	56
Phosphorus (as P ₂ O ₅)		16	23	32
Potassium (as K ₂ O)		32	50	66
Sulphur		20	30	40

Source: Ruth McDougall, P.Ag., 2015 City of Armstrong Soil Monitoring Report

The report also states that “Balmoral forage producers with both irrigated and dryland forage production estimate a 60-80% increase in yield with irrigation deriving from their observations over a range of years. This includes higher yields per forage cut as well as potential for additional forage cuts in a season.”

Interviews with Balmoral area farmers within a six-kilometre radius of the subject site identified that over 80% of those interviewed were very interested in the potential acquisition of the proposed spray irrigation water and currently have non-irrigated land planted as forage crop. The report indicates that “Two of the nine farmers also grow grain (wheat and barley) for which access to irrigation would open up more lucrative markets (malting barley, food grade wheat).” In Table 3 of the report, a summary the available acreage for irrigation is presented for many farms within the surrounding area. In total, there is 1,830 acres currently not irrigated that could recognise agricultural benefit with the spray irrigation program.

Based on the estimated flows of waste water available for irrigation from a community sewer service area of Blind Bay, Reedman Point and Sorrento, it is estimated that enough effluent to irrigate over 3,000-acre feet annually will be available at full buildout of the community sewer system (summarized in Table 4).

Community Sewer System Projected Wastewater Volume Flows (m ³ /day) ²⁶						
YEAR	COMMERCIAL	RESIDENTIAL	ESTIMATED FLOW (m ³ /day)	ESTIMATED DAILY FLOW (IMPERIAL GALLONS)	DAILY ACRE FEET AVAILABLE IRRIGATION	ANNUAL ACRE FEET AVAILABLE IRRIGATION
2009	N/A	27%	2,400	528,000	1.95	710
2014	16%	30%	2,323	510,000	1.88	685
2019	38%	36%	3,739	820,000	3.03	1,100
2024	66%	44%	5,083	1,120,000	4.12	1,500
2029	88%	51%	6,267	1,375,000	5.08	1,850
Buildout	100%	100%	10,304	2,265,000	8.35	3,050

Conclusion of Part 1: The value of a spray irrigation program to nine current forage operations within a six-km radius, with over 1,800 non-irrigated acres would be significant, adding 60-80% productivity to these holdings.

Conclusion of Part 2: The existing site has limited feasibility as an agricultural operation. The poor quality of the grazing due to slope and poisonous bracken fern, the costs of fencing, limited area suitable for crop production and the challenges of remediation all combine to render this site economically unfeasible for an agricultural operation.

This report is found in the Addenda as Exhibit 4.

2.5 Sorrento/Blind Bay Community Sewer System Plan – Opus International

This report was originally commissioned by the CSRD in 2013 and identifies options to provide a community sewer system for the communities of Sorrento, Blind Bay and Reedman Point. The report calculates predicted flows, collection systems, as well as treatment and disposal options. The report also provides details regarding site location, overall cost breakdown, and effluent discharge volumes.

The CSRD has reviewed and researched many of these options, with Option 1 (Expansion of the Existing Sewage Treatment Facility at Shuswap Lake Estates) being the preferred option. This allows the CSRD to utilize existing infrastructure and provided the earliest timeframe for completion of a sewer system and spray irrigation program for the area.

The outcome of the buildout design flow estimate for the communities of Sorrento, Blind Bay and Reedman Point (based on current OCP) are summarized in Table 2.2:

BLIND BAY, SORRENTO AND REEDMAN POINT	APPROXIMATE AREA (ha)	NUMBER OF RESIDENTIAL DWELLINGS	WASTEWATER GENERATION RATE	ESTIMATED WASTEWATER FLOW (m ³ /day)
Residential	1,210	8,709	1000 L/pop/day 625 L/pop/day	6,270
Commercial	90	-	12 m ³ /ha/day	1,070
Total	1,300	8,709	-	7,340

In addition, Opus revised the assumed growth in the subject area and provided a Community Sewer System Plan Growth Assumptions and Design Flows in Table 2.5:

YEAR	PERCENTAGE OF BUILDOUT		ESTIMATED FLOW (m ³ /day)
	COMMERCIAL	RESIDENTIAL	
2009	Unknown	27%	2,400
2014	16%	30%	2,323
2019	38%	36%	3,739
2024	66%	44%	5,083
2029	88%	51%	6,267
Buildout	100%	100%	10,304

This report is found in the Addenda as Exhibit 5.

2.6 Field Investigation and Preliminary Assessment of Sewage Disposal – Piteau Associates

This report was commissioned by the CSRD in 2014 to assess the feasibility of in-ground disposal of sewage effluent at 874 Dilworth Road (a potential site for rapid infiltration of effluent from Sorrento). Based on the site work and investigation, the disposal capacity was substantially less than estimated or required for a community sewage system. Although the site looked promising for rapid ground water infiltration, the results were limited to only 300-400 m³/day and therefore not worth pursuing.

This report is found in the Addenda as Exhibit 6.

2.7 Sorrento Community Sanitary Sewer Opportunities – Gentech Engineering

This report was commissioned by the CSRD and is a technical memo summarizing the findings of the evaluation onto the feasibility of a stand-alone Sorrento Community Sanitary Sewer system. This report summarizes the numerous reports that have been completed between 2009 and 2015.

This report is found in the Addenda as Exhibit 7.

2.8 Concept Plan for Balmoral Property

Concept Plan for the Balmoral Property outlining 13.5 ha for a CSRD retention irrigation storage pond and the balance of the property for commercial, recreational and higher density residential. This property will act as the Balmoral Village as referred to in the CSRD's Official Community Plan.

This plan is found in the Addenda as Exhibit 8.

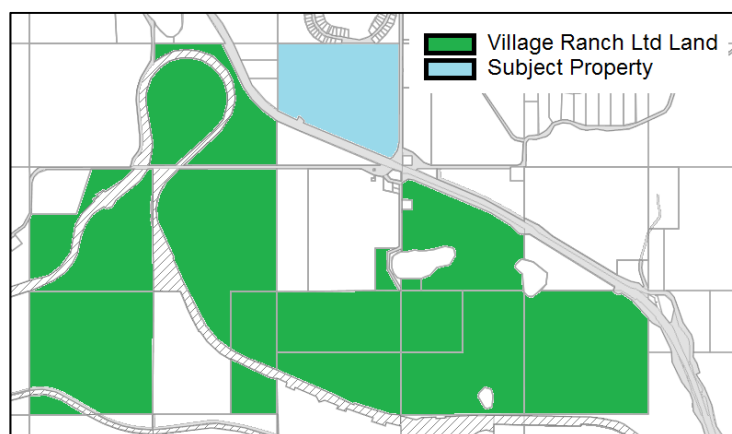
2.9 Letter of Support – Paul Demenok, Electoral Area C Director (CSRD)

This letter was written by Paul Demenok, CSRD Director for Electoral Area C (South Shuswap) and provides support for the community sewer system and village center development initiative. In addition to the major environmental concerns, Director Demenok identifies the benefits that the exclusion of land will have socially and economically.

This letter is found in the Addenda as Exhibit 9.

2.10 Letter of Interest in Spray Irrigation for ~500 acres of land

Letter from John Born, President of Village Ranch Ltd confirming his interest in spray irrigation for his properties. Mr. Born confirms that he has 500 acres of land close to the subject property and would be interested in irrigating with the treated effluent from the CSRD system. Mr. Born has expressed interest in spray irrigation for his properties since 2006 when he purchased land a few hundred feet from the proposed irrigation pond (south side of Trans-Canada Hwy). Below is a small map showing the subject parcel in blue, and lands owned by Village Ranch Ltd in green.



This letter is found in the Addenda as Exhibit 10.

2.11 Letter of Support from the South Shuswap Chamber of Commerce

Letter from Mark Lane, President of the South Shuswap Chamber of Commerce expressing support for the exclusion of the subject property and the existing shortage of land for potential development and commercial use.

This letter is found in the Addenda as Exhibit 11.

2.12 Letter of Support from Mel Arnold, MP

Letter from Mel Arnold, Member of Parliament for North Okanagan – Shuswap, expressing his support for the exclusion as it has a number of ecological, agricultural, economic and social benefits. In addition, Mr. Arnold identifies the agricultural benefit of using treated effluent in agricultural operations, making them more

sustainable. With the treatment facility, it will also provide for future development (assisted living, nursing home, housing, amenities) as these require an adequate sewage system.

This letter is found in the Addenda as Exhibit 12.

2.13 Letter of Support from Greg Kylo, MLA

Letter from Greg Kylo, Member of Legislative Assembly for the Shuswap. Mr. Kylo supports the application to excluded land from the ALR as it will allow for the construction of a Waste Water Treatment Facility.

This letter is found in the Addenda as Exhibit 13.

2.14 Letter of Support from Shuswap Watershed Council

Letter from Paul Demenok, Chair of the Shuswap Watershed Council (SWC). The SWC support the application as they recognize both the agricultural and environmental benefits. The agricultural benefit of using treated effluent for spray irrigation to support and improve local agricultural operations, and the environmental benefits of reducing the environmental pressures on the critically important Shuswap watershed.

This letter is found in the Addenda as Exhibit 14.

2.15 CSRD – Electoral Area C - Official Community Plan

The Official Community Plan for Electoral Area C referenced both the need for a community sewer system, and the desire to have a Balmoral Village Centre. The OCP was written with guidance from the ALC although it is clear in the OCP that the ALC has not approved any exclusion.

The relevant sections of the OCP can be found in the Addenda as Exhibit 15.

2.16 Western Water Association Ltd – 2016 Groundwater Monitoring Report

The report is a summary of the background, method and results for groundwater monitoring in Blind Bay and Sorrento.

The report indicates that levels of fecal coliform and/or E. Coli exist in a number of sites in the study area.

The report is found in the Addenda as Exhibit 16.

2.17 Liquid Waste Management Plan – Stage 3 – EarthTech/AECOM

This Stage 3 report of the CSRD's Liquid Waste Management Plan was completed in January 2009 and identified the preferred solution for the Sorrento and Blind Bay area was to use the existing SLE treatment plan as a "Regional Facility".

The report goes on to recognise the agricultural benefit by identifying: "Given the strong interest shown by members of the agricultural community in the vicinity of the SLE treatment plant and the limited water supply, there appears to be significant demand for effluent for irrigation. Excess demand ensures that the effluent demand, even under a wet year, is greater than the available supply."

The report is found in the Addenda as Exhibit 17.

Section 3

Section 6 of ALC Act

Benefits to Agriculture

To assist the ALC to deliver on its mandate, we have reviewed this proposal against the purpose of the Commission as outlined in Section 6 of the Agricultural Land Commission Act (the ‘Act’). Section 6 states:

“The following are the purposes of the commission”:

6a – to preserve agricultural land;

The subject land has not been farmed and the agricultural capabilities are predominantly Class 4 and higher due to the heavy clayey glacial lacustrine blanket. With this application, existing farm land will be able to receive adequate water and increased nutrients through a spray irrigation program increasing the agricultural capability of the lands. The anticipated increase in crop yield with irrigation is anticipated to be between 60% - 80%. (Exhibits 3 & 4)

6b – to encourage farming on agricultural land in collaboration with other communities of interest;

Upon approval of this application, ALR lands within the region that currently have limited or no access to irrigation would be enhanced through the acceptance of treated effluent. The proposed wastewater treatment site would result in a spray irrigation program operated by the CSRD that could ultimately provide over 3,000-acre feet of spray irrigation per year. Concurrently with the spray irrigation system, the sewer system would allow for densification of existing lands in the community by allowing subdivision of existing lots and densification to occur of non-ALR lands (currently parcels need to be a minimum of 1.0 hectare in size as they require septic fields). Finally, a community sewer system would allow existing properties to connect to the system and reduce the effluent that is currently entering the groundwater through individual septic systems and causing elevated constituents of onsite septic systems such as nitrates, phosphorus and fecal coliform and/or E. Coli levels in Shuswap Lake near Blind Bay and Sorrento. (Exhibits 4 & 16)

6c – to encourage local governments, first nations, the government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

The exclusion of the subject lands from the ALR would provide opportunities to develop the Balmoral Village that has been identified as a community goal and noted in the current CSRD OCP (Exhibit 15). A village centre would provide a community hub for various activities. These activities should reduce the vehicular trips to larger centers, resulting in reduced traffic and GHS emissions from vehicle exhaust. The Balmoral lands are large enough to provide for years of growth.

Overall, although the application is requesting the exclusion of 45.1 hectares of land from the ALR, the exclusion will increase agriculture productively in the community by improving yields for crop-based agriculture, while also improving the water quality of Shuswap Lake and deliver on many social needs in the community.

Section 4

Benefits

4.1 Nutrient Rich Spray Irrigation

Should the ALC approve this ALR Exclusion Application, approximately 1/3 of the site will be used as a wastewater storage effluent lagoon and receive effluent from the existing Shuswap Lake Estates Sewage system. The existing system will be transferred to CSRD as a community sewer system, and will be expanded over time to provide servicing to areas of Blind Bay, Reedman Point and Sorrento. As more effluent is captured it will be directed to be utilized in the spray irrigation program.

There has been strong interest for spray irrigation from the surrounding farmers who see the possibility of nutrient rich spray irrigation being a benefit to their fields and agricultural capability. This will result in a 60% - 80% increase in crop yields. (Exhibit 3)

Spray irrigation is a method for disposing of secondary treated municipal wastewater by spraying it on the land surface. Land application of wastewater has advantages over conventional means of disposal. These advantages or benefits are derived from the "natural" treatment of the wastewater that takes place in the soil when plants and other biota remove nutrients (nitrogen and phosphorus) from the wastewater.

Another benefit of effluent reuse is the decrease in wastewater discharges to natural waterways. When pollutant discharges to waterways are removed or reduced, the pollutant loadings to these waters are decreased. Substances that can be pollutants when discharged to waterways can be beneficially reused for irrigation. For example, plant nutrients such as nitrogen and phosphorus can stimulate harmful algal blooms in waterways and are a valuable fertilizer for crops.

4.2 Densification

The development of the storage effluent reservoir and the acquisition of the existing sewer system by the CSRD will enable the expansion of the service area into Sorrento, Reedman Point and Blind Bay, and will reduce the overall number of individual septic fields within these communities.

As Health Authorities do not recommend that properties containing on-site septic systems subdivide unless they are over 2 hectares in size (thus creating a propensity of 1 Ha lots), there is a lack of opportunity for densification in these existing communities. By connecting to community sewer, existing lots will be able to decommission their septic systems, subdivide their properties, and densify the land.

4.3 Reduction in GHG emissions

With the location of Balmoral Village Centre located in the northwest corner of the Trans-Canada Highway and Balmoral Road, the number of vehicular trips into Salmon Arm should be reduced, and result in fewer overall GHG emissions from fewer operating vehicles.

4.4 Removes Effluent from Shuswap Lake

The CSRD has conducted groundwater monitoring in the Blind bay Sorrento area since 1995. Since that time, water tests have found that the area has deteriorating water quality, with indicators most likely related to septic impacts. Over the past five years sampling has shown "slightly higher" levels of fecal coliform in Shuswap Lake. In 2012 the Columbia-Shuswap Regional District advised that "swimmers should make efforts not to ingest lake water and children should always be closely supervised."

With the acquisition of the community sewer system and corresponding decrease in on-site systems, a decrease in the levels of constituents of on-site sewer systems (such as fecal coliform) is expected at the foreshore of Shuswap Lake. (Exhibit 12)

4.5 Builds a Community Centre

Residents of Blind Bay and Sorrento have for decades commuted to larger community centers such as Salmon Arm for shopping and activities. This commute adds increased traffic to the ~29 km section of the Trans-Canada Highway separating Salmon Arm and Blind Bay/Sorrento. By placing a community centre in Balmoral, the use of this highway by residents should decrease. This will build community and social character and identity within Balmoral by encouraging locally owned and operated businesses to open in the proposed community centre.

ADDENDA –



EXHIBIT 1

***Letter from ALC to CSRD Re Balmoral Corner
– October 20, 2005***



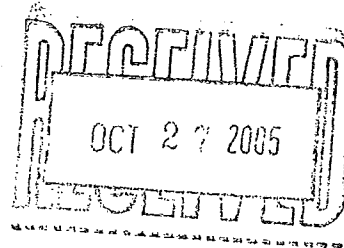


Agricultural Land Commission
 133-4940 Canada Way
 Burnaby, British Columbia V5G 4K6
 Tel: 604-660-7000
 Fax: 604-660-7033
 www.alc.gov.bc.ca

October 20, 2005

Reply to the attention of Martin Collins

Ted Bacigalupo, Director Electoral Area C
 Columbia Shuswap Regional District
 PO Box 978
 Salmon Arm, B.C. V1E 4P1



Dear Sir:

Re: Application H-33986 (Balmoral Corner)

The Agricultural Land Commission would like to thank you very much for taking the time to meet on Friday, October 14th, 2005.

The Commission appreciated the opportunity to discuss growth pressures in the Blind Bay/Sorrento are, and to hear your vision as to how growth will be accommodated. The Commission was also pleased to hear that you believe that the Regional District may have a role to play in the administration of a spray irrigation system in the Balmoral area. The Commission believes that the proposed irrigation system could have long term benefits to agriculture in the Balmoral area, and as such is willing to continue discussions with the Regional District and the applicant as to how a spray irrigation infrastructure can be developed and administered that is supported by the Regional District, so that irrigation benefits will remain available to local farmers in the long term.

However, it should be emphasised that continuing discussions with the Regional District and the applicant should in no way be construed that the Commission will exclude ALR land if spray irrigation is developed. The Commission continues to have reservations about the effectiveness and durability of such a program, particularly if it continues to be wholly owned and operated by private, rather than public interests.

If you have any further questions about the next steps in the process, please contact Martin Collins at 604-6607021.

Yours truly,

PROVINCIAL AGRICULTURAL LAND COMMISSION

Per:

A handwritten signature in black ink, appearing to read 'Erik Karlsen'. The signature is written in a cursive, flowing style.

Erik Karlsen, Chair

Cc: Terry Barker, Shuswap lake Estates Ltd., PO Box 150, Blind Bay, BC V0H 1H0

MC/eg/l/33986m16

EXHIBIT 2

***Letter from ALC to CSRD Re Balmoral Corner
– January 21, 2008***



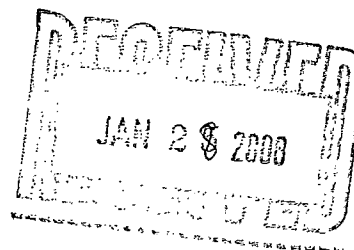


Agricultural Land Commission
 133-4940 Canada Way
 Burnaby, British Columbia V5G 4K6
 Tel: 604 660-7000
 Fax: 604 660-7033
 www.alc.gov.bc.ca

January 21, 2008

Reply to the attention of Martin Collins

Jay Simons
 Chief Administrative Officer
 Columbia Shuswap Regional District
 PO Box 978
 Salmon Arm, B.C.
 V1E 4P1



Re: Application H-33986 (Balmoral Corner)

Your File: LC2247-C

The Agricultural Land Commission considered and refused an exclusion application for 47 ha of ALR at the northwest quadrant of the intersection of Balmoral Rd. and Highway #1 in late 2003. The excluded area was proposed for commercial, low and medium density residential housing, and a golf course (see attached map and sketches for details).

The applicant (Shuwap Lake Estates) requested (in 2004) that the application be reconsidered based on a revised proposal which proposed the following benefits for agriculture;

- to include 19 ha into the ALR,
- to irrigate farmlands lying to the west of Highway #1 with treated sewage water.

The Commission requested more detailed information about the irrigation project, expressing interest in the concept, but also expressing concern that any irrigation agreement between two private entities would not ensure that the irrigation benefits would be secured by agriculture for the long term. In that vein, concurrent discussions with Director Bacigalupo confirmed that the Regional District might have an interest in administering a spray irrigation program.

It is the Commission's understanding that the Regional District may soon be entering into negotiations to purchase Shuwap Lake Estates' sewage treatment facility as a result of recommendations arising from Electoral Area C Liquid Waste Management Plan. The Commission may consider the purchase and administration of the sewage treatment facility by the Regional District to potentially offer an agricultural benefit, if spray irrigation is developed.

Page 2
File: H-33986

Shuswap Lake Estates has requested a commitment from the Commission that the 47 ha area proposed for exclusion at Balmoral corner will be excluded if the Regional District purchases the sewage treatment facility and operates a spray irrigation program. The Commission is not prepared to consider the issue without understanding the Regional District's position on the matter. The Commission therefore requests the Board provide its position regarding:

- the proposed exclusion, and
- developing and administering a spray irrigation program that will benefit farmers in the Balmoral area

Upon receipt of the above, the Commission will reconsider the application, taking into account both the agricultural benefits proposed by the applicant, the views of the Regional District, and its mandate as described in the *Agricultural Land Commission Act*.

If you have any questions about this matter, please contact Martin Collins at 604-660-7021.

Yours truly,

PROVINCIAL AGRICULTURAL LAND COMMISSION

Per



Erik Karlsen, Chair

Enclosure

MC/33986m19

EXHIBIT 3

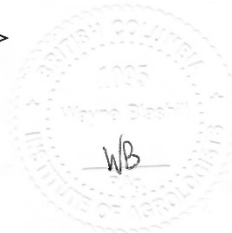
Wayne Blashill, PAg Agrologist's Report



**S.W. ¼, SECTION 8, TWP. 22, RANGE 10, KDYD
BALMORAL. BC.
AGROLOGIST'S REPORT**

Prepared by: Wayne A. Blashill, PAg
11519 Quinpool Road.
Summerland. BC. V0H 1Z5.
(250) 494 5323
e-mail: <wayne_blashill@telus.net>
August 28, 2017

Signature Wayne Blashill, PAg



INTRODUCTION

This Agrologist's Report has been compiled to provide an agricultural capability and arability assessment for a property NW of the corner of Balmoral Road and the TransCanada Highway 1, Blind Bay, BC. This report will be used to form part of a future ALC Application for Exclusion. The land is currently in the ALR.

The legal address of the property is:

S.W. ¼, Section 8, TWP. 22, Range 10, KDYD.

METHODS

The site was inspected on July 12, 2017. There were 6 soil test pit locations numbered TP1 to TP6. The soil pits were excavated by machine. The soil pits were placed to sample the variation in the soils and landforms across the property. The BC Ministry of Forests FS882 field form was used to record the data. Site and soil data was recorded at each test pit to enable calculation of the agricultural capability. Slope only was recorded at a couple of locations to confirm the topography limitation T.

The soil horizons were described to determine depth of topsoil and surface gravel content. Soil color, depth, % coarse fragments, soil texture, roots, structure and clay skins are among the factors used to differentiate soil horizons, topsoil depth and extent. Site factors such as slope, aspect, drainage, landform and surface shape are also recorded.

The soil pits were dug to about 1.5 m depth and a photograph taken. A topsoil sample was taken from soil test pits TP1 and TP6. The soil chemistry samples will characterize the nutritional status of the soil. The data was collected over a period of 7.5 hours.

RESULTS

It was determined from field inspection that the 120-acre parcel is mainly composed of a clayey glacial lacustrine blanket (cL^Gb) described by Howes and Kenk (1988). The glacial lacustrine deposit topography varies from level to sloping and contains a pond in the NW portion. The soil polygon labels and boundaries are shown in Figure 1. The soil test pit locations are depicted in Figure 2. The original high resolution ortho-image for Figures 1 and 2 can be inspected on Google Earth.

Soils

The following soils descriptions (Tables 1 & 2) show two of the typical profiles found at the property. The complete descriptions can be found in their entirety in Appendix B which contains photographs of the original FS882 field cards from all test pits. TP1 is in the flat east part of polygon 1. TP6 is in the sloping north central part of polygon 2.

The soil pit pictures are in Appendix A. The soil horizon and texture definitions can be found in NRC (1998). Soil colors were determined using a Munsell Color Chart (Amazon.ca, 2017).

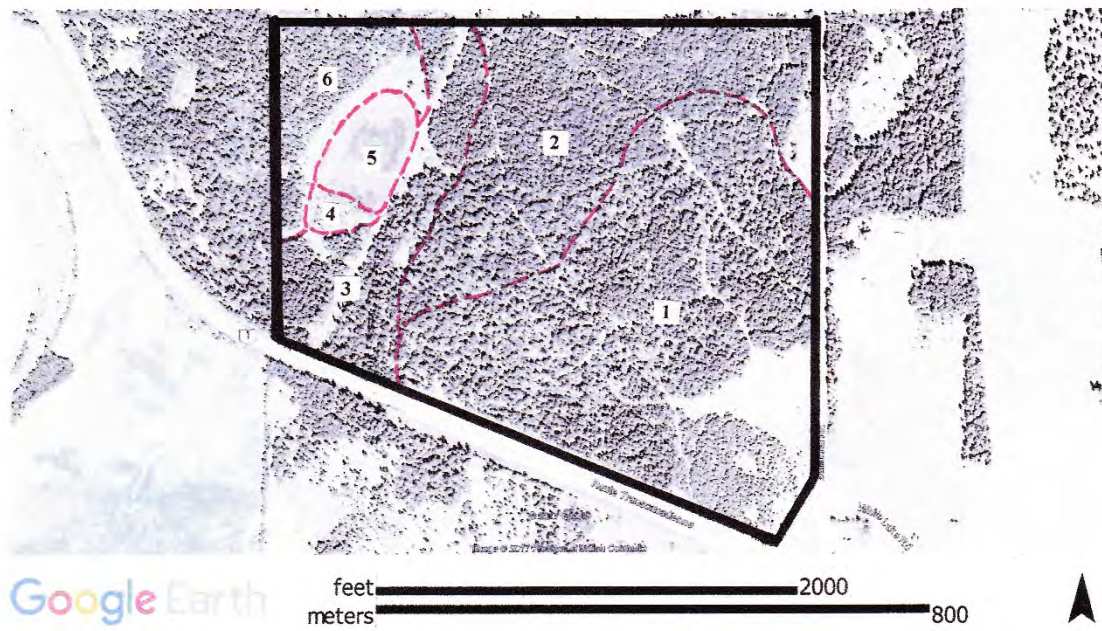


Figure 1. Soil polygon numbers and boundaries at the Balmoral Road property.

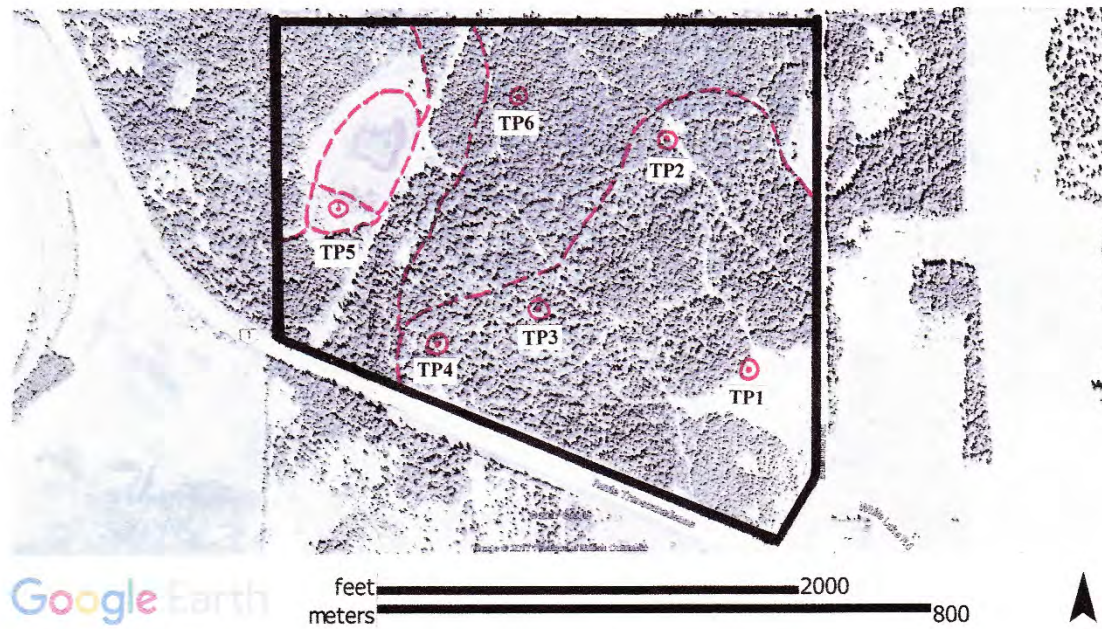


Figure 2. Soil test pit locations at the Balmoral Road property.

Table 1. Soil description for TP1 an Orthic Gray Luvisol (NRC, 1998) on flat glacial lacustrine.

HORIZON	DEPTH	COLOUR	TEXTURE	TOTAL	COARSE	FRAGMENT	CONTENT
	(cm)			Gravel	Cobbles	Stones	Total
LFH	2-0			(%)	(%)	(%)	(%)
Ae	0-18	10YR5/2	silty clay loam	0	0	0	0
Bt1	18-43	10YR4/2	heavy clay	0	0	0	0
Bt2	43-77	10YR4/2	heavy clay	0	0	0	0
C	77-127	10YR4/2	silty clay	0	0	0	0

Table 2. Soil description for TP6 an Orthic Gray Luvisol on sloping glacial lacustrine.

HORIZON	DEPTH	COLOUR	TEXTURE	TOTAL	COARSE	FRAGMENT	CONTENT
	(cm)			Gravel	Cobbles	Stones	Total
LFH	5-0			(%)	(%)	(%)	(%)
Ae	0-12	10YR3.5/2	silt loam	0	0	0	0
Bt1	12-33	10YR4/2	silty clay	0	0	0	0
Bt2	33-72	10YR4/2	silty clay	0	0	0	0
C	72-115	10YR4/2	silty clay loam	0	0	0	0

Soil Chemistry

The soil chemistry samples are used to determine the fertility of the topsoil (Tables 3 & 4). The complete chemistry data sheets for horizons Bt1 (18-43) and Bt1 (12-33) are found in Appendix B. The data is used to characterize the nutritional status of the soils. The soil analytical data was provided by Exova (2017).

Table 3. Soil chemistry analysis for the TP1 sample.

SAMPLE	pH	%OM	NO ₃ ⁻ (ppm)	CEC (meq/100g.)	P (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)	EC (dS/m)
Bt1 (18-43)	7.2	3.1	<2	37.4	29	555	4500	1610	0.26

The soil chemistry analysis for TP1 has potassium, calcium and magnesium in excess (Appendix B). Phosphorus, iron, copper and manganese are optimal. Sulphate-S and zinc are marginal while Nitrate-N, boron and chlorine are deficient. The pH is ideal, the EC is good and the %OM is normal. Sodium is low (good). The overall nutritional status of the topsoil is considered moderate. Fertilizer is still recommended for balanced crop nutrition.

Particle size analysis was also done on this sample to verify the heavy clay soil texture. The % sand, silt and clay are 14, 20 and 66 respectively. The data is below the bar graphs.

Table 4. Soil chemistry analysis for the TP6 sample.

SAMPLE	pH	%OM	NO ₃ ⁻ (ppm)	CEC (meq/100g.)	P (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)	EC (dS/m)
Bt1 (12-33)	6.8	1.8	3	11	>60	380	1130	267	0.1

The soil chemistry data for TP6 shows that phosphorus is in excess. Potassium, calcium, magnesium, iron and manganese are all optimal. Sulphate-S, copper, zinc and chlorine are marginal. Nitrate-N and boron are deficient. The pH is ideal, the EC is good and the %OM is low. Sodium is low. The overall nutritional status of the topsoil is considered moderate.

Climatic Capability

The nearest climate station to the property is Salmon Arm at 506 m in elevation (RAB, 1972). The property is lower in elevation than the climate station. This would make the site slightly warmer than Salmon Arm. The climatic capability for agriculture is estimated to be virtually the same as Salmon Arm:

5A (1aF)

Aridity subclass 5A is improved through irrigation to Class 1A. Subclass (F) indicates minimum temperatures near freezing will adversely affect plant growth during the growing season. Subclass (1a) climate can theoretically produce: hardy apples, berries, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radishes, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cereal grains and forage. However, the main local commercial agricultural operations are hay and forage production.

Agricultural Capability

The property was mapped into 6 polygons of similar site and soil characteristics. Table 5 has the agricultural capability rating for each soil polygon in Figure 1. The rating was derived from each soil pit data and notes about each polygon. Table 6 has the definitions for the various capability subclasses present (Kenk, 1983).

Table 5. Agricultural capability ratings for the polygons in Figure 1.

Polygon #	Agricultural Capability	Landform	Acres
1	4D	Level glacial lacustrine with heavy clay in Bt.	55
2	$4^T_D : 3^T_D$	Sloping glacial lacustrine with silty clay in Bt.	34
3	6T	Steep & gullied glacial lacustrine blanket.	14
4	5W	Wetland adjacent to south side of pond.	2
5	7W	Pond in depression on west side of parcel.	4
6	5T	Moderately steep glacial lacustrine NW of pond.	11
		Total	120

Soil limitations due to topography T are not considered improvable. The pond and wetland are in a closed bowl with no outlet. Thus, the 5W and 7W cannot be improved by drainage. The soil structure limitation D has no improved rating. It is unknown if deep ploughing, ripping or blading will significantly improve this soil. It would probably just create a field of heavy clay cement-hard clods.

The heavy clay soil texture in the Bt horizons may explain why this land shows no visual evidence of historical farming. Flat, clay soil this close to the highway would surely have been

cultivated in the past. However, the heavy clay would have been difficult to break with the lightweight plows, cultivators and seed drills they had back in the 1900's. The soil has 66% clay which can make cultivation problematic even with modern farm implements.

The forest land south across the highway and NW from the subject property is flat and about the same elevation. The presence of heavy clay in this area, may be a contributing factor as to why those forested lands are currently not cultivated.

Table 6. The agricultural capability class, subclass & definitions for Table 5.

Class	Subclass	Limitation	Definition
3	D	Soil Structure	Root restricting layer occurs within 25 to 50 cm of the mineral soil surface, or the upper 25 cm usually has a texture of silty clay or clay.
4	D	Soil Structure	Root restricting layer occurs within 25 cm of the mineral soil surface, or the upper 25 cm usually has a texture of heavy clay.
3	T	Topography	Simple slopes varying from 11 to 15% or complex slopes varying from 6 to 10%.
4	T	Topography	Simple slopes varying from 16 to 20% or complex slopes varying from 11 to 15%.
5	T	Topography	Simple slopes varying from 21 to 30% or complex slopes varying from 16 to 30%.
6	T	Topography	Slopes, either simple or complex, varying from 31 to 60%. The land provides only natural grazing for livestock.
5	W	Excess Water	Frequent or continuous occurrence of excess water during the growing period. Water level is near the soil surface until early summer, or the maximum period the water level is less than 20 cm below the soil surface is 6 weeks during the growing period.
7	W	Excess Water	Underwater most of the growing season, not useable for agriculture.

DISCUSSION

Polygon Summary

Polygons 1 and 2 are the arable portions of the property. They comprise an area of approx. 89 acres. This is about 74% of the entire property. The remaining 31 acres are non-arable, because of being too steep T or too wet W.

The 4D rating in polygon 1 is substantially different from that stated in the previous report by R&H Services Ltd (1980). They rated polygon 1 as 2D⁷:3D³. They did not recognize the heavy clay and did not correctly evaluate the effect of that texture on the D limitation. The D limitation is worse than originally estimated.

Benefit to Agriculture

The owners intend to construct a commercial, recreational and housing subdivision on the property. The Regional District and the owners propose to move treated wastewater from this development and the adjacent Shuswap Lake Estates (SLE) into the existing pond on the property. SLE already has operating primary, secondary sewage treatment and a chlorination plant.

The owners want to deliver treated wastewater as liquid fertilizer for spray application on adjacent and nearby farms. The pond and wetland will become the new reservoir for the secondary treated and chlorinated wastewater. The Regional District plans to buy the SLE sewer treatment plant and the pond area on the subject property. They will commit to using spray irrigation as the means of disposing of the treated effluent.

The project is considered a benefit to agriculture. The wastewater will become cost effective crop fertilizer. Hay & forage yields are expected to increase with the irrigation of nutrient-rich wastewater (Rusan *et al*, 2006). Much like it would through the equivalent applications of dry fertilizer. Photo#7 shows the existing reservoir with a noticeable “algae bloom”. General knowledge is that algae and aquatic plants in ponds and lakes indicate eutrophic (nutrient-rich) water conditions. In the case of wastewater ponds, the water is usually high in nitrates, phosphate and potassium. These are important plant macro-nutrients.

Additionally, periodic inspections will be required to ensure that salts do not accumulate in the soil. Fall irrigation with freshwater would alleviate possible high salt levels. Crop irrigation rates should not exceed the available water storage capacity (AWSC) of the root zone. Excess wastewater would drain below the root uptake zone and nitrates could leach into the groundwater. Also, irrigating with freshwater prior to harvest would wash any nitrate residue from crop leaves. Thus, reducing the ingestion of excess nitrates by livestock.

Spray irrigation of treated wastewater directly onto edible food crops is not recommended, especially those that are eaten raw. The treated effluent irrigation would be strictly for hay and forage crops.

CONCLUSION

It is the Agrologist’s opinion that the subject property has 89 arable acres composed of polygons 1 and 2. The remaining 31 acres are non-arable due to topography and wetness. The proposed irrigation of adjacent farmland using nutrient-rich wastewater, will provide a benefit to agriculture of a cost-effective source of fertilizer and the subsequent increase in crop yield.

The existing pond will act as a natural reservoir for the wastewater. It is suggested that wastewater irrigation be conducted in consultation with Agriculture Canada using their Best Agricultural Practices guidelines.

REFERENCES

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Rusan, M.J.M, S. Hinnawi and L. Rousan. 2006. Long term effect of wastewater irrigation of forage crops on soil and plant quality parameters. Presented to the International Conference on Sustainable Water Management, Rational Water Use, Wastewater Treatment and Reuse. Marrakech. Morocco.

APPENDIX A

Photo Diary

Executive Summary



Photo #1. Soil test pit TP1 an Orthic Gray Luvisol with heavy clay in the Bt.



Photo #2. Soil test pit TP2 an Orthic Gray Luvisol with heavy clay in the Bt.



Photo #3. Soil test pit TP3 an Orthic Gray Luvisol with heavy clay over silty clay.



Photo #4. Soil test pit TP4 an Orthic Gray Luvisol with heavy clay over deep sand.



Photo #5. Soil test pit TP5 an Orthic Humic Gleysol with silt loam and prominent mottles.



Photo #6. Soil test pit TP6 an Orthic Gray Luvisol with silty clay in the Bt.



Photo #7. Nutrient-rich wastewater reservoir at Shuswap Lake Estates with algae bloom.

Executive Summary

Mr. Blashill, *Professional Agrologist*, has 40 years experience in soils and ecology field work throughout BC and in AB, SK and the USA. He has completed Agrologist's Reports for numerous ALC Applications. He has a background in soil science. Climate and soils experience is required to: calculate and rate the climatic and agricultural capability; assess the extent and depth of topsoil. The soil texture, colour, % coarse fragments, structure, carbonates, roots and chemistry are all used to determine topsoil amount and quality.

The Agrologist's opinion is based on the site and soil factors observed and recorded at the property, along with the operational constraints and plans from the landowner. The Agrologist also has knowledge in field crops, soil chemistry, evaporation theory and soil water balance modelling.

APPENDIX B

FS882 Field Cards

Soil Chemistry Analysis

PROVINCE OF BRITISH COLUMBIA
Ministry of Forests

ECOLOGICAL CLASSIFICATION RECONNAISSANCE FORM

SITE TYPE Balmoral Rd and Highway 1, Shuswap. DATE July 12, 2017
 BIOGEOCLIMATIC UNIT _____ MAP UNIT _____ SURVEYOR Blashill
 ECOSYSTEM ASSOC. _____ SITE NO. _____
 PLOT NO. TPI

LOCATION landing near opening. SITE DIAGRAM _____

TRANSECT _____
 LOCATION _____
 AIR PHOTO NO. _____ X CO-ORD. _____ Y CO-ORD. _____
 MAP SHEET (NTS) _____ LONG. _____ LAT. _____
 ELEVATION 441 m SLOPE 0 % ASPECT _____
 MESO SLOPE POS. level SURFACE SHAPE STRAIGHT
 MOISTURE REGIME _____ NUTRIENT REGIME _____
 SUCCESSIONAL STATUS _____ EXPOSURE _____

SITE HISTORY Logging

GEOLOGY _____
 BEDROCK GEOLOGY _____ COARSE FRAG. LITH. _____

NOTES: Photo # 703
- poor forage.

SURFACE	SUBSTRATE
HUMUS	
DEAD WOOD	
BEDROCK	
ROCKS	
MINERAL SOIL	
WATER	

PS 882 RES 88/08

SOIL CLASSIF. Orthic Gray Luvisol TERRAIN CLASSIF. f c LGL
 HUMUS FORM _____ DRAINAGE CLASS mw
 ROOTING DEPTH 40 cm ROOT RESTRICTING TYPE _____
 SEEPAGE WATER DEPTH _____ cm LAYER _____ DEPTH _____ cm
 HUMUS (TPI)

PROFILE DIAGRAM _____

HORIZON	DEPTH	FABRIC				ROOTS		MISCELLANEOUS COMMENTS	
		STRUCTURE	CONSIST	CHAR	TEXTURE	AB.	SIZE		
LH	2-0								

HORIZON	DEPTH	COLOUR	A _p	TEXTURE	% COARSE FRAGS.				ROOTS		MISC.	COMMENTS	
					G	C	S	TOT	AB.	SIZE			
Ae	0-18	10YR5/2		Sic	-	-	-	-	A	M	F	GR	
Bt ₁	18-43	10YR4/2		Hc	-	-	-	-	P	M	VC	ABK	- clay skins
Bt ₂	43-77	10YR4/2		Hc	-	-	-	-	F	F	VC	ABK	- clay skins
C	77-127	10YR4/2		Sic	-	-	-	-	-	-		MA	

NOTES: - no carbonates
- very strong structure & lots of clay skins

PROVINCE OF BRITISH COLUMBIA
Ministry of Forests

ECOLOGICAL CLASSIFICATION RECONNAISSANCE FORM

SITE TYPE Balmoral Rd & Highway 1, Shuswap DATE July 12, 2017
SURVEYOR Blaskill
SITE NO. _____
PLOT NO. TP2

BIOGEOCLIMATIC UNIT _____ MAP UNIT _____
ECOSYSTEM ASSOC. _____

LOCATION
TRANSECT landing near cabin
LOCATION _____
AIR PHOTO NO. _____ X CO-ORD. _____ Y CO-ORD. _____
MAP SHEET (NTS) _____ LONG. _____ LAT. _____
ELEVATION 426 (m) SLOPE 5 % ASPECT 24 °
MESO SLOPE POS. UPPER SURFACE SHAPE concave
MOISTURE REGIME _____ NUTRIENT REGIME _____
SUCCESSIONAL STATUS _____ EXPOSURE _____

SITE HISTORY _____

GEOLOGY
BEDROCK GEOLOGY _____ COARSE FRAG. LITH. _____

NOTES: Photo #704
- poor forage.

SURFACE SUBSTRATE

HUMUS	
DEAD WOOD	
BEDROCK	
ROCKS	
MINERAL SOIL	
WATER	

FS 882 RES 88/08

SOIL CLASSIF. Orthic Gray Luvisol TERRAIN CLASSIF. #C15

HUMUS FORM _____ DRAINAGE CLASS mw

ROOTING DEPTH 48 cm ROOT RESTRICTING TYPE _____
SEEPAGE WATER DEPTH _____ cm LAYER _____ DEPTH _____ cm

HUMUS

HORIZON	DEPTH	FABRIC	ROOTS	MISCELLANEOUS	COMMENTS
		STRUCTURE / CONSIST / CHAR / TEXTURE	AB. SIZE		
<u>LFA</u>	<u>1-0</u>				

MINERAL SOIL

HORIZON	DEPTH	COLOUR	A _{sp}	TEXTURE	% COARSE FRAGS.	ROOTS	MISC.	COMMENTS
					G C S TOT	AB. SIZE		
<u>Ae</u>	<u>0-14</u>	<u>10YR 6/2</u>	<u>2</u>	<u>sic1</u>	- - - -	<u>A</u> <u>VC</u> <u>F</u>	<u>GR</u>	
<u>Bt₁</u>	<u>14-52</u>	<u>10YR 4/2</u>	<u>2</u>	<u>HC</u>	- - - -	<u>A</u> <u>VC</u> <u>C</u>	<u>ABK</u>	<u>- clay skins</u>
<u>Bt₂</u>	<u>52-75</u>	<u>10YR 4/3</u>	<u>3</u>	<u>HC</u>	- - - -	<u>P</u> <u>F</u> <u>VC</u>	<u>ABK</u>	<u>- clay skins</u>
<u>C</u>	<u>75-124</u>	<u>10YR 4/3</u>	<u>3</u>	<u>sic</u>	- - - -	<u>F</u> <u>M</u>	<u>PL</u>	

NOTES: - varying visible in C horizon.

SOIL DESCRIPTION	SOIL CLASSIF. <u>Orthic Gray Luvisol</u>		TERRAIN CLASSIF. <u>fc LG</u>		PROFILE DIAGRAM					
	HUMUS FORM	DRAINAGE CLASS								
	ROOTING DEPTH <u>4b</u> cm	ROOT RESTRICTING] TYPE								
	SEEPAGE WATER DEPTH _____ cm	LAYER DEPTH _____ cm								
	(TP3)									
	FABRIC		ROOTS		MISCELLANEOUS COMMENTS					
	HORIZON	DEPTH	STRUCTURE / CONSIST / CHAR. / TEXTURE	AB.	SIZE					
	LFH	6-0								
	MINERAL SOIL		STRUCTURE							
	HORIZON	DEPTH	COLOR	A _p	TEXTURE	% COARSE FRAGS. G C S TOY	ROOTS AB. SIZE	MISC.	COMMENTS	
	Ae	0-16	10YR 4/1	3	Sil	— — — —	P F	F GR		
	Bt 1	16-29	10YR 4/1	3	Hc	— — — —	P M	VC ABK	clay skins	
	Bt 2	29-51	10YR 4/1	2	Sic	— — — —	F C	M ABK	clay skins	
	C	51-117	10YR 4/1	2	Sic	— — — —	F F	PL		
	NOTES: _____									

PROVINCE OF BRITISH COLUMBIA
Ministry of Forests

ECOLOGICAL CLASSIFICATION RECONNAISSANCE FORM

DATE July 12, 2017
SURVEYOR Baskill
SITE NO. _____
PLOT NO. TP4

SITE TYPE Balmoral Rd + Highway 1, Shuswap

BIOGEOCLIMATIC UNIT _____ MAP UNIT _____

ECOSYSTEM ASSOC. _____

LOCATION flat area near highway 1.

TRANSECT _____
LOCATION _____
AIR PHOTO NO. _____ X CO-ORD. _____ Y CO-ORD. _____
MAP SHEET (N.T.S.) _____ LONG. _____ LAT. _____
ELEVATION 440 (m) SLOPE 0 % ASPECT — °
MESO SLOPE POS. LEVEL SURFACE SHAPE Concave
MOISTURE REGIME _____ NUTRIENT REGIME _____
SUCCESSIONAL STATUS _____ EXPOSURE _____

SITE HISTORY _____

GEOLOGY
BEDROCK GEOLOGY _____ COARSE FRAG. LITH. _____

NOTES: Photo #705
-poor storage

SURFACE SUBSTRATE

HUMUS	
DEAD WOOD	
BEDROCK	
ROCKS	
MINERAL SOIL	
WATER	

FS 842 RES 88/08

SOIL CLASSIF. Orthic Gray Luvisol TERRAIN CLASSIF. shc

HUMUS FORM _____ DRAINAGE CLASS shc

ROOTING DEPTH 38 cm ROOT RESTRICTING TYPE _____
SEEPAGE WATER DEPTH _____ cm LAYER _____ DEPTH _____ cm

HUMUS

SOIL DESCRIPTION

HORIZON	DEPTH	FABRIC			ROOTS			MISCELLANEOUS	COMMENTS
		STRUCTURE/CONSIST	CHAR	TEXTURE	AB	SIZE			
LH5-0									

MINERAL SOIL

HORIZON	DEPTH	COLOUR	A _{sp}	TEXTURE	% COARSE FRAGS				ROOTS		MISC.	COMMENTS	
					G	C	S	TOT	AB	SIZE			
Ae	0-12	10YR5/2		Sil	—	—	—	—	P	F	F	GR	
Bt1	12-38	10YR4/2		AC	—	—	—	—	P	M	VC	ABK - clay skins	
Bt2	38-59	2.5Y4/3		Sic	—	—	—	—	F	C	C	ABK - clay skins	
C	59-112	2.5Y5/3		S	—	—	—	—	—	—	—	PL	

NOTES: -sacring evident in the fine sand of Ae C

PROFILE DIAGRAM

SOIL CLASSIF. Orthic Humic Gleysol TERRAIN CLASSIF. LG_b

HUMUS FORM _____ DRAINAGE CLASS imperfect

ROOTING DEPTH 25 cm ROOT RESTRICTING] TYPE water

SEEPAGE WATER DEPTH 74 cm LAYER] DEPTH 74 cm

HUMUS TP5

HORIZON	DEPTH	FABRIC		ROOTS		MISCELLANEOUS	COMMENTS
		STRUCTURE / CONSIST.	CHAR. / TEXTURE	AB	SIZE		
LPH	1-0						

MINERAL SOIL

HORIZON	DEPTH	COLOUR	A _p	TEXTURE	% C	COARSE FRAGS. S	TOY	ROOTS		MISC.	COMMENTS
								AB	SIZE		
Ah	0-13	10YR 3/2		Sil	-	-	-	P	VF	MA	
Bg	13-58	2.5Y 4/2		Sil	-	-	-	F	F	MA	5YR 4/6
Cg	58-88	5GY 4/1		Sil	-	-	-	-	-	MA	10YR 4/4

STRUCTURE MOTTLES

NOTES: _____

PROVINCE OF BRITISH COLUMBIA
Ministry of Forests

ECOLOGICAL CLASSIFICATION RECONNAISSANCE FORM

DATE July 12 2017

SURVEYOR Blashill

SITE NO. TP6

PLOT NO. TP6

SITE TYPE Balmoral Rd + Highway 1, Shuswap

BIOGEOCLIMATIC UNIT _____ MAP UNIT _____

ECOSYSTEM ASSOC. _____

LOCATION The slope in the 4T area near powerline.

TRANSECT _____

LOCATION _____

AIR PHOTO NO. _____ X CO-ORD. _____ Y CO-ORD. _____

MAP SHEET (NTS.) _____ LONG. _____ LAT. _____

ELEVATION 410 (m) SLOPE 16 % ASPECT 240 °

MESO SLOPE POS. UPPER SURFACE SHAPE Concave.

MOISTURE REGIME _____ NUTRIENT REGIME _____

SUCCESSIONAL STATUS _____ EXPOSURE _____

SITE HISTORY _____

GEOLOGY _____

BEDROCK GEOLOGY _____ COARSE FRAG. LITH. _____

NOTES: Photo # 708

SURFACE SUBSTRATE

HUMUS	
DEAD WOOD	
BEDROCK	
ROCKS	
MINERAL SOIL	
WATER	

FS 862 RES 88/08

SOIL CLASSIF Orthic Gray Luvisol TERRAIN CLASSIF 4CLG6

HUMUS FORM _____ DRAINAGE CLASS mb

ROOTING DEPTH 35 cm ROOT RESTRICTING TYPE _____

SEEPAGE WATER DEPTH _____ cm LAYER _____ DEPTH _____ cm

HUMUS _____

SOIL DESCRIPTION

HORIZON	DEPTH	FABRIC		ROOTS		MISCELLANEOUS COMMENTS
		STRUCTURE/CONSIST	CHAR/TEXTURE	AB.	SIZE	
<u>LH 5-0</u>						

MINERAL SOIL

HORIZON	DEPTH	COLOUR	A _{sp}	TEXTURE	% COARSE FRAGS				ROOTS		MISC.	COMMENTS	
					G	C	S	TOT.	AB.	SIZE			
<u>Ae</u>	<u>0-12</u>	<u>10YR 2.5/2</u>		<u>Sil</u>	-	-	-	-	<u>A</u>	<u>C</u>	<u>F</u>	<u>GR</u>	
<u>Bt1</u>	<u>12-33</u>	<u>10YR 4/2</u>		<u>Sic</u>	-	-	-	-	<u>P</u>	<u>M</u>	<u>Vc</u>	<u>ABK</u>	<u>collected.</u>
<u>Bt2</u>	<u>33-72</u>	<u>10YR 4/2</u>		<u>Sic</u>	-	-	-	-	<u>F</u>	<u>M</u>	<u>C</u>	<u>ABK</u>	
<u>C</u>	<u>72-115</u>	<u>10YR 4/2</u>		<u>Sic</u>	-	-	-	-	<u>F</u>	<u>F</u>		<u>MA</u>	

NOTES: - earthworm found in Ae.

PROFILE DIAGRAM

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Farm Soil Analysis

Bill To: Wayne Blashill	Grower Name:	Lot Number: 1221032
Report To: Wayne Blashill	Client's Sample Id:	Report Number: 2215009
11519 Quinpool Road	Field Id: TP1-Bt1(18-43)	Date Received: Aug 17, 2017
Summerland, B.C., Canada	Acres:	Disposal Date: Sep 16, 2017
V0H 1Z5	Legal Location:	Report Date: Aug 22, 2017
Agreement: 99398	Last Crop: Crop not provided	Arrival Condition:

Nutrient analysis (ppm)														Soil Quality			
Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Bi/CarbP	pH	EC(dS/m)	OM(%)	Sample#
0" - 16"	<2	29	555	1	4500	1610	92.5	1.5	0.7	0.3	6.3	3		7.2	0.26	3.1	5809930
Excess														Alkaline	Extreme	High	
Optimum														Neutral	Very High	Normal	
Marginal														Acidic	High	Low	
Deficient														Very Acidic	Good	Very Low	
Total lbs/acre	11	152	2963	7	Texture <i>Heavy Clay</i> Hand Texture <i>n/a</i>						BS 100 % CEC 37.4 meq/100 g						
					Sand 14.4 % Silt 20.0 % Clay 66.5 %						Ca 60.0 % Mg 35.5 % Na 0.7 % K 3.8 %						
Estimated lbs/acre	12	103	1114	8	Ammonium <i>n/a</i>						TEC 37.4 meq/100 g Na 59 ppm						
					Lime 0 T/ac Buffer pH Not Required						Est. N Release <i>n/a</i> K/Mg Ratio <i>n/a</i>						

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

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

Macro-nutrients	Hay - Grass					Alfalfa - New				
	Yield	N	P2O5	K2O	S	Yield	N	P2O5	K2O	S
Growing Condition	T/ac	To be added (lbs/acre)				T/ac	To be added (lbs/acre)			
Excellent	4.3	94	19	0	19	1.5	10	11	0	19
Average	2.9	71	12	0	14	1.2	10	10	0	18
Your Goal	0.0					0.0				
Removal Rate (Seed/Total)	4.3	0 / 161	0 / 47	0 / 204	0 / 20	1.5	0 / 96	0 / 23	0 / 99	0 / 10
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0

Add Boron or try a test strip.

Parts of the field may be Zinc deficient.

Add Boron or try a test strip.

Comments:

- Sample Information Sheet was not received.

Recommendations are based on general research consensus. They should not replace responsible judgement.

Terms and Conditions: <https://www.exova.com/media/1252/exova-canada-inc-standard-conditions-of-contract-shor-form.pdf>

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Farm Soil Analysis

Bill To: Wayne Blashill	Grower Name: Balmoral Road	Lot Number: 1215167
Report To: Wayne Blashill	Client's Sample Id:	Report Number: 2207309
11519 Quinpool Road	Field Id: TP6 - Bt1 (12-33)	Date Received: Jul 18, 2017
Summerland, BC., Canada	Acres:	Disposal Date: Aug 17, 2017
V0H 1Z5	Legal Location:	Report Date: Jul 20, 2017
Agreement: 99398	Last Crop: Crop not provided	Arrival Condition:

Nutrient analysis (ppm)														Soil Quality			
Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	BiCarbP	pH	EC(dS/m)	OM(%)	Sample#
0" - 36"	3	>60	380	2	1130	267	63.2	0.7	<0.5	0.2	5.3	4		6.8	0.1	1.8	5781824
Excess														Alkaline	Extreme	High	
Optimum														Neutral	Very High	Normal	
Marginal														Acidic	High	Low	
Deficient														Very Acidic	Good	Very Low	
Total lbs/acre	33	720	4565	19	Texture n/a		Hand Texture n/a		BS 89 %		CEC 11 meq/100 g						
					Sand n/a		Silt n/a		Clay n/a		Ca 57 %		Mg 22 %		Na <1.3 %		K 9.9 %
Estimated lbs/acre	32	480	770	19	Ammonium n/a		TEC 9.9 meq/100 g		Na <30 ppm								
					Lime 0 T/ac		Buffer pH 6.9		Est. N Release n/a		K/Mg Ratio n/a						

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

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Hay - Grass - New					Hay - Legume				
	Yield	N	P2O5	K2O	S	Yield	N	P2O5	K2O	S
Growing Condition	T/ac	To be added (lbs/acre)				T/ac	To be added (lbs/acre)			
Excellent	4.7	108	0	0	21	6.3	23	0	0	18
Average	3.1	44	0	0	13	5.8	21	0	0	17
Your Goal	0.0					0.0				
Removal Rate (Seed/Total)	4.7	0 / 177	0 / 52	0 / 224	0 / 22	6.3	0 / 373	0 / 96	0 / 350	0 / 19
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)	0.0	0.0	7.0	2.0	0.0	0.0	0.0	7.0	2.0	0.0

Incorporate the recommended rate of Zinc or seed place 1 lb/ac.
Add Boron or try a test strip.

Incorporate the recommended rate of Zinc or seed place 1 lb/ac.
Add Boron or try a test strip.

Comments:

Recommendations are based on general research consensus. They should not replace responsible judgement.

Terms and Conditions: <https://www.exova.com/media/1232/exova-canada-inc-standard-conditions-of-contract-short-form.pdf>

EXHIBIT 4

AG Consulting

***Balmoral Waste Management Opportunities & Benefits
to Area***



Waste Management Opportunities and Benefits to Area Agriculture

Report TO:

Terry Langlois
Utilities Team Leader, Operations Management
Columbia Shuswap Regional District
555 Harbourfront Drive NE
Salmon Arm, BC V1E 4P1
Email <tlanglois@csrd.bc.ca>
O 250-833-5941 TF 1-888-248-2773

BY

Andrea Gunner, P.Ag.
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November 24, 2017

Disclaimer

This report relies on a September 23, 2017 site visit and information contained in the *Technical Memorandum Review of Treatment Strategies in the Development of a Community Sewer System for Blind Bay and Sorrento* by Kathryn Jessamine, Opus Dayton Knight Consultants Ltd. as well as *S.W. ¼, Section 8, TWP. 22, Range 10, KDYD Balmoral, B.C. Agrologist's Report* by Wayne Blashill, P.Ag.

The author is an agricultural economist based in the North Okanagan. The author is neither a soils specialist (therefore not qualified to assess the technical structure or stability of the site) nor a waste management expert (therefore not qualified to assess the environmental impacts from spray effluent). The author has relied on qualified professional soil scientist, waste management agrologist and a district agrologist for interpretation on the potential benefits or negative impacts of waste water irrigation on agricultural lands.

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PART ONE

Benefits of Wastewater Irrigation to Agricultural Production in the Shuswap

Cities and towns generate a stream of water that has already been used, such as for domestic purposes. This stream of water represents a waste product that can be re-used downstream as a resource.¹ In the Shuswap, the value of treated wastewater to agricultural production is significant due to frequent growing season soil moisture deficits. Apart from its value as irrigation water, it also contains nutrients which are of benefit to agricultural production.²

Agricultural Land Base, Soils and Climate Information

The Shuswap has a complex geological history which has created a variable growing region by way of diverse bedrock, soils, terrain and climate. Soil types and agricultural capability vary across the region and by elevation.

With long frost-free periods and high temperatures during the growing season, the Shuswap has a highly favourable climate for agriculture. On average, precipitation is amongst the lowest in southern Canada and summers are generally very hot. Across much of the region, the dry, hot summers and evapo-transpiration lead to soil moisture deficits requiring irrigation for perennial and annual crops.

The land base of the agriculture industry in the Shuswap generally is dominated by many small production units but in the Balmoral area, forage crops predominate on larger acreages. The dairy industry is a major user of forage crops along with a smaller beef and equine industry across the region. Grain crops such as barley and wheat are also grown in this area.

For agricultural producers across the temperate interior of BC, including the Shuswap, there are three main potential benefits of spray effluent to area agricultural producers. The value of access to waste water for irrigation purposes on forage lands reduces the reliance on creeks and groundwater aquifers to supply crop needs during the growing season. This is of particular concern when growing seasons are impacted by increased temperatures and decreasing frequency of precipitation events. A second important

¹ Food and Agriculture Organisation of the United Nations, *Wastewater Treatment and Reuse in Agriculture*, retrieved at <http://www.fao.org/land-water/water/water-management/wastewater/en/>

² R. McDougall, P.Ag., personal communication, November 2017

benefit is greater control over timing of irrigation, critical for both crop renovation and re-planting where dryland systems are reliant on natural precipitation. Thirdly, implementing a spray effluent program on agricultural land contributes nutrients, not only improving yields but utilising a waste resource in an ecologically sound manner.

Wastewater Irrigation in Nearby Communities

The nearby municipalities of Vernon, Kamloops and Armstrong have been providing treated effluent from their municipal wastewater treatment plants as irrigation water for various landowners since 1977, 1984 and 1995 respectively.^{3,4}

In Vernon, the wastewater treatment plant currently serves a population of 40,000. Vernon's wastewater undergoes primary, secondary and tertiary treatment (fine screening, grit removal, primary clarification, biological nutrient removal, secondary clarification), as well as filtration and ultra-violet disinfection during the spray irrigation season (May – October). The reclaimed water is chlorinated and allocated to approximately 970 Ha or 2,400 acres including Predator Ridge Golf Resort, Vernon Golf and Country Club, The Rise Golf Course, Vernon Seed Orchard, Kalamalka Forestry Centre, Pacific Regeneration's Vernon Nursery as well as Marshal sports fields and grazing and forage lands on the Vernon Commonage.⁵

The Kamloops wastewater treatment plant currently serves a population of approximately 90,000. Kamloops implemented significant upgrades to the treatment plant systems in 2010-2013 as a result of concerns by the BC Ministry of Environment and federal authorities regarding the quality of effluent being discharged into the Thompson River. Kamloops discharges 80% of its treated wastewater directly into the Thompson River and provides approximately 20% for land application to Cinnamon Ridge Farm, adjacent lands at the Kamloops Airport, Kamloops Golf and Country Club as well as nearby forage and pasture lands.⁶

The City of Armstrong has a successful, fully subscribed spray irrigation program derived from the waste water treatment plant serving 5,100 domestic residents⁷ and

³ J.E. Bryan, *The Effects of Wastewater Releases by City of Vernon on Vernon Creek and Vernon Arm of Okanagan Lake in 1984 and 1985*, Ministry of Environment and Parks, November 1987, retrieved at

<http://www.env.gov.bc.ca/wat/wq/studies/vernonwastewater.pdf>

⁴ R. McDougall, *2015 City of Armstrong Soil Monitoring Report*, November 2015

⁵ City of Vernon, retrieved at <https://www.vernon.ca/homes-building/utilities/water-sewer-0/wastewater>

⁶ City of Kamloops, *Sustainable Kamloops Plan Information Package on Wastewater*, retrieved at <http://www.kamloops.ca/sustainable/pdfs/SKP-WasteWaterBackground.pdf>

⁷ Statistics Canada, 2016 Census Population, retrieved at <http://www12.statcan.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=POPC&Code1=0020&Geo2=PR&Code2=59&Data=Count&SearchText=armstrong&SearchType=Begin&SearchPR=59&B1=All>

industrial facilities (poultry processing, cheese processing) within city limits since 1995. The water goes through a multi-stage treatment program. The reclaimed water is chlorinated and allocated to approximately 900 acres in 2017, predominantly applied to forage crops with a small allocation to a poplar tree plantation.^{8,9,10,11,12} The spray irrigation program is distributed over a network of about 10 km of various diameter PVC pipeline (250 mm to 600 mm diameter) to a total of 12 agricultural landowners, ranging in size from 10 acres to approximately 500 acres^{13,14}.

In both Vernon and Armstrong, an initial monitoring program was developed and background data was collected from each site. Once the spray irrigation program was initiated, monitoring and testing was conducted on an annual basis to ensure no negative effects were observed from the program. With the approval of the Ministry of Environment, the monitoring is now conducted bi-annually.¹⁵ The monitoring program tracks soil quality parameters (pH, conductivity, major nutrients, trace elements and micronutrients), erosion or soil loss, salinity and soil exchangeable sodium, the latter two of particular concern in spray effluent land application programs. There has been no observable trend in the soil concentration of any of the nutrients monitored since monitoring began. The soil concentration of nutrients fluctuates from year to year in most fields but this appears to be due to fertilization or application of manure, or to annual variations in climate. There was no evidence of erosion or soil loss due to effluent irrigation. There has been no trend in salinity observed since effluent irrigation began. All sites have had low salinity values, well below the salinity threshold. The soil pH has remained very stable in the past several years, and all fields had pH values within or very close to the optimum range of 6.5 to 7.5 with no trend in pH in monitored fields since monitoring began. Likewise, the values of soil exchangeable sodium remain within the range of values observed since data collection began in fall 2000. Irrigation of City of Armstrong effluent does not appear to have negatively impacted any of the soil quality or fertility parameters monitored since 1995.¹⁶

⁸ Kerry Fox, City of Armstrong Waste Water Technician, personal communication, October 2017

⁹ Opus DaytonKnight Consultants Ltd., *City of Armstrong Master Sewer Plan Update*, February 2014

¹⁰ Kerry Fox, City of Armstrong Waste Water Technician, personal communication, October 2017

¹¹ David Derbowka, Passive Remediation Systems, personal communication, October 2017

¹² Ruth McDougall, P.Ag, personal communication, October 2017

¹³ Opus DaytonKnight Consultants Ltd., *City of Armstrong Master Sewer Plan Update*, February 2014

¹⁴ Ruth McDougall, P.Ag., personal communication, October 2017

¹⁵ *ibid*

¹⁶ R. McDougall, P.Ag., *2015 City of Armstrong Soil Monitoring Report*, November 2015

The benefits of the spray irrigation program to Armstrong farmers are mainly the access to irrigation water, control over irrigation timing as well as the value of nutrient content.^{17, 18}

Nutrient Contribution of Wastewater Treatment Plant Effluent

Wastewater treatment plant effluents can vary in nutrient content so should be tested for total and available nutrients to accurately estimate nutrient contribution. Nutrient content also varies with the time of year; in spring nutrient content will be lower due to dilution from rain and snow in the storage facility. Concentrations will increase through the growing season and will be at their highest in fall due to little rain during the summer months.

As an example, effluent from Armstrong's wastewater treatment plant contains on average 21 mg/L of nitrogen, 5 mg/L of phosphorus and 20 mg/L of potassium. Per 6" (15 cm) of effluent irrigated, it would contribute the following:

- Total nitrogen (as N) (up to 20% may be available in the year of application): 31 kg/ha or 28 lbs/A
- Total phosphorus (as P) (approx. 20% will be crop-available): 8 kg/ha (7 lbs/A)
- Total potassium (as K) (most will be crop-available): 31 kg/ha or 28 lb/A

Effluent will also contribute small amounts of micronutrients including boron, and a moderate amount of sodium to the land base. It typically has a neutral pH and contains very little organic matter.¹⁹

Table 1 Amount of Nutrients from Effluent, City of Armstrong, 2012 Data

City of Armstrong 2012 Nutrients from the Effluent (in pounds per acre)		Amount of effluent irrigated onto land		
		6 inches	9 inches	12 inches
Nitrogen (as N)		28	40	56
Phosphorus (as P ₂ O ₅)		16	23	32
Potassium (as K ₂ O)		32	50	66
Sulphur		20	30	40

Source: Ruth McDougall, P.Ag., 2015 City of Armstrong Soil Monitoring Report

¹⁷ David Derbowka, Passive Remediation Systems, personal communication, November 2017

¹⁸ David Kennedy, farmer, personal communication, November 2017

¹⁹ Ruth McDougall, P.Ag., personal communication, November 2017

Potential Benefits of Spray Effluent to Balmoral Agricultural Producers (within a 6 km radius)

There are three main potential benefits of spray effluent to Balmoral area and its agricultural producers: reduced reliance on area creeks and groundwater, greater control over irrigation timing and positive effects on crop yield.

Reduced Reliance on Area Creeks and Groundwater

The value of access to waste water for irrigation purposes on forage lands reduces the reliance on creeks and groundwater aquifers to supply crop needs during the growing season. This is of particular concern when growing seasons are impacted by increased temperatures and decreasing frequency of precipitation events.

Greater Control over Irrigation Timing

A second important benefit is greater control over timing of irrigation, critical for both crop renovation and re-planting where dryland systems are reliant on natural precipitation events. This increase in control also facilitates diversifying into other field crops of higher per acre income (eg. corn, hops, malting barley, sunflower) which require greater soil moisture control.²⁰

Effects on Yield

Balmoral forage producers with both irrigated and dryland forage production estimate a 60-80% increase in yield with irrigation.^{21, 22, 23}, deriving from their observations over a range of years. This includes higher yields per forage cut as well as the potential for additional forage cuts in a season.

The nutrient value of the effluent, based on 2012 data from the City of Armstrong, is estimated in the following Table²⁴ It is reasonable to expect additional yield increases from the nutrients in the effluent.

²⁰ Laura Code, P.Ag. Regional Agrologist, BC Minisry of Agriculture, personal communication, October 2017

²¹ Trevor Schaaffsma, Balmoral farmer, personal communication, November 2017

²² Robert Shuster, Balmoral farmer, personal communication, November 2017

²³ Rob Trenholme, Balmoral farmer, personal communication, November 2017

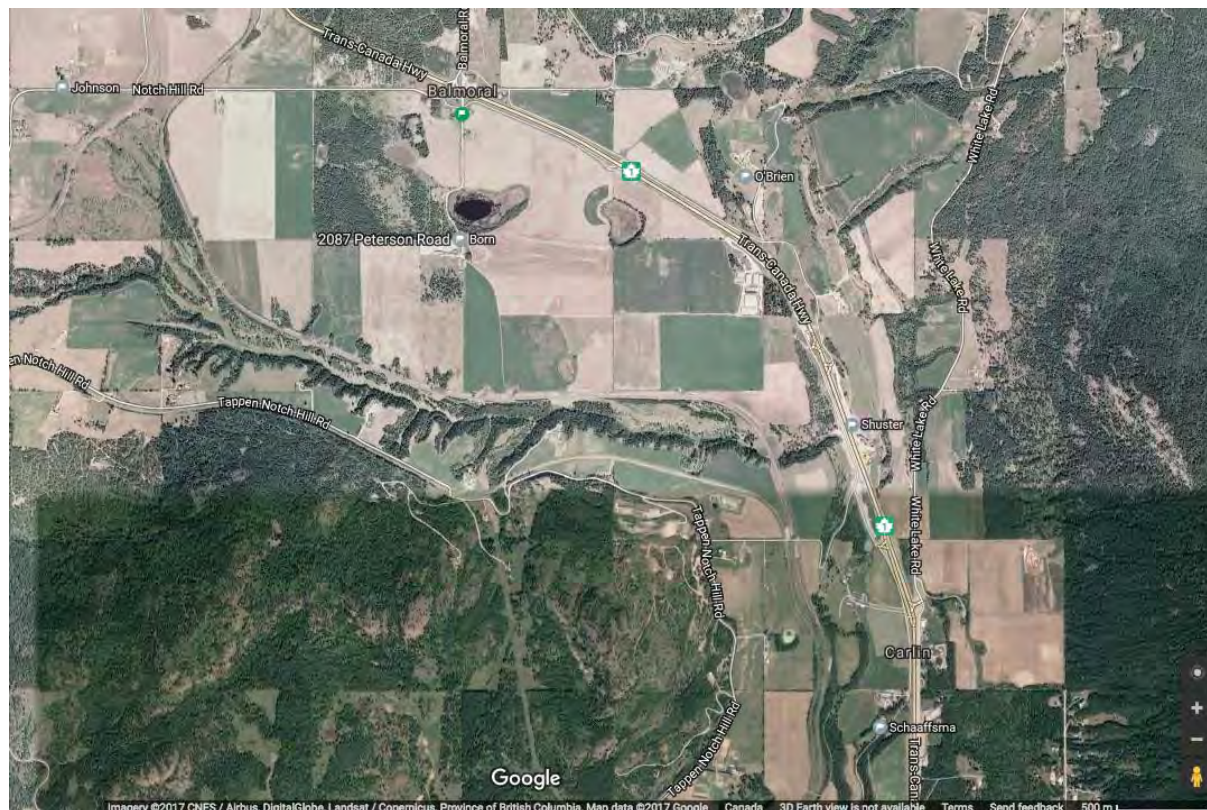
²⁴ Ken Clancy, P.Ag., Okanagan Fertilizer, personal communication, November 2017

Table 2 Value of Effluent Nutrients, City of Armstrong, 2012 Data

City of Armstrong 2012 Value of Effluent Nutrients (in dollars (\$) per acre)		Amount of effluent irrigated onto land		
		6 inches	9 inches	12 inches
Nitrogen (as N)		12.32	17.60	24.64
Phosphorus (as P2O5)		8.32	11.96	16.64
Potassium (as K2O)		9.60	15.00	19.80
Sulphur		2.00	3.00	4.00
TOTAL		\$32.24	\$47.56	\$65.08

Results from Balmoral Farmer Interviews

Interviews were conducted with eleven Balmoral area farmers within a six kilometre radius to gauge their interest in and crop suitability to a spray irrigation program. Nine of the eleven farmers were very interested and have non-irrigated land planted to forage crops. Of the six farmers with irrigation, only two have drilled wells, the others have water rights on a nearby creek. Two of the nine farmers also grow grain (wheat and barley) for which access to irrigation would open up more lucrative markets (malting barley, food grade wheat).

Figure 1 Balmoral Agricultural Forage Lands

List of Balmoral Farmers Interviewed

1. John Born, 2087 Peterson, Tappen, personal communication, Oct-Nov 2017
2. Keith Boulter, 2519 Hendrickson Road, Tappen, personal communication, Nov 2017
3. Jim Gooch, 1078 Birch Road, Tappen, personal communication, Nov 2017
4. Roy Johnson, 2704 Notch Hill, Tappen personal communication, Nov 2017
5. Geoff O'Brien, 2149 Wuori, Tappen, personal communication, Nov 2017
6. Brad Romyn, 1844 Hammond, Tappen, personal communication, Nov 2017
7. Trevor Schaaffsma, 1585 Calhoun, Tappen, personal communication, Nov 2017
8. Robert Shuster, 3727 White Creek Frontage Road, Tappen, personal communication, November 2017
9. Grant Smith, 2804 White Lake Road, Tappen, personal communication, Nov 2017
10. Rob Trenholme, 3862 Trans-Canada Highway, Tappen, personal communication, November 2017
11. John Vanderveen, Tappen, personal communication, November 2017

Table 3 Area Agriculture Producers within a 10 km Radius with Crops & Acreage that would Benefit from a Spray Irrigation Program

Name & Address	Major Crops	Major Soil Types	Irrigated Acreage	Acreage Available for Irrigation	Total Acreage
John Born	Alfalfa grass silage & hay, corn silage	Clay, sandy loam	150	850	1,000
Jamie Gooch	Alfalfa grass hay	Clay	0	20	20
Roy Johnson	Alfalfa grass hay	Heavy clay	0	320	320
Geoff O'Brien	Alfalfa grass silage & hay, corn silage	Heavy clay	120	30	150
Brad Romyn	Alfalfa grass hay	Sandy loam peat	0	80	80
Trevor Schaaffsma	Alfalfa grass hay, corn silage, grain	Clay, sandy loam	580	70	650
Robert Shuster	Alfalfa grass silage & hay, corn silage	Clay, sandy loam	60	60	120
Rob Trenholme	Alfalfa grass hay	Heavy clay	50	350	400
John Vanderveen	Alfalfa grass hay	Clay loam	150	50	200
TOTAL			1,110	1,830	2,940

Projected Wastewater Volume Flows

The estimated flows of waste water available for irrigation (after treatment) vary over time as shown in Tables 4 and 5. A Community Sewer System built to serve the areas of Blind Bay, Reed Point and Sorrento is estimated to produce annual volumes enough to irrigate approximately 3,000 acre feet at full future capacity.²⁵

Table 4 Projected Waste Water Flows

Community Sewer System Projected Wastewater Volume Flows (m ³ /day) ²⁶							
YEAR	COMMERCIAL	RESIDENTIAL	ESTIMATED FLOW (m ³ /day)	ESTIMATED DAILY FLOW (IMPERIAL GALLONS)		DAILY ACRE FEET AVAILABLE IRRIGATION	ANNUAL ACRE FEET AVAILABLE IRRIGATION
2009	N/A	27%	2,400	528,000		1.95	710
2014	16%	30%	2,323	510,000		1.88	685
2019	38%	36%	3,739	820,000		3.03	1,100
2024	66%	44%	5,083	1,120,000		4.12	1,500
2029	88%	51%	6,267	1,375,000		5.08	1,850
Buildout	100%	100%	10,304	2,265,000		8.35	3,050

Depending on allocation to individual landowners, the spray irrigation could be applied to as much as 3,000 acres at full build out, as shown in Table 5. However, based on the experience of the similar sized community system in the City of Armstrong, it is likely that approximately 1,000 -1,500 acres of forage crops will absorb the annual volumes of a Community Sewer System in the Balmoral area, providing sufficient storage capacity exists. The allocation of spray irrigation to individual land owners and attendant distribution strategy will need to be developed.

²⁵ Opus DaytonKnight Consultants Ltd., *Draft Review of Treatment Strategies for Blind Bay and Sorrento*, October 2017

²⁶ *ibid*

Table 5 Projected Irrigated Acres at Varying Application Levels

Projected Acres to be Irrigated from Community Sewer System Volume Flows (at varying levels of application)			
Irrigated	Total Acres @ 6" irrigation	Total Acres @ 9" irrigation	Total Acres @ 12" irrigation
2009	1,420	1,065	710
2014	1,370	1,027	685
2019	2,200	1,650	1,100
2024	3,000	2,250	1,500
2029	3,700	2,775	1,850
Buildout	6,100	4,575	3,050

Crop Water Requirements

Forage crops have varying water requirements depending on a number of factors including but not limited to soil type, amount and frequency of precipitation, cloud cover, wind, average daily temperature and Growing Degree Days (GDD)* or Corn Heat Units (CHU). As an example of this variability, heavy clay soils will retain soil moisture better than sandy, light soils but early season crops may be delayed or diminished since wet clay soils are also significantly cooler, delaying crop growth.

Assumptions

1. 180 day growing cycle
2. Average irrigated corn silage yield of 8 tons dry matter/acre
3. Average irrigated alfalfa grass mix yield of 1.75 tons/acre/cut, 3 cuts/season

Table 6 shows the estimated crop water requirements for the most common forage crops grown in the Balmoral area. Table 7 shows the variability in size of acreage necessary to utilise the projected waste water, depending on the forage crops grown. Non-irrigated forage lands within a 6 km radius show sufficient capacity for the total volume of spray irrigation at build-out.

Table 6 Estimated Crop Water Requirements

Crop Water Requirements (inches) ^{27, 28, 29, 30}				
CROP	PEAK DAILY	PRODUCTION CYCLE TOTAL (metric)	PRODUCTION CYCLE TOTAL (Imperial)	ESTIMATED GALLONS/ACRE
Alfalfa	9 mm	540-680 mm	5 inches/ton	595,000
Timothy Grass Hay	6 mm	500 mm	4.0 inches/ton	407,000
Alfalfa Grass mix	9 mm	540-680 mm	5 inches/ton	595,000
Silage Corn ³¹	7 mm	500-550 mm	20-25 inches/acre	510,000

Table 7 Spray Irrigation Application Acreage Variability Depending on Cropping

Alfalfa Grass Hay / Corn Silage					
Effluent volume	100%/0%	75%/25%	50%/50%	25%/75%	0%/100%
1,100	503	521	542	563	587
1,500	686	711	738	768	800
1,850	846	877	911	947	987
3,050	1,394	1,446	1,502	1,562	1,627

Conclusion to Part One: Benefits of Wastewater Irrigation to Agricultural Production in the Shuswap

The value of a spray irrigation program to nine current forage operations within a six km radius, with over 1,800 non-irrigated acres would be significant, adding 60-80% productivity to these holdings.

²⁷ *Irrigation Scheduling for Alfalfa Hay in Southern Alberta*, Alberta Agriculture and Forestry, July 2017

²⁸ *Irrigation Scheduling for Timothy Hay in Southern Alberta*, Alberta Agriculture and Forestry, August 2017

²⁹ *Irrigation Scheduling for Silage Corn in Southern Alberta*, Alberta Agriculture and Forestry, August 2017, retrieved at

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex14256](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex14256)

³⁰ *Irrigation Decisions with Limited Water*, BC Ministry of Agriculture, June 2015 Drought Management Factsheet, retrieved at https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/water/drought/665000-4_irrigation_decisions_with_limited_water-drought_factsheet_no4.pdf

³¹ *Report of 2016 Field Trials*, Pacific Field Corn Association, October 2016, retrieved at <http://www.farmwest.com/node/1588>

PART TWO

Agricultural Capacity and Feasibility of S.W. ¼, Section 8, TWP. 22, Range 10, KDYD

Part Two outlines the economic value to agriculture of 48.4 ha, currently in the ALR, on the North West corner of Balmoral Road and the TransCanada Highway in Blind Bay, B.C. measured against the value of spray effluent irrigation outlined in Part One to active forage production on adjacent ALR lands.

General Site Context

A site visit on September 23, 2017 confirmed the topographic information contained within the August 28, 2017 *S.W. ¼, Section 8, TWP. 22, Range 10, KDYD Balmoral, B.C. Agrologist's Report* by Wayne Blashill, P.Ag.³²

The site encompasses fairly level to fairly steep sloped forest land which has been recently logged. Mr. Blashill's report maps six polygons with similar site and soil characteristics.

The plant communities are dominated by typical Shuswap species: poplar (*Populus spp.*), cedar (*Thuja plicata*), red osier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*) and snowberry (*Symphoricarpus abus*), as well as two noxious weeds Canada thistle (*Cirsium ravense*), and mullein (*Verbascum thapsis*), common to disturbed sites.

³² Wayne Blashill, P.Ag., *S.W. ¼, Section 8, TWP. 22, Range 10, KDYD Balmoral, B.C.*



Looking west, down slope towards small pond

Bracken fern (*Pteridium aquilinum*) exists throughout the site, including the level, class 2 soils. Bracken fern is poisonous to domestic livestock, including cattle, horses and sheep. Poisoning is essentially untreatable. However, poisoning is easily controlled by preventing exposure. Initial epidemiological studies suggest that consumption of milk from cattle exposed to bracken fern increases the risk of esophageal or gastric cancers in humans.³³ The site is not fenced.

Agricultural Context

In an agricultural context, this site appears to have some limited potential for livestock grazing. However, it has several limitations. There is no contiguous livestock operation that would benefit from the available grazing; there is poisonous bracken fern throughout the level areas and on the slopes, there is a lack of effective fencing; and access to the small pond for livestock watering would be the subject of pressure from cattle or any other livestock and be impacted by erosion. According to Range Agrologist, Anne Skinner, P.Ag., with the B.C. Ministry of Forests,³⁴ a fence right adjacent to the shallow pond or the wetland adjacent to it would get a lot of pressure

³³ Bryan L. Stegelmeier, *Bracken Fern Poisoning*, Veterinary Pathologist, Poisonous Plant Research Laboratory, USDA-ARS, Merck Veterinary Manual, retrieved at <http://www.merckvetmanual.com/toxicology/bracken-fern-poisoning/overview-of-bracken-fern-poisoning>

³⁴ Personal communication, October 4, 2017

from cattle and be impacted by erosion. The preferred fencing option would be well back from the pond, resulting in a loss of forage.

The population of bracken fern is problematic for use as a grazing site. Bracken is a strong competitor with an extensive underground rhizome system containing nutrient reserves, is allelopathic to other species and is not controllable by chemical controls and is toxic to livestock.³⁵ The slopes on this site make the bracken fern weed cultural control method of disking and reseeding to pasture grasses impractical.³⁶

The Soil Management Handbook for the Okanagan and Similkameen Valley designates **Grassland**: sites which are suited to the grassland crop group may not have a high animal unit month (AUM) carrying capacity. They are best suited to “grass species”. Grasslands are defined as lands where native vegetation, including grasses, forbs, sedges, shrubs and trees, and cultivated species, i.e., crested wheatgrass or reed canarygrass, grow well. They may have been revegetated to include tame forages, however, intensive forage production, irrigation, drainage or fertilization is not normal. If harvested, they are normally harvested by grazing due to steepness and/or stoniness. Areas are designated to this crop group when slopes are 15% and up, stoniness greater than S3 and depth of the soil less than 50 cm over compact till or bedrock. Some lowland, wetter sites or soils have also been given this crop group designation. This is a result of several soil limitations which do not allow for use of soil management inputs at an economic level. These lands may be Crown or privately owned. Grassland sites may or may not be used for grazing, outdoor recreation or may be held as ecological reserves.³⁷

The soil classification indicates that this site may have potential for grain and/or forage production. The site visit on September 23 confirmed that there is a small area which could be suitable for forage production, if not populated by bracken fern, which retains its toxicological effects through the harvest and drying process.

³⁵ R.H. Marrs, M.G. Le Duc, R.J. Mitchell, D. Goddard, S. Paterson and R.J. Pakeman, *The Ecology of Bracken: It's Role in Succession and Implications for Control*, Annals of Botany, 85, 3-15, 2000

³⁶ *ibid*

³⁷ N. A. Gough, G. A. Hughes-Games, D.C. Nikkel, *Soil Management Handbook for the Okanagan and Similkameen Valleys*, B.C. Ministry of Agriculture, Fisheries and Food, 1994

Agricultural Capacity & Feasibility Assessment



View North across reasonably level, arable 89 acre S.W. ¼, Section 8 TWP 22, Range 10, KDYD, Balmoral

Potential Agricultural Activity – Livestock Grazing

Opportunities	Constraints	Potential Area	Estimated Development & Capital Cost	Estimated Total Annual Return
Grazing for an adjunct livestock operation	No adjunct livestock operation	89 acres	\$400,000 - 500,000	\$25,000
	Fencing cost of \$10,000/km ³⁸	4 km	\$40,000	
	Poisonous bracken fern			
	Dryland annual growth of 500 lbs./forage/acre ³⁹	60 acres		\$2,000
	Insufficient land productivity			

³⁸ Greg Tegart, P.Ag., Central Manager, retired, B.C. Ministry of Agriculture, Sustainable Agriculture Management Branch, personal communication, October 4, 2017

³⁹ ibid

Assumptions:

1. Estimated development and capital costs are the investment required to develop an agricultural enterprise.
2. Estimated development and capital costs do not include annual operating costs.
3. Estimated total annual returns are on a gross return basis.
4. No evidence of irrigation infrastructure on the property.
5. Fencing is required to keep livestock on the property and away from highway, neighbouring commercial and residential areas.
6. A cow/calf unit requires 4 acres of reasonable forage/month⁴⁰ and access to water.
7. Well drilling costs \$7,000 – 10,000/test well.
8. Grazing quality poor to fair, maximum 70-100 days spring to early summer⁴¹
9. A small beef operation (100 cows) requires investments of \$400,000 – 500,000 while generating less than \$25,000 of gross farm income.⁴²

Potential Agricultural Activity – Forage Production

Opportunities	Constraints	Potential Area	Estimated Development & Capital Cost	Estimated Total Annual Return
Forage production	Available small scale equipment	< 2 acres	\$35,000 - \$50,000 (used equipment)	\$200-250
	Poisonous Bracken fern			
	Lack of irrigation system			

Assumptions:

1. Estimated development and capital costs are the investment required to develop an agricultural enterprise.
2. Estimated development and capital costs do not include annual operating costs
3. Estimated total annual returns are on a gross return basis.
4. Well drilling costs \$7,000 – 10,000/test well.
5. Equipment complement includes a maximum 30 HP tractor, cultivator, seeder, swather, tedder and baler and for forage production.
6. A dryland forage operation in this location will likely only get one cut/season plus fall grazing. Estimated production = 20- 25 bales/acre @ \$5/bale

⁴⁰ ibid

⁴¹ B.M. Wikeem, A. McLean, A. Bawtree and D. Quinton, *An Overview of the Forage Resource and Beef Production on Crown Land in B.C.*, Can. Journal of Animal Science, December 1993, 73: 779-794

⁴² Grant Henry, P.Ag. *Beef Production – An Economic Profile*, Economic Development Branch, BC Ministry of Sustainable Resource Management, March 2003

7. Gaining farm status for this land would require a minimum of \$2,500 gross annual income plus 5% of the regulated value of the land over 10 acres⁴³, estimated at \$4,800/year.

Potential Agricultural Activity – Horticultural Operation

Opportunities	Constraints	Potential Area	Estimated Development & Capital Cost	Estimated Total Annual Return
Nursery	Land remediation	< 2 acres	\$??	
	High development costs		Minimum \$250,000	
	Irrigation system		\$15,000/acre	
	Aspect (east)			

Assumptions:

1. Removal of added debris would have associated excavation, trucking and disposal costs.
2. Land could be remediated with a program of excavation, removal and intensive soil rebuilding over time. No estimate for this cost was available.
3. Well drilling costs \$7,000 – 10,000/test well.
4. Nursery production requires specialised technical production and/or marketing abilities.

Conclusion to Part Two Agricultural Capacity and Feasibility of S.W. ¼, Section 8, TWP. 22, Range 10, KDYD

The existing site has limited feasibility as an agricultural operation. The poor quality of the grazing due to slope and poisonous bracken fern, the costs of fencing, limited area suitable for crop production and the challenges of remediation all combine to render this site economically unfeasible for an agricultural operation.

⁴³ BC Assessment Factsheet “*Classifying Farm Land*”,
<http://www.bcassessment.ca/public/Fact%20Sheets/Classifying%20Farm%20Land.aspx>
 x

TEAM MEMBERS

Andrea Gunner and Ruth McDougall are both Professional Agrologist in good standing with the B.C. Institute of Agrologists.

Andrea Gunner, P.Ag.

Andrea's area of practise is agricultural economics and farm business management. She has a Bachelor's degree in Horticulture with a minor in Agricultural Economics and post-graduate studies in Economics and Marketing from UBC and Agricultural Leadership from the University of Saskatchewan.

In her role as a both a Professional Agrologist and as a Farm Business Advisor, she is familiar with production practises and market conditions across the agri-food industry as well as the range of provincial and federal regulations that affect the various sectors of the industry, both at primary production and secondary processing levels. In addition to site assessments and business planning with individual farms and agri-food processors, she also researches and assesses existing and new agricultural opportunities within a broad range of sectors on behalf of industry associations, municipalities and Regional Districts, First Nations, Community Futures and government. She is on the Ministry of Agriculture's list of Farm Business Management consultants for all five levels of business management services for both primary producers as well as agri-food processors. These include Tier 1 and Tier 2 of the BC Farm Business Advisory Services Program, the First Nations AGRI-business opportunity assessment, the development and delivery of farm business management workshops and education sessions, and the development of agri-business fact sheets and enterprise budgets.

Ruth McDougall, P.Ag.

Ruth's area of practise is Waste Management. She is an acknowledged expert in BC in the characterization and recycling of organic residuals to agricultural land. She has been extensively involved with regulatory and policy development and the composting and use of various organic residuals and effluent since 1993. She has worked with various municipalities and residuals generators throughout British Columbia since 1996 to develop and implement land application programs. Her expertise in soil fertility and nutrient cycling in agricultural systems, has been utilised by municipal, regional and provincial governments to establish appropriate regulations. Ruth has been involved in writing provincial guidelines for residuals recycling, organic matter recycling, the BC Soil Amendment Code of Practise and has produced Land Application Plans for the application of many residuals to agricultural land.

Andrea and Ruth both maintain a close association with other agrologists in British Columbia through active involvement in the B.C. Institute of Agrologists, a professional body whose duty is to uphold and protect the public interest through ensuring the competent and ethical practise. Both spend an average of one hundred hours of Professional Development each year to ensure continuing competency.

EXHIBIT 5

Opus International Sorrento/Blind Bay Community Sewer System Plan





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TO	Terry Langlois, Team Leader, Utilities, CSRD
BY	Greg Cockburn, EIT
REVIEWED BY	Stephen Horsman, P.Eng; Tim Phelan, P.Eng.
DATE	November 17, 2017
FILE	Sorrento/Blind Bay Community Sewer System Plan
SUBJECT	TM4 – Review of Treatment Strategies – Update (Revision H)

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1 Introduction

Rev. H

This is an updated version of the TM4 – Review of Treatment Strategies originally completed December 2, 2013. Section 2 of this memorandum incorporates changes to the proposed development of Shuswap Lake Estates. The planning horizons used in the previous version are based on a 2009 design year and have not been updated.

This Technical Memorandum (TM) builds on the work completed in previous TMs to develop a range of community sewer system (CSS) options with the aim of providing a more affordable solution for the communities of Sorrento, Blind Bay and Reedman Point. The structure of this TM is as follows:

- *Section 2 – Design Criteria for CSS Plan* sets out the population and wastewater flow data to be used in the development of the CSS Plan
- *Section 3 – Regulations and Guidelines* sets out the provincial and federal regulatory frameworks within which a CSS must operate.
- *Section 4 – Preliminary Community Sewer System Options* discusses some of the issues and assumptions common to the three preliminary options developed
- *Sections 5, 6, 7, and 8* outline the preliminary options developed, for the purpose of selection of one or more preferred options for more detailed evaluation, including cost estimation.
- *Section 9* - provides a summary of the preliminary options including total capital costs, operations and maintenance costs and service connection costs. It also discusses potential cost allocation methods and summarises the estimated costs on a per household basis.

2 Design Flows for CSS Plan

As discussed in Technical Memorandum 1 - Service Area Characterisation (TM1), several previous reports, including the Liquid Waste Management Plan for Area C (LWMP), have made estimates of the design flows for the Sorrento, Blind Bay and Reedman Point areas. The various

reports have used different assumptions with regards to growth and wastewater generation rates. The intent of this section of the TM is to confirm the design criteria that will be used going forward in the development of the CSS plan.

2.1 Ultimate Buildout Wastewater Flow

The ultimate future design flow is defined as the wastewater flow that would be produced at an unknown future date once complete infilling of the LWMP service area has occurred. Although the CSS Plan currently in development will address servicing of flows for development over the near term, the plan must also take into account that the ultimate buildout flow must be serviced at some point in the future.

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The Electoral Area 'C' Official Community Plan (OCP) Bylaw No. 725, adopted July 20, 2017, has been used as the basis of what type of development will occur, and where. The GIS data provided by the CSRD was used to estimate the areas for each different type of land designation in the OCP. For residential land uses, the theoretical maximum number of properties was determined using the maximum property densities set out in the OCP. The different types of residential land designation, and the maximum densities set out by the OCP are outlined in Table 2.1.

Table 2.1 – Property Density Information from the OCP

LAND USE DESIGNATION	ASSUMED MAXIMUM DENSITY (units/ha)	COMMENTS
Village Centre	34	Range is 12 – 74 units/ha
Medium Density	20	Range is 12 – 30 units/ha
Neighbourhood Residential	5	
Rural Residential	1	
Rural Residential 2	0.5	
Rural Holdings	0.017	
Agricultural	0.017	Minimum parcel size is 60 ha
Rural Resource	0.017	Minimum parcel size is 60 ha

Once the number of residential properties was determined, a per unit wastewater generation rate was applied to determine the residential wastewater flow:

- 1000 L/unit/day for single family dwellings. Assuming a population density of 2.5 people per dwelling this corresponds to 400 L/person/day.
- 625 L/unit/day for medium density and village centre designations to reflect reduced water usage in higher density housing situations. Still using a population density of 2.5 people per dwellings, this corresponds to 250 L/person/day.

For commercial type properties¹, rather than determining the expected number of future units, a per hectare wastewater generation rate was applied. This rate was calculated from the work done by the Sorrento Business Improvement Association (SBIA). The SBIA system was sized to service 21 properties in the commercial area of Sorrento, incorporating a mixture of hotels, RV parks, offices, retail and residential premises. An assumption was made that this group of properties is a fair representation of the mixture of business that might be developed in the future. Knowing the sum area of these properties and the expected wastewater flows, a per hectare commercial wastewater generation rate of 12 m³/ha/day was determined.

A number of other assumptions were made to complete the estimate of the ultimate buildout wastewater flows:

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- Because the Village Centre in Sorrento is expected to contain both residential and commercial developments, it was assumed that 50% of the area would be developed as residential, and 50% as commercial.
- There are currently 244 properties in Reedman Point. This exceeds the maximum density set by the OCP. The current number of properties was used in the estimate.
- The OCP designates a group of 11 properties east of Shuswap Lakes Estates as medium density residential. These properties lie outside of the service area defined in the LWMP. The ultimate buildout design flow estimate assumes that the community sewer service area is extended to include these properties.
- For clarity it is noted that these calculations do not include the Balmoral Village Centre, which is currently part of the ALR but the future use is unclear.

Table 2.2 summarises the outcome of the ultimate buildout design flow estimate for the communities of Sorrento, Blind Bay and Reedman Point.

Table 2.2 – Summary of Ultimate Buildout Wastewater Flow Estimate

BLIND BAY, SORRENTO AND REEDMAN POINT	APPROXIMATE AREA (ha)	NUMBER OF RESIDENTIAL DWELLINGS	WASTEWATER GENERATION RATE	ESTIMATED WASTEWATER FLOW (m ³ /day)
Residential	1,210	8,709	1000 L/pop/day 625 L/pop/day	6,270
Commercial	90	-	12 m ³ /ha/day	1,070
Total	1,300	8,709	-	7,340

¹ Commercial type properties were assumed to include the following land use designations as defined by the OCP: Village Centre, Neighbourhood Commercial, Public and Institutional, Highway Commercial, Residential Resort, Tourist Commercial, and Waterfront Commercial.

2.2 Community Sewer System Plan Flows

The ultimate buildout flow is the required capacity of the CSS at some point in the future. The design horizon for this CSS Plan is 20 years, but with a view to accommodate the ultimate buildout scenario at some unknown point in the future. This section sets out the design flows that will be used going forward in the development of the CSS Plan.

The construction of a sewer system in the Blind Bay/Sorrento/Reedman Point area is going to have a positive impact on growth. Commercial growth and residential growth have been treated separately:

- Given that a sewer system is constructed in the near future, by 2019 it is assumed that commercial development throughout the service area, including the Sorrento Village Centre, will have reached 50% of the ultimate buildout.
- Regardless of in which areas the sewer system is constructed for all residential areas a per annum growth rate of 2% has been assumed.

It is important to ensure that the above assumptions are sound. Underestimating growth rates will lead to undersizing of the system which may cause problems later on, while overestimation will lead to redundancy and unnecessary costs. The only source of information available for current growth patterns in the area is the Canadian Census. For comparative purposes, the results of the 2011 census are summarised in Table 2.3. Also refer to the discussion in TM1.

Table 2.3 – Summary of 2011 Census Results

PARAMETER	SORRENTO	BLIND BAY POPULATION CENTRE	BLIND BAY AND REEDMAN POINT	TOTAL
Population 2011	1,255	1,738	1,234	4,227
Population 2006	1,360	1,684	1,091	4,135
Percentage Change in Population 2006 -2011	-7.7%	3.2%	13.1%	2.2%
Average Per Annum Growth Rate	-1.6%	0.6%	2.5%	0.4%

A proposed expansion of the Shuswap Lake Estates was not included in the OCP and is considered as additional growth above the OCP and Census based population growth. The development currently has 194 residential units and 30 commercial units. By 2029, the Shuswap Lake Estates projects a total of 555 residential units and 100 commercial units. The wastewater flows from the proposed Shuswap Lake Estates will flow into the existing Shuswap Lake Estates Sewage Treatment Plant. The proposed development phasing is shown in Table 2-4.

Table 2-4 – Shuswap Lake Estates Additional Development

YEAR	RESIDENTIAL UNITS	COMMERCIAL UNITS
Current Condition		
2017	194	30
Planned/Proposed Additional Per Period		
2019	61	0
2024	155	40
2029	145	30
Total Buildout	555	100

Table 2-5 outlines the revised assumed growth in the Blind Bay/Sorrento/Reedman Point area and the resulting wastewater design flows (average annual daily flows). 2009 has been included as a base year as this is when the LWMP process was completed. The flow for 2009 is the design flow from the LWMP.

Table 2-5 – Community Sewer System Plan Growth Assumptions and Design Flows

YEAR	PERCENTAGE OF BUILDOUT		ESTIMATED FLOW (m ³ /day)
	COMMERCIAL	RESIDENTIAL	
2009	Unknown	27%	2,400
2014	16%	30%	2,323
2019	38%	36%	3,739
2024	66%	44%	5,083
2029	88%	51%	6,267
Buildout	100%	100%	10,304

The information from Table 2-5 is presented graphically in Figure 2.1.

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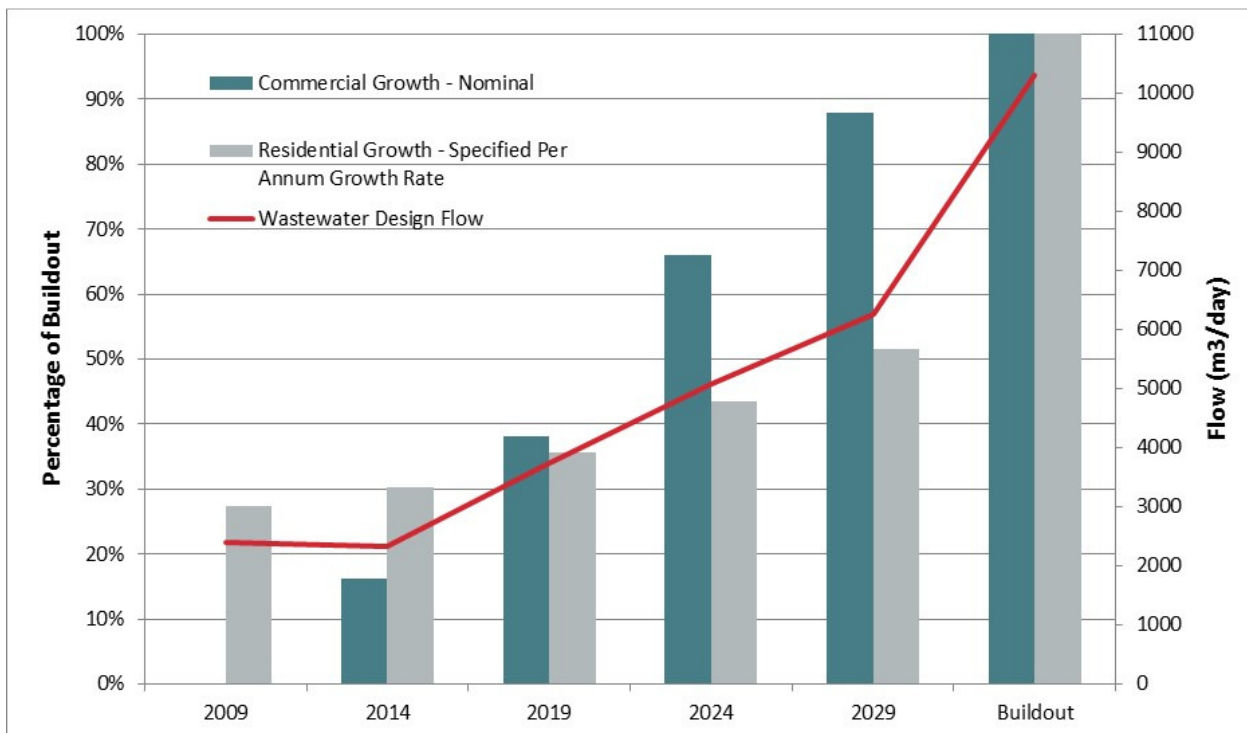


Figure 2.1 –Assumed Growth and Flows for Community Sewer System Plan

The various scenarios developed in previous reports, and summarised in TM1 are presented for, comparison only, side-by-side with the CSS Plan Flows in Table 2-6.

Table 2-6 – Comparison of Development Scenarios²

SCENARIO	SOURCE	POPULATION SERVICED	NUMBER PARCELS SERVICED	DESIGN FLOW (m³/day)
Phase 1 Only	LWMP	1,398	559	560
Current (phases 1, 2, and 3)	LWMP	5,965	2,386	2,400
	BBSO ³	5,965	2,386	3,240
20 Year Horizon	AECOM combined servicing option	7,610	3,040	3,000
	TM4	11,178	4,575	6,267
Ultimate Buildout	TM4	23,158	9,365	10,304

² Numbers in italics are calculated based on a population density of 2.5 people/dwelling and do not necessarily form part of the calculations for any particular scenario

³ Blind Bay Servicing Options – Aecom for Columbia Shuswap Regional District, December 2011

Table 2-7, Table 2-8, and Table 2-9 outline the design criteria for satellite plants for Blind Bay and Reedman Point, Sorrento, and Shuswap Lake Estates respectively. These have been calculated using the same methods and assumptions described above that were used for the entire service area.

Table 2-7 – Design Flows for Sorrento Satellite Plant

SCENARIO	SOURCE	POPULATION SERVICED	NUMBER PARCELS SERVICED	DESIGN FLOW (m ³ /day)
Phase 1 Only	LWMP	277	289	290
Current (phases 1, 2, and 3)	LWMP	1,240	494	490
5 year horizon	TM4	1,630	652	650
10 year horizon	TM4	1,909	764	770
15 year horizon	TM4	2,198	879	880
20 Year Horizon	TM4	2,497	999	1,000
Ultimate Buildout	TM4	5,288	2,115	2,120

Table 2-8 – Design Flows for Blind Bay and Reedman Point Satellite Plant

SCENARIO	SOURCE	POPULATION SERVICED	NUMBER PARCELS SERVICED	DESIGN FLOW (m ³ /day)
Phase 1 Only	LWMP	675	270	270
Current (phases 1, 2, and 3)	LWMP	3,510	1,922	1,890
5 year horizon	TM4	5,383	2,153	1,700
10 year horizon	TM4	6,002	2,401	1,900
15 year horizon	TM4	6,674	2,670	2,110
20 Year Horizon	TM4	7,406	2,963	2,340
Ultimate Buildout	TM4	16,485	6,594	5,220

Table 2-9 – Design Flows for Shuswap Lake Estates Development

SCENARIO	SOURCE	POPULATION SERVICED	NUMBER PARCELS SERVICED	DESIGN FLOW (m ³ /day)
2017	TM4	485	224	959
2019	TM4	638	285	1,112
2024	TM4	1,025	480	2,131
2029	TM4	1,388	655	2,968
Total Buildout	TM4	1,388	655	2,968

2.3 List of References

- Liquid Waste Management Plan Area 'C' Final Stage 2 Report – Earth Tech for Columbia Shuswap Regional District, June 2008
- Blind Bay Servicing Options – Aecom for Columbia Shuswap Regional District, December 2011
- Official Community Plan for Area 'C' Bylaw No. 725– Columbia Shuswap Regional District, Adopted July 20, 2017
- Liquid Waste Management Plan Area 'F' Stage 3 Report (AECOM Combined Servicing Option)– Focus Corporation for Columbia Shuswap Regional District, July 2009
- Sorrento Community Sewer Proposal – Stokes, B. Sorrento Business Improvement Association (now Sorrento & Area Community Association), February 2008
- 2011 Census Data – Statistics Canada
- Technical Memorandum 1 Service Area Characterisation for Blind Bay/Sorrento – Opus DaytonKnight for Columbia Shuswap Regional District, June 2013
- Proposed Shuswap Lake Estates development details – Terry Barker, Vice President, Shuswap Lake Estates, 2017

3 Regulations and Guidelines

The LWMP for the Sorrento/Blind bay area specifies that no new private discharges to Shuswap Lake will be allowed, and does not give discharge of municipal effluent to the lake as one of the options. Although municipal discharges of treated effluent to Shuswap Lake are not prohibited, it would require a change to the LWMP, including consultation with the community. It is anticipated that there will be strong opposition to a municipal effluent discharge to the lake from the community, therefore it is assumed that wastewater must be treated to a standard where it can either be reused or discharged to ground.

Discharges to ground are normally undertaken using ground disposal fields (also referred to as drain fields and tile fields), which consist of a network of shallow-buried perforated pipes that disperse the effluent to the surrounding soil. In the case of larger discharges, rapid infiltration (RI) basins may be used (these consist of constructed basins with porous bottoms that are periodically filled with treated effluent, which then percolates into the ground). For both ground disposal methods, soils and subsurface conditions must be such that the receiving environment (native soils and groundwater) is protected.

This section contains a summary of regulations that apply to ground discharges and to use of reclaimed effluent that apply to the Blind Bay/Sorrento study area.

3.1 Federal Regulations for Effluent Discharges

The Canadian Council of Ministers of the Environment (CCME) has developed a Canada-wide Strategy for the Management of Municipal Wastewater Effluent. The CCME strategy focuses on effluents released from wastewater treatment systems and overflows from sewer collection systems. National performance standards regulated under the Fisheries Act and in provincial and territorial regulatory instruments are contained in the Wastewater Systems Effluent Regulations, which are now in force.

The new federal regulations apply to effluent discharges greater than 100 m³/day to waters that are frequented by fish, or where the deposit may enter water frequented by fish. This for the most part would apply to outfall discharges. However, since effluent discharged to ground can be assumed to migrate to Shuswap Lake, it is unclear whether or not the federal regulations may apply to this study. In any case, for a discharge to ground, additional renovation of the effluent would occur as the infiltrated effluent migrates down-gradient toward the lake. Table 3.1 summarises the discharge criteria defined in the Wastewater System Effluent Regulations.



Table 3.1 – Wastewater System Effluent Regulations Discharge Criteria

PARAMETER	CRITERIA
BOD ₅	Effluent average not to exceed 25 mg/L
TSS	Effluent average not to exceed 25 mg/L ⁴
Residual Chlorine	Maximum 0.02 mg/L
Acute Toxicity	Include specific requirement and timelines to identify and reduce toxicity in cases of acute toxicity test failure
Ammonia	Include specific requirement if acute toxicity test failure is due to ammonia that would authorize discharge of ammonia in effluent based on receiving environment considerations

Monitoring of the environment and timelines to achieve effluent discharge levels are based on risk while considering elements such as sensitivity of the receiving environment, size and composition of the effluent release.

The Wastewater Systems Effluent Regulations require that the minimum discharge standards be met by January 1, 2015, unless a Transitional Authorization has been applied for on or before June 30, 2014. A Transitional Authorization allows discharge of an effluent that does not meet the minimum standards set out in the Regulations for a specified period.

Schedule 2 of the Regulations contains a procedure for allocating points to a particular discharge, with the number of points determining the maximum duration of a Transitional Authorization. If the number of points allocated to the discharge is more than 70 points it would mean that the duration of a Transitional Authorization would not extend past December 31, 2020. If the number of points is less than 70 and equal to or greater than 50, the Transitional Authorization would extend until December 31, 2030; if less than 50 points, the Transitional Authorization would extend to 2040.

Based on the scoring system set out for the federal regulations, it appears that less than 40 points would be awarded to a single discharge from the entire Sorrento/Blind Bay study area at OCP build-out (i.e. worst-case scenario); a Transitional Authorization would therefore extend to 2040, well beyond the horizon for this study. In the long-term, the regulations require wastewater treatment systems equivalent in performance to secondary treatment with advanced treatment if required. A level of treatment that meets or exceeds the criteria set out in Table 3.1 is envisioned for the study area in any case (see Provincial Regulations below).

3.2 Provincial Regulations for Effluent Discharges to Ground

In July of 1999, the Province of B.C. introduced regulatory standards for wastewater discharges and for the use of reclaimed water under the Municipal Sewage Regulation (MSR). The MSR was updated in 2012, with the objectives of clarifying registration requirements, reorganizing the regulation to improve ease of use, simplifying the requirements for reclaimed water use, and providing flexible storage and alternate disposal options for reclaimed water. Because of the

⁴ For a continuous wastewater system with a hydraulic retention time of five or more days (e.g. lagoon systems), during the months of July, August, September or October are excluded if the result is >25 mg/L

extensive reorganization that the Regulation underwent, it was renamed the Municipal Wastewater Regulation (MWR). Despite the extensive reorganization, the water quality standards for effluent discharges and for reclaimed water have not changed from the earlier version of the Regulation. The MWR requirements that apply to the study area are summarized below.

Since the study area has an approved LWMP, wastewater discharges will be regulated under Operational Certificates. It is important to note that effluent discharges and use of reclaimed water that are authorized under an Operational Certificate as part of an approved LWMP do not have to be registered under the MWR. However, the Ministry of Environment (MOE) generally uses the MWR standards in developing Operational Certificates.

Municipal effluent for ground disposal is separated into four classes which are summarised in Table 3.2.

Table 3.2 – Municipal Effluent Classes

CLASS	DEFINITION
A	High quality municipal effluent from advanced treatment that includes filtration with disinfection and nitrogen reduction
B	High quality municipal effluent from advanced treatment that includes filtration
C	Municipal effluent from secondary treatment (for lagoon systems the maximum allowable TSS is 60 mg/L)
D	Municipal effluent from a septic tank

The MWR standards for discharges to ground are summarized in Table 3.3.

Table 3.3 – Municipal Effluent Quality Requirements for Discharges to Ground

PARAMETER	CLASS A	CLASS B	CLASS C	CLASS D
BOD ₅ (mg/L)	10	10	45	n/a
TSS (mg/L)	10	10	45	n/a
Faecal coliform (MPN / 100 mL)	Median: 2.2 any sample: 14	400, if maximum daily flow is $\geq 37 \text{ m}^3/\text{d}$	n/a	n/a
Turbidity (NTU)	Average: 2 Any sample :5	n/a	n/a	n/a
Nitrogen (mg/L)	Nitrate – N: 10 Total N:20	n/a	n/a	n/a

The MWR specifies that if the ground discharge is within 300 m of a drinking water source, then Class A effluent standards must be met. Sub-surface travel time must be at least six days for Class A and B effluent, and at least ten days for Class C and D effluent (sub-surface travel time is the time that the effluent takes to travel from the ground disposal site perimeter to the point where the effluent surfaces, reaches a property line, or is intercepted by a water well). Minimum setback distances are as shown in Table 3.4.



Table 3.4 – Minimum Setback Requirements

ROW	FEATURE	MAXIMUM DAILY FLOW	
		< 37 m ³ /day	≥ 37 m ³ /day
1	Property boundary	3 m	6 m
2	Building drain, buffer strip	5 m	10 m
3	Body of water	30 m	30 m
4	Water within the Okanagan Basin	30 m	150 m
5	Water well	60 m	90 m
6	Water well within unconfined aquifer	60 m	300 m

Additional restrictions for discharges to ground that are set out in the MWR include, depth to the ground water table, potential for mounding of the groundwater table, and effect on water quality parameters. Where subsurface disposal fields are used, the size of the field depends on the soil percolation rate, and the volume and quality of the discharge. Two disposal fields must be provided, each designed to accommodate the design flow of the system, with a third undeveloped field retained as a standby area. For rapid infiltration basins, at least two basins must be provided, each capable of accepting all of the effluent under annual average rainfall conditions. A minimum of Class C effluent must be achieved for rapid infiltration. Sand mounds and seepage beds may also be allowed if authorized by the MOE.

It should be noted that for situations that require Class A effluent (i.e. potable water well within 300mm of the ground disposal facility), the requirement for nitrogen removal and the low effluent turbidity limits will add significantly to the capital and operational costs of treatment compared to Class B effluent.

3.3 Provincial Standards for Reclaimed Wastewater

Standards for the use of reclaimed effluent in British Columbia are administered by the MOE under the standards set out in the MWR. Categories of reclaimed water are determined based on the point of distribution or use. Uses of reclaimed water are categorized as follows:

- a) *indirect potable reuse, being any use of reclaimed water to replenish a potential potable water source;*
- b) *greater exposure potential, being uses for which public contact is likely or that present a risk to the receiving environment;*
- c) *moderate exposure potential, being uses*
 - i. *for which public contact is likely minimal;*
 - ii. *for which public access to the reclaimed water is restricted and users are educated as to the risks posed by the use of the reclaimed water, or*
 - iii. *that present a moderate risk to the receiving environment;*
- d) *lower exposure potential, being uses*
 - i. *for which public access to the reclaimed water is restricted and users are not likely to have contact with the reclaimed water,*
 - ii. *that are commercial or industrial in nature and users are educated as to the risks posed by the use of the reclaimed water, or*
 - iii. *that presents a low risk to the receiving environment.*

The MWR standards for water reuse in British Columbia dictate that effluent used as reclaimed water must meet the requirements described in Table 3.5, depending on the use of the reclaimed water. Use of reclaimed water must be authorized in writing by the local health authority having jurisdiction, or a local service area bylaw must be in place that specifically authorizes the reclaimed water use and that specifies local government responsibility for ensuring compliance with the MWR and for ensuring proper operation and maintenance.

Table 3.5 – Municipal Effluent Quality Requirements for Reclaimed Water

PARAMETER	INDIRECT POTABLE USE	GREATER EXPOSURE POTENTIAL	MODERATE EXPOSURE POTENTIAL	LOWER EXPOSURE POTENTIAL
pH	Site specific	6.5 to 9	6.5 to 9	6.5 to 9
BOD ₅ , TSS	BOD ₅ 5 mg/L TSS <5 mg/L	10 mg/L	25 mg/L	45 mg/L
Turbidity	max 1 NTU	average 2 NTU, max 5 NTU	N/A	N/A
Fecal Coliform (/100 mL)	median <1 CFU or < 2.2 MPN	median < 1 CFU or < 2.2 MPN; max 14 CFU	median 100 CFU; max 400 CFU	median 200 CFU; max 1,000 CFU

The MWR sets out additional restrictions for uses of reclaimed water (e.g., setbacks from potable water sources, worker contact, restrictions for irrigation). For reclaimed water used in applications having greater exposure potential, treatment must include chemical addition followed by filtration. A chlorine residual must be maintained in the reclaimed water distribution system regardless of exposure potential.

An alternate means of disposing of the effluent is also required under the MWR. In the case of this study for the Sorrento/Blind Bay Community Sewer System Plan, the preferred alternate means of disposal would be ground disposal, since discharge to surface water (Shuswap Lake) is not considered in the LWMP. However, as discussed in TM3, there are few locations within the study area that are suitable for ground disposal, particularly in the Balmoral area. Our discussions with MoE Kamloops office indicate that some flexibility can be provided regarding alternative means of disposal, since the system will be operating under an approved LWMP (Operational Certificate) rather than registration under the MWR.

Acceptable alternatives for dealing with process upsets or mechanical problems that may temporarily result in the production of effluent that does not meet reclaimed water standards include dedicated temporary storage with subsequent re-treatment, or pump and haul to a treatment facility that can accept the wastewater. The latter alternative would require a binding agreement with the owners of the treatment facility ensuring that the waste would be accepted. Refer also to Section 4.5 for further discussion.

4 Preliminary Community Sewer System Options

Sections 5, 6, 7 and 8 discuss preliminary options for a Community Sewer System for the Blind Bay, Sorrento and Reedman Point area. The options are based on those previously investigated in the LWMP and Blind Bay Servicing Options Report (BBSO), but have been updated based on the new information available. It is intended that one or more of these options is selected to go on to more in-depth design and costing. The preliminary options presented are:

- Option 1 – Expansion of the Existing Shuswap Lake Estates Treatment Facility
- Option 2 – New regional treatment facility at Balmoral
- Option 3 – Satellite Treatment Facilities for Sorrento and Blind Bay
- Option 4 – Hybrid Regional Facility

This section discusses and defines some of the issues that are common to all options.

4.1 Service Area and Phasing

No change is to be made to the service area defined in the LWMP except to extend it to include the 11 properties east of Shuswap Lake Estates (SLE) that are included as part of the Secondary Settlement Area but were excluded at the time the LWMP was developed.

The LWMP identified areas of Blind Bay and Sorrento that are priorities for centralised sewage collection. These areas, described in this report as priority 1 areas, are along the lakefront and have the greatest potential to contaminate Shuswap Lake from inefficient or damaged septic tank systems. Priority 2 and 3 refers to the remaining properties within the LWMP service area. Refer to Appendix A which includes Figure 02 from the Stage 2 LWMP Report defining the priority areas for Sorrento, Blind Bay and Reedman Point.

In the following sections, the definition of priority 1 has been retained and priority 2 has been amended to refer to priority 2 and 3 from the LWMP. Once a preferred option is selected, and more detailed design/costing is undertaken, it may be favourable to extend or reduce these priority areas to best fit with the phasing plan and the design.

For the community sewer system options presented at this preliminary stage, two phases are proposed. In general, it is expected that the first phase will be implemented as soon as possible, and will address the needs of priority 1 areas only. It is expected that the second phase will be implemented 5-10 years following phase 1 and will provide servicing for the remaining areas within Blind Bay and Sorrento, allowing for 20 years of growth. This is different from the LWMP, which did not make allowances for the 20 years of growth. In addition, the system must be configured in light of long term (buildout) future development.

4.2 Collection System

The LWMP provides a concept design for the collection system for Blind Bay, Sorrento and Reedman Point. The design is a conventional gravity collection system with force mains for low-



lying areas as required. No changes are proposed at this stage to that network, although the design will be reviewed in detail when a preferred option is selected.

An alternate type of collection system is Septic Tank Effluent Pump (STEP) or Septic Tank Effluent Gravity (STEG). In this type of system each household has a pumped connection into a low pressure sewer main. This type of system is suited to communities with terrain that makes it challenging to construct a conventional gravity sewer system. A review of the potential difference in cost between the two collection systems has been carried out and is summarised in Table 4.1.

Table 4.1 – Comparison of Collection Systems

COLLECTION SYSTEM	PHASE	ESTIMATED CAPITAL COST (\$MILLION)		
		NETWORK	SERVICE CONNECTION	TOTAL
Conventional gravity	1	\$4.8	\$2.8	\$7.6
	2	\$20.0	\$17.0	\$37.0
	Total	\$24.8	\$19.8	\$44.6
STEP	1	\$2.8	\$5.6	\$8.4
	2	\$10.3	\$34.0	\$44.3
	Total	\$13.1	\$39.6	\$52.7

Table 4.1 shows that using a STEP system reduces the overall network costs, but increases the cost of the service connection to each household. The cost of a service connection (from the house to the property boundary) for a STEP system is approximately \$10,000 per household, compared to \$5,000 per household for a conventional gravity system. Overall, the STEP is likely to be more expensive than a conventional gravity system for the Sorrento, Blind Bay and Reedman Point communities and would be more challenging and costly to operate.

4.3 Wastewater Treatment

In general, the most economical approach for small community systems where secondary treatment is required is to use partial-mix aerated lagoons. These systems typically employ screening to remove coarse trash (plastics and other debris), followed by one or more partially mixed aerated ponds, and then a final unmixed, un-aerated pond to allow settling of solids prior to discharge. In some systems, settling is accomplished by leaving a portion of the last lagoon in the series unmixed and un-aerated. Additional treatment steps (e.g., disinfection) may be added depending on the effluent quality requirements. With the addition of a storage reservoir, this type of system can be used to produce reclaimed water for irrigation (as practiced at the City of Armstrong).

In partial-mix lagoon systems, solids gradually accumulate in the settling pond or section; these must be periodically removed and either disposed of or beneficially used (e.g., land applied under a permit). Solids removal typically occurs on a 20 to 30 year cycle, depending on the design and the loading of the system.

Lagoon systems are robust and simple to operate; their main disadvantage is the relatively large space requirement.

For larger communities or where space restrictions prevent the use of lagoons, mechanical treatment facilities are used; these may be based on fixed or suspended growth processes, depending on a number of site-specific factors. Mechanical treatment facilities have much smaller space requirements than lagoons and are in general capable of producing a better quality effluent. However, they are more costly to construct and to operate, and they require a greater level of operator training.

Mechanical treatment facilities produce waste solids that must be removed regularly from the process. Depending on the nature and size of the facility, waste solids may consist of primary sludge (mainly untreated fecal material that is separated from the wastewater by gravity settling or filtration), and waste biological sludge (mainly consisting of bacterial cells that grow in the treatment system). Both of these waste solids streams must be removed from the liquid treatment process (generally on a daily or weekly basis), and normally are subjected to additional treatment (e.g., digestion or composting) before being disposed of or beneficially used. For small systems, the untreated waste solids may be taken by tanker truck to a larger facility that receives this type of waste. Solids handling and treatment at mechanical facilities represents a significant capital and O&M cost, and is also source of nuisance odours.

The CSRD currently operates an Organic Matter Recycling Regulation (OMRR) compliant static pile composting facility in Salmon Arm. This is a potential destination for waste solids generated from a community sewer system, if a mechanical treatment process is selected.

4.4 Reclaimed Water Use for Irrigation

4.4.1 Effluent Storage Reservoir Sizing

The minimum effluent storage volume required must accommodate one year's worth of effluent at design flows. It is recommended that capacity in excess of this be provided in case of extended unfavorable (wet) conditions during the summer when effluent irrigation would not take place. For the purposes of cost estimation the effluent storage reservoirs have been sized to hold 1.25 years' worth of effluent at design flows. Because the design flow is a summertime flow, and wastewater flows for the remainder of the year are expected to be significantly less than this, the effective storage in the reservoir is estimated to be up two years of effluent at actual flows, and this is judged to provide an adequate safety factor.

It should be noted that the provincial Municipal Wastewater Regulation (MWR) requires that an alternative method of effluent disposal be available for reclaimed water systems (see Section 3 for further detail).

4.4.2 Irrigation System

The required irrigation areas have been calculated based on a duty irrigation of 380 mm/year or 3,800 m³/hectare. During the LWMP process a number of properties in the vicinity of Shuswap Lake Estates and Balmoral expressed interest in receiving reclaimed water for irrigation, and from this it is estimated there may be 275 ha of land available for irrigation of reclaimed water.



There are no suitable irrigation areas in the vicinity of the Fredrickson Rd site, and a plant located there would need to dispose of effluent with rapid infiltration basins.

It is noted here that there are options regarding ownership of the irrigation equipment. For example, some municipalities have found that it was beneficial for them to own all the irrigation equipment initially, to encourage local farmers to take part in the scheme. Once the irrigation scheme was well developed, the municipality sold the irrigation equipment to the farmers, for a nominal amount. It is our understanding that the land in the Balmoral area is primarily used for dairy, and much of the irrigation equipment is already in place.

For the purpose of providing a preliminary capital cost estimation it has been assumed that only irrigation distribution infrastructure (lift stations and forcemain to property boundary) will be provided by the CSRD.

4.5 Rapid Infiltration and Other Alternative Disposal Means

As noted previously, the MWR requires an alternative means of effluent disposal for reclaimed water systems. This may be a ground or surface water discharge, or another system that MoE deems acceptable. In any case, it is recommended that a back-up method for disposing of effluent is allowed for, in case of prolonged unfavourable irrigation conditions or deterioration of treated effluent quality.

For Blind Bay/Sorrento, rapid infiltration basins are the preferred alternative disposal method. TM3 discusses potentially suitable locations for rapid infiltration basins in the Blind Bay and Sorrento areas. Figure 1 from TM3 which shows these locations is reproduced in Appendix B. Currently, no suitable locations in the immediate vicinity of the Shuswap Lake Estates or in the Balmoral area have been identified. A number of other potential sites for rapid infiltration are discussed in TM3, but require further investigation to confirm suitability. For the purposes of preparing cost estimates, the rapid infiltration site proposed in the LWMP, at Fredrickson Rd, has been used. There are number of issues with use of the Fredrickson Rd site for rapid infiltration:

- The site is approximately 9km away from the potential treatment sites at Shuswap Lake Estates and Balmoral, and at a difference in elevation of 35m.
- If the entire service area is to be serviced by rapid infiltration basins, the estimated capacity of the site (2,700 m³/day) would only be sufficient until around the year 2019. However, if only Sorrento is to be serviced at this site, the capacity of the site is likely to be sufficient to ultimate buildout.
- Approximately ten houses downstream of the site will be required to stop using wells for drinking water supply. It is possible for CSRD to extend the current Sorrento drinking water supply system to these properties; however, this is an additional cost that must be considered.

Although the costs for providing back-up rapid infiltration systems may be high due to the distances and changes in elevation involved, as noted in Section 3.3, there is some flexibility in the requirement for a back-up disposal system. It is proposed that for any regional treatment facility in the Balmoral area where irrigation of reclaimed water is intended, a dedicated



emergency storage reservoir, sized to hold 20 days of effluent at design flows, is provided (this is in addition to the much larger reclaimed water storage reservoirs).

4.6 Septage Handling

Septage is the waste solids from a septic tank system. It has a higher solids to liquid ratio than municipal wastewater, is much more concentrated in organic matter, heavy metals, grease and extraneous solids and is highly odorous. It has the potential to upset the treatment performance at a wastewater treatment facility if it is not designed to handle septage. There are a number of methods for dealing with septage:

- Direct application to land. Septage is mixed with chemicals to reduce pathogen count prior to land application (in trucks). A license is required to do this, which may be difficult to obtain. Requires a large land area. Odours would be a significant concern.
- Disposal at a regional wastewater treatment facility. The wastewater facility would need to be design to handle septage, which would increase the cost. Septage may be disposed directly into aerated lagoons, although this will increase the frequency with which desludging is required. Septage treatment can also be accommodated at a mechanical treatment plant, but the waste solids generation will increase.
- Composting. Dewatering of septage is required prior to being used as an additive to a composting system. The viability is dependent on the volumes of septage and other compostable material found and the ease of dewatering (which may require chemicals).
- Dewatering trenches. This involves digging long trenches in permeable soils, which allow the liquid portion of the septage to seep into the ground or evaporate. The dewatered solids can then be disposed of at an approved landfill or further stabilised and applied to land. This is a no discharge system (no permit required) but land application requires a large land area.

Whichever method is chosen, it is important that the owner/operator of the treatment system set appropriate user fees for receiving septage to cover the additional costs of treating and disposing of it.

The CSRD do not currently operate a septage handling facility in the Blind Bay/Sorrento area. There is a private septage handling facility operating in the area, however its continued future operation is uncertain.

The existing septage handling facility has a discharge permit for 910 m³/year, although we understand that the facility operates as evaporation beds and there is no discharge occurring.

An estimate of the annual volume of septage generated within the study area is summarised in Table 4.2. It is assumed that all properties in Area C not serviced by the Blind Bay/Sorrento regional wastewater treatment facility are on septic tanks and will generate septage.



Table 4.2 – Estimate of Annual Volume of Septage in Area C

PARAMETER	VALUE
2011 Census number of dwellings in Area C	4,807
Number of properties to be serviced by Blind Bay/Sorrento regional wastewater treatment facility (2011, no growth)	2,385
Nominal allowance for growth	2% per annum for 20 years
Number of dwellings to be serviced by septage handling facility (20 year design horizon)	3,600
Assumed average capacity of septic tank	4,000 L
Recommended septic tank clearing frequency	5 years
Annual volume of septage to be treated	2,880 m ³ /year

In this TM, the assumption has been made that septage will not be received at any wastewater treatment facility, largely due to the risk of undesirable material entering the wastewater treatment facility from septage trucks resulting in process disruptions. It is assumed that a dedicated septage receiving and treatment facility will be located on a separate site.

4.7 Design Criteria

The design flows for this project are discussed in detail in Section 2 of this TM. The minimum design flow values for a regional treatment facility (Options 1 and 2) are summarised in Table 4.3, and in Table 4.4 and Table 4.5 for satellite facilities (Option 3). Design values for the effluent storage reservoir and irrigation area are also given.

Table 4.3 - Design Criteria for Regional Treatment Facility

SCENARIO	NUMBER PARCELS SERVICED	WASTEWATER AVERAGE DAY FLOW	EFFLUENT STORAGE RESERVOIR VOLUME ⁵	IRRIGATION AREA
Existing Priority 1 areas	559	0.6 ML/day	274,000 m ³	58 ha
Existing Priority 1 and 2 areas	2,386	2.4 ML/day	1,095,000 m ³	231 ha
Future Priority 1 and 2 plus 20 years growth	3,920	3.3 ML/day	1,506,000 m ³	317 ha
Ultimate Buildout	8,710	7.3 ML/day	3,331,000 m ³	705 ha

⁵ Sized based on 1.25 years' worth of design flows.



Table 4.4 – Design Criteria for Sorrento Satellite Plant

SCENARIO	NUMBER PARCELS SERVICED	WASTEWATER AVERAGE DAY FLOW	EFFLUENT STORAGE RESERVOIR ⁵	IRRIGATION AREA
Existing Priority 1 areas	289	0.3 ML/day	137,000 m ³	28 ha
Existing Priority 1 and 2 areas	494	0.5ML/day	228,000 m ³	47 ha
Future Priority 1 and 2 plus 20 years growth	999	1.0 ML/day	456,000 m ³	96 ha
Ultimate Buildout	2,115	2.1 ML/day	958,000 m ³	204 ha

Table 4.5 – Design Criteria for Blind Bay and Reedman Point Satellite Plant

SCENARIO	NUMBER PARCELS SERVICED	WASTEWATER AVERAGE DAY FLOW	EFFLUENT STORAGE RESERVOIR ⁵	IRRIGATION AREA
Existing Priority 1 areas	270	0.3 ML/day	137,000 m ³	26 ha
Existing Priority 1 and 2 areas	1,892	1.9 ML/day	867,000 m ³	182 ha
Future Priority 1 and 2 plus 20 years growth	2,963	2.3 ML/day	1,049,000 m ³	225 ha
Ultimate Buildout	6,594	5.2 ML/day	2,373,000 m ³	501 ha

Table 4.6 is provided for information only at this stage. It summarises the service levels required at five year intervals up to the design horizon based on the work done in Section 2. Refer also to Table 2-6.

Table 4.6 – Design Criteria for Regional Treatment Facility by Year

SCENARIO	NUMBER PARCELS SERVICED	WASTEWATER AVERAGE DAY FLOW (ML/day)	EFFLUENT STORAGE RESERVOIR ⁵ (m ³)	IRRIGATION AREA (ha)
2009	1,920	2.4	1,095,000	222
2014	2,150	2.3	1,049,000	221
2019	2,400	2.6	1,186,000	250
2024	2,670	3.0	1,369,000	288
2029	2,960	3.3	1,506,000	317
Buildout	6,590	7.3	3,331,000	701

4.8 Preliminary Costing

Indicative costing for the options is presented in the following sections and in Appendix C. It is important to note that the costs provided are preliminary costs only and are intended to enable a relative comparison of cost between the various options.

For the sewer collection system, concept design for the pipe diameters and unit costs for the installation of sewer pipes, service connections and pump stations were developed in consultation with a local civil engineering firm, Gentech Engineering. Unit excavation costs for lagoon construction are also based on information from recent local projects.

The uncertainties present in the opinions of probable cost include:

- The location of the proposed treatment facility in the Balmoral area is to be confirmed. A conservative location has been assumed for the purposes of cost estimation. If a suitable location can be found closer to the service area, then costs may be reduced.
- The location and extent of potential reclaimed water irrigation sites is to be confirmed
- The purchase/lease arrangements need further discussion with land owners
- The layout of the collection system and sizing of lift stations may have changes in installation depth (affected by vertical realignment at crossings), or adjustments in the service area (affecting flow rate).
- Ground and soil conditions are to be confirmed. At this stage no allowance has been made for import of materials

We also note that costs for a separate septage treatment facility have not been included in the capital cost estimates. The cost of the septage facility is independent of the wastewater treatment option selected. A septage treatment facility is expected to consist of the following at a minimum:

- Land purchase
- Civil works includes public and private access roads, unloading area and fencing
- Receiving kiosk including card access module
- Screening
- Septage treatment lagoon with or without waste effluent disposal facility

A concept design has not been carried out for a septage treatment facility, but it is expected the capital cost may be in the order of \$1,000,000⁶.

4.8.1 Contingency

A contingency of 20% of construction cost has been applied to the estimates developed in this report to be consistent with the contingency level applied during the 2009 LWMP. Contingency is an allowance for unknown project costs that may become apparent during detailed design and/or construction, and should be proportional to the level of design development or design risks not yet identified.

Normally, a 20% contingency is applied for projects which are developed to approximately 30% design, whereas the present options are considered to be at more within a 10% to 15% design. However, as a measure of design risks not yet identified, this type of infrastructure generally has less risk than a more complex treatment facility with multiple process streams. On the other hand, there are unknowns at this level of design that can result in significantly higher

⁶ Assuming \$40,000 for land purchase, \$100,000 for civil works, \$50,000 for utilities, \$350,000 for kiosk and screening and \$450,000 for treatment.



costs than anticipated (e.g. difficult ground conditions, need for rock blasting, high groundwater, poor structural soils etc.). Therefore, while a more conservative contingency level of up to 40% would normally be used based strictly on the level of design development, using a 20% contingency level is still acceptable based on acceptance of that risk. It also makes the costs in this report directly comparable to the 2009 LWMP in 2013 dollars. However, it must be recognised that using the lower contingency of 20% increases the risk that the project may exceed budgeted amounts during detailed design and construction.

4.8.2 Engineering

An allowance of 15% of construction costs was applied for engineering, legal, and administration (ELA) which is the same as was used in the 2009 LWMP; a typical allowance for projects of this nature at this level of analysis.

4.9 Public Private Partnerships

Public Private Partnerships (P3s) are discussed in TM 2. They are a mechanism for project delivery, and can be applied to any of the options discussed in the following sections. If the CSRD decide to pursue a P3 delivery method, then the agreement between the parties will set out the parameters for the project including the performance specification, location, general process requirements etc.

It is important to provide sufficient detail to ensure that all of the CSRD's needs are met by the project.



5 OPTION 1 - Expansion of the Existing Sewage Treatment Facility at Shuswap Lake Estates

As discussed in TM1, expansion of the existing Shuswap Lake Estates Sewage Treatment Plant (STP) was one of two preferred options during the LWMP process. Since the LWMP, Shuswap Lake Estates (SLE) have added a third aerated lagoon and upgraded the aeration systems in the existing two lagoons. SLE estimates the current treatment capacity of the facility at 1 ML/day.

It appears the current facility operates as a no discharge system that relies on evaporation of treated effluent from a system of ponds on the golf course. It may be possible for SLE to utilise the effluent for seasonal irrigation of their golf course, but we have no information on the frequency of watering and the quantity of effluent that could be used in this manner.

5.1 Existing Capacity

The number of properties intended to be developed at Shuswap Lake Estates is currently unknown, but it is assumed that it will not exceed the capacity of the lagoons (approximately 1,000 properties). As shown in Table 5.1, treatment of this number of properties will require expansion of the storage reservoir and irrigation area.

The following is a summary of the current capacity of the SLE STP:

- Lagoon capacity is 1 ML/day
- Effluent storage reservoir capacity is 270,800 m³
- There is 44 ha of land available on the golf course for irrigation of reclaimed water.

Table 5.1 summarises further information on the Shuswap Lake Estates treatment facility.

Table 5.1 –Shuswap Lake Estates STP Flows

ITEM	PARCELS SERVICED	FLOW THROUGH AERATED LAGOONS	EFFLUENT STORAGE RESERVOIR VOLUME REQUIRED	REQUIRED IRRIGATION AREA
Current Flows	200	<0.1 ML/day	73,000 m ³	10 ha ⁷
Capacity Required to Service 1,000 Properties	1,000	1 ML/day	456,000 m ³	96 ha

5.2 Required Upgrades to Existing Plant

Although the current STP operates at well under capacity, it is not large enough to accommodate the entire Sorrento and Blind Bay service area (refer to Table 5.1 and Section 4.6) and the

⁷ Theoretically this is the irrigation area required, but currently reclaimed water is not used to irrigate the golf course

current effluent storage capacity is not adequate for a service population of this size. At some point in the future, expansion of the existing plant will be required.

It is expected that any expansion of the existing STP will take place on the current site. (Option 4 covers a situation where the SLE facility is initially used, but any expansion occurs offsite). From the LWMP, the proposed expansion of the treatment facility consists of:

- Addition of a primary fine screen filter (Salsnes filter)
- Addition of mechanical treatment process train - rotating biological contactor (RBC) units
- Upgrade/replacement of existing mechanical and electrical equipment as required
- Addition of septage handling facility
- Provision of additional effluent storage capacity
- Irrigation distribution system
- Provision of alternative means of effluent disposal (emergency storage reservoir)
- A Management Plan for primary and biological waste solids generated at the treatment plant will be required prior to commissioning.

There is little room for expansion of the existing storage reservoir on the existing site. When additional storage is required a new effluent storage reservoir would have to be constructed (assumed to be close by in the Balmoral area).

Local residents have previously raised concerns about the structural stability of the dam and aerated lagoons at the Shuswap Lake Estates facility. It is recommended that a geotechnical investigation be carried out to assess the stability to the storage reservoir and aerated lagoons. Ideally this would take place before any further costing/design was to take place, but must take place before a final decision on options takes place. A geotechnical investigation would cost in the order of \$50,000.

Providing an alternative means of disposal at this site is also problematic. There are no suitable areas for ground disposal of effluent using rapid infiltration in the vicinity, nor is there sufficient space on site to accommodate an emergency storage reservoir. Additional effluent storage to the existing is required to service priority 1 areas, so it is recommended that the existing storage reservoir be converted into emergency storage, and a new effluent storage reservoir be constructed offsite. The existing storage reservoir will provide approximately 450 days of emergency storage at priority 1 flows and 80 days at priority 1 and 2 plus growth flows.

There is little room to house a separate septage handling facility on the existing site. There are two options for dealing with septage for this option;

- Construct a separate septage handling facility offsite, likely in the Balmoral area. This would allow dewatering trenches or another low technology method of dewatering and disposing of septage to be utilised
- The existing lagoon system is too small to handle septage. Therefore septage could only be accepted once the mechanical treatment plant is constructed. This will require the capacity of this equipment to increase, and would further increase the amount of waste solids produced in the mechanical treatment process. It is noted that odour risk for the plant neighbours will be increased if septage is received at the site.



5.3 Phased Expansion of Shuswap Lake Estates STP

There is sufficient capacity in the aerated and lagoons and effluent storage reservoir at the SLE STP to accommodate the priority 1 area from the LWMP, plus 300 additional SLE properties on top of the properties already serviced. However, the irrigation area available at the golf course is insufficient to reuse all of the effluent. Table 5.2 summarises the actions required at phase 1 and 2.

Table 5.2 – Phasing for Option 1

COMPONENT	PHASE 1	PHASE 2
Collection and Transmission	Construction of collection system for priority 1 areas and connection to existing Shuswap Lake Estates STP	Construction of a collection system for priority 2 areas and connection to existing collection system
Treatment	Purchase of Shuswap Lake Estates STP	Expansion of Shuswap Lake Estates treatment facility including addition of screening and RBC units
Storage	Construction of new effluent storage reservoir in Balmoral area (provides ¼ total storage) Convert existing effluent storage reservoir into emergency storage reservoir	Construction of additional of effluent storage reservoirs to meet total storage requirements
Disposal	Preparation of a minimum of 20 hectares of additional irrigation area (plus golf course)	Preparation of additional irrigation areas (approximately 250 ha)

It is noted that although the existing SLE facility has sufficient capacity to service priority 1 areas, there is insufficient effluent storage available.

Option 1 utilises existing infrastructure, avoids the operation of two parallel sewer systems in the area and provides for the earliest installation of a sewer system for the community. The location of the site is also favourable for effluent reuse. There are, however, a number of potential issues with this option, which are outlined below:

- There are concerns over the structural stability of the dam and lagoon structures. These need to be investigated and proved sound before CSRD can confirm they would be willing to take over this facility
- The limited space available for expansion of the existing treatment facility means that a mechanical treatment process must be used to provide additional capacity.
- The use of mechanical treatment facilities (primary screen filter and RBC units) will generate waste primary and secondary solids, which will require additional treatment (solids digestion or composting) as well as a beneficial biosolids reuse programme.

- There is no space available on the site for an additional effluent storage reservoir. This will most likely be located in the nearby Balmoral area.
- There are no locations in the vicinity that are suitable for rapid infiltration. The closest sites are several kilometres away and at significantly greater elevations. There is no space available on the site for a basin designed for short term storage of effluent that does not meet reclaimed water standards except for the existing storage basins which are currently used for treated effluent. Emergency storage reservoirs may satisfy the requirement for an alternative disposal system but there is a residual risk that in the event of an extended period where reclaimed water standards are not being met by the treatment process there is no facility to deal with excess sewage.
- The existing facility is located within a residential area and has received complaints regarding odours in the past. Expansion of the facility and addition of mechanical treatment processes and waste solids handling will worsen the odour problem.
- CSRD would need to come to an agreement with Shuswap Lake Estates

5.4 Configuration of System and Cost Estimate

The configuration of the system under Option 1 is shown in Figure 5.1. The preliminary capital cost estimate for this option is summarised in Table 5.3. A breakdown of the cost estimate is provided in Appendix C.

Table 5.3 – Preliminary Capital Cost Estimate for Option 1 (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.01	\$24.83
Transmission	\$2.02	-	\$2.02
Treatment	\$3.00	\$4.19	\$7.19
Storage	\$4.74	\$5.93	\$10.67
Disposal	\$0.74	\$0.45	\$1.19
Subtotal	\$15.31	\$30.58	\$45.90
Contingency & ELA	\$5.36	\$10.70	\$16.06
Total	\$20.67	\$41.29	\$61.96

Placeholder page for Figure 5.1



6 OPTION 2 – New Regional Facility at Balmoral

As discussed in TM1, construction of a new regional treatment facility in the Balmoral area was the preferred option at Stage 3 of the LWMP process. Much of the land in the Balmoral area is administered by the ALC, who have offered to negotiate with the CSRD over purchase/lease of land for the purpose of situating a regional treatment facility. Note that the location is not necessarily the same as presented in TM1 (in the rail loop). The ALC would like the wastewater facility to be constructed on the least desirable agricultural land in the area.

A community sewer system under this option is expected to consist of the following:

- Collection system and transfer to treatment facility
- Partial-mix aerated lagoons for wastewater treatment and chlorination for irrigation.
- Effluent storage reservoir
- Irrigation distribution system
- Septage receiving and handling
- Provision of an alternative means of effluent disposal (emergency storage reservoir)

Refer to Section 4 for additional discussion on the effluent storage reservoir sizing, and the irrigation and rapid infiltration systems.

The treatment plant and effluent storage reservoir are expected to be located in the Balmoral area. There are no suitable sites for rapid infiltration in the vicinity of the Balmoral area. It is proposed that an alternative means of disposal is provided by way of emergency storage reservoir located on the treatment plant site.

Table 6.1 summarises the anticipated phasing that would occur for this option.

Table 6.1 – Phasing for Option 2

COMPONENT	PHASE 1	PHASE 2
Collection and Transmission	Construction of collection system for priority 1 areas in Sorrento and Blind Bay	Construction of collection system for priority 2 areas
Treatment	Construction of new partial-mix aerated lagoon treatment facility at Balmoral	Expansion of aerated lagoon treatment facility
Storage	Construction of new effluent storage reservoir Construction of emergency storage reservoir	Construction of additional of effluent storage reservoirs to meet total storage requirements Construction of additional emergency storage reservoir
Disposal	Preparation of initial irrigation area	Preparation of additional irrigation area

Option 2 was a preferred option in the LWMP. It has the advantages of providing a purpose built facility on a dedicated site with plenty of room. The amount of space available means that low maintenance aerated lagoons can be used as a treatment process, and that all elements of the facility, including treatment processes, effluent storage, septage handling and irrigation distribution can be located on the same site. The location is also favourable for effluent reuse and is within an agricultural area, reducing the number of immediate neighbours and potential odour complaints. There are, however, a number of potential issues with this option, which are outlined below:

- There are no locations in the vicinity that are suitable for rapid infiltration. The closest sites are several kilometres away and at significantly greater elevations. Emergency storage reservoirs may satisfy the requirement for an alternative disposal system but there is a residual risk that in the event of an extended period where reclaimed water standards are not being met by the treatment process there is no facility to deal with excess sewage.
- It will create two parallel treatment facilities in the area (the other being SLE) and does not utilise the available existing infrastructure.

6.1 Configuration of System and Cost Estimate

The configuration of the system under Option 2 is shown in Figure 6.1. The preliminary capital cost estimate for this option is summarised in Table 6.2. A breakdown of the cost estimate is provided in Appendix C.

Table 6.2 – Preliminary Capital Cost Estimate for Option 2 (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.01	\$24.83
Transmission	\$2.58	-	\$2.58
Treatment	\$5.20	\$2.13	\$7.33
Storage	\$2.93	\$6.26	\$9.18
Disposal	\$0.63	\$0.45	\$1.08
Subtotal	\$16.15	\$28.85	\$45.00
Contingency & ELA	\$5.65	\$10.10	\$15.75
Total	\$21.80	\$38.95	\$60.74

Placeholder page for Figure 6.1



7 OPTION 3 – Satellite Plants for Sorrento and Blind Bay

Separate “satellite” plants were also discussed as part of the LWMP process and were described in TM1. Construction of satellite plants for Sorrento, Blind Bay and Reedman point were not considered preferred options at Stage 3 of the LWMP process. Creating two separate service areas offers greater flexibility in the phasing. Six similar options are presented here and are summarised in Table 7.1. The options involve two potential locations for the satellite treatment facility for Blind Bay/Reedman Point, and three phasing options.

Table 7.1 – Summary of Satellite Treatment Plant Options

OPTION	SORRENTO SATELLITE TREATMENT FACILITY	BLIND BAY SATELLITE TREATMENT FACILITY	PHASING
3a	Fredrickson Road	Shuswap Lake Estates	Priority 1 areas serviced at phase 1 and remaining areas at phase 2
3b	Fredrickson Road	Shuswap Lake Estates	Sorrento serviced at phase 1 and Blind Bay/Reedman Point serviced at phase 2.
3c	Fredrickson Road	Balmoral area	Priority 1 areas serviced at phase 1 and remaining areas at phase 2
3d	Fredrickson Road	Balmoral area	Sorrento serviced at phase 1 and Blind Bay/Reedman Point serviced at phase 2.
3e	Fredrickson Road	Fredrickson Road / Shuswap Lake Estates	Priority 1 areas serviced at Fredrickson Rd at Phase 1. At phase 2 Blind Bay effluent is diverted to a new treatment facility at Shuswap Lake Estates
3f	Fredrickson Road	Fredrickson Road / Balmoral area	Priority 1 areas serviced at Fredrickson Rd at Phase 1. At phase 2 Blind Bay effluent is diverted to a new treatment facility in the Balmoral area

The Sorrento Satellite facility will consist of screening and partial-mix aerated lagoons, and disposal will be via rapid infiltration basins. There is to be no effluent storage at this site. The Blind Bay Satellite facility will either be similar to Option 1 or Option 2, whichever is relevant. Tables 7.2 to 7.7 provide a more detailed summary of the six options.

Table 7.2 – Outline of Option 3a (Treatment Facilities at Fredrickson Rd and SLE, Phased by Priority Area)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	Shuswap Lake Estates	Fredrickson Rd

Phase 1	<ul style="list-style-type: none"> • Collection system for priority 1 area in Blind Bay constructed and connected to SLE • Existing storage reservoir utilised • New emergency storage reservoir constructed in the Balmoral area • Preparation of irrigation area 	<ul style="list-style-type: none"> • Collection system for priority 1 area in Sorrento constructed • New partial-mix aerated lagoon treatment facility constructed • Rapid infiltration basins constructed
Phase 2	<ul style="list-style-type: none"> • Collection system for priority 2 areas in Blind Bay and Reedman Point • Expansion of existing treatment facility by addition of screening and RBC units • New effluent storage reservoir constructed in the Balmoral area • Expansion of irrigation area 	<ul style="list-style-type: none"> • Collection system for priority 2 area in Sorrento • Expansion of lagoon system • Expansion of rapid infiltration area

Table 7.3 – Outline of Option 3b (Treatment Facilities at Fredrickson Rd and SLE, Phased by Geographical Area)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	Shuswap Lake Estates	Fredrickson Rd
Phase 1	<ul style="list-style-type: none"> • No action 	<ul style="list-style-type: none"> • Collection system for entire Sorrento area constructed • New partial-mix aerated lagoon treatment facility constructed • New rapid infiltration basins constructed
Phase 2	<ul style="list-style-type: none"> • Collection system for entire Blind Bay/Reedman Point area constructed • Expansion of existing treatment facility by addition of screening and RBC units • New effluent storage reservoir constructed in the Balmoral area • New emergency storage reservoir constructed in the Balmoral area • Preparation of irrigation area 	<ul style="list-style-type: none"> • No action



Table 7.4 – Outline of Option 3c (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Phased by Priority Area)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	In Balmoral area	Fredrickson Rd
Phase 1	<ul style="list-style-type: none"> Collection system for priority 1 area in Blind Bay constructed New partial-mix aerated lagoon treatment facility constructed New effluent storage reservoir constructed New emergency storage reservoir constructed Preparation of irrigation area 	<ul style="list-style-type: none"> Collection system for priority 1 area in Sorrento constructed New partial-mix aerated lagoon treatment facility constructed New rapid infiltration basins constructed
Phase 2	<ul style="list-style-type: none"> Collection system for priority 2 areas in Blind Bay and Reedman Point constructed Expansion of lagoon system Additional effluent storage reservoirs constructed Additional emergency storage reservoirs constructed Preparation of additional irrigation area 	<ul style="list-style-type: none"> Collection system for priority 2 area in Sorrento constructed Expansion of lagoon system Expansion of rapid infiltration area

Table 7.5 – Outline of Option 3d (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Phased by Geographical Area)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	In Balmoral area	Fredrickson Rd
Phase 1	<ul style="list-style-type: none"> No Action 	<ul style="list-style-type: none"> Collection system for entire Sorrento area constructed New partial-mix aerated lagoon treatment facility constructed New rapid infiltration basins constructed
Phase 2	<ul style="list-style-type: none"> Collection system for entire Blind Bay/Reedman Point area constructed New partial-mix aerated lagoon treatment facility constructed 	<ul style="list-style-type: none"> No action



	<ul style="list-style-type: none"> • New effluent storage reservoir constructed • New emergency storage reservoir constructed • Preparation of irrigation area 	
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Table 7.6 – Outline of Option 3e (Treatment Facilities at Fredrickson Rd and at Shuswap Lake Estates, Priority 1 areas initially serviced at Fredrickson Rd)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	Phase 1 – Fredrickson Road Phase 2 - Shuswap Lake Estates	Fredrickson Rd
Phase 1	<ul style="list-style-type: none"> • Collection system for priority 1 area in Blind Bay constructed and connected to Fredrickson Rd treatment facility 	<ul style="list-style-type: none"> • Collection system for priority 1 area in Sorrento constructed • New partial-mix aerated lagoon treatment facility constructed • New rapid infiltration basins constructed
Phase 2	<ul style="list-style-type: none"> • Collection system for priority 2 areas in Blind Bay and Reedman Point constructed • Sewage from existing priority 1 area diverted to SLE treatment facility • Expansion of existing treatment facility by addition of screening and RBC units • New effluent storage reservoir constructed in the Balmoral area • Preparation of irrigation area 	<ul style="list-style-type: none"> • Collection system for priority 2 area in Sorrento constructed • Expansion of lagoon system • Expansion of rapid infiltration area

Table 7.7 – Outline of Option 3f (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Priority 1 areas initially serviced at Fredrickson Rd)

AREA	BLIND BAY AND REEDMAN POINT	SORRENTO
Treatment Facility Location	Phase 1 – Fredrickson Road Phase 2 - In Balmoral area	Fredrickson Rd
Phase 1	<ul style="list-style-type: none"> • Collection system for priority 1 area in Blind Bay constructed and connected to Fredrickson Rd treatment facility 	<ul style="list-style-type: none"> • Collection system for priority 1 area in Sorrento constructed • New partial-mix aerated lagoon treatment facility constructed • New rapid infiltration basins constructed



Phase 2	<ul style="list-style-type: none"> • Collection system for priority 2 areas in Blind Bay and Reedman Point constructed • Sewage from existing priority 1 area diverted to new Balmoral area treatment facility • New partial-mix aerated lagoon treatment facility constructed • New effluent storage reservoir constructed • New emergency storage reservoir constructed • Preparation of irrigation area 	<ul style="list-style-type: none"> • Collection system for priority 2 area in Sorrento constructed • Expansion of lagoon system • Expansion of rapid infiltration area
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Refer to Section 4 for additional discussion on the effluent storage reservoir sizing, and the irrigation and rapid infiltration systems. The design criteria for these satellite plants is set out in Section 4.6.

The lack of a suitable location for rapid infiltration basins in the Balmoral area remains an issue for the Blind Bay community in this option. Instead an emergency storage reservoir will be constructed for the Blind Bay Satellite facility.

The Fredrickson Road site has been considered since the 2002 LWMP by Urban Systems. If one of these options is chosen for further consideration, it is recommended that the extent of the site is checked. Discussions with the owners indicate that use of the site is still possible. Disposal of effluent using rapid infiltration at this site may require neighbouring properties that have groundwater wells to be connected to the Sorrento water supply system. There are approximately 10 properties that may be affected and an allowance of \$15,000 per property has been included in the cost estimates for this purpose.

The use of satellite treatment facilities was not a preferred option in the LWMP. We have considered it in this TM because of the increased flexibility it provides in phased construction of a community sewer system, and the opportunity it provides to utilise existing infrastructure (at SLE), irrigations areas (in Balmoral) and disposal sites (at Fredrickson Rd). There are, however, a number of potential issues with this option, which are outlined below:

- Many of the issues associated with Options 1 and/or 2 remain. Blind Bay is still faced with the problem of an alternative method of effluent disposal, and issues around ownership, space and safety of the SLE facility also remain.
- It will create two or three parallel treatment facilities in the area.
- There will be increased operating and maintenance costs associated with running two separate plants.
- From a funding perspective, it is not clear whether this can be packaged in a way that grant money for both satellite plants can be obtained.



7.1 Configuration of System and Cost Estimate

The configuration of the system under Option 3 is shown in Figures 7.1 and 7.2. The preliminary capital cost estimates for this option are summarised in Tables 7.8 – 7.13. A breakdown of the cost estimates is provided in Appendix C.

Table 7.8 – Preliminary Capital Cost Estimate for Option 3a (Treatment Facilities at Fredrickson Rd and SLE, Phased by Priority Area) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.96	\$25.78
Transmission	\$2.66	-	\$2.66
Treatment	\$5.43	\$4.12	\$9.55
Storage	\$2.46	\$5.47	\$7.92
Disposal	\$1.40	\$0.97	\$2.38
Subtotal	\$16.77	\$31.52	\$48.29
Contingency & ELA	\$5.87	\$11.03	\$16.90
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$22.78	\$42.56	\$65.34

Table 7.9 – Preliminary Capital Cost Estimate for Option 3b (Treatment Facilities at Fredrickson Rd and SLE, Phased by Geographical Area) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$7.03	\$18.75	\$25.78
Transmission	\$1.59	\$1.07	\$2.66
Treatment	\$3.16	\$6.39	\$9.55
Storage	-	\$7.82	\$7.82
Disposal	\$1.19	\$1.19	\$2.38
Subtotal	\$12.97	\$35.22	\$48.18
Contingency & ELA	\$4.54	\$12.33	\$16.87
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$17.65	\$47.55	\$65.20



Table 7.10 – Preliminary Capital Cost Estimate for Option 3c (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Phased by Priority Area) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.96	\$25.78
Transmission	\$3.22	-	\$3.22
Treatment	\$6.78	\$2.29	\$9.08
Storage	\$2.01	\$4.74	\$6.74
Disposal	\$0.66	\$1.60	\$2.26
Subtotal	\$17.49	\$29.59	\$47.09
Contingency & ELA	\$6.12	\$10.36	\$16.48
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$23.77	\$39.95	\$63.72

Table 7.11 – Preliminary Capital Cost Estimate for Option 3d (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Phased by Geographical Area) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$7.03	\$18.75	\$25.78
Transmission	\$1.59	\$1.63	\$3.22
Treatment	\$3.16	\$5.34	\$8.50
Storage	-	\$6.55	\$6.55
Disposal	\$1.19	\$1.08	\$2.26
Subtotal	\$12.97	\$33.35	\$46.31
Contingency & ELA	\$4.54	\$11.67	\$16.21
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$17.65	\$45.02	\$62.67



Table 7.12 – Preliminary Capital Cost Estimate for Option 3e (Treatment Facilities at Fredrickson Rd and at Shuswap Lake Estates, Priority 1 areas initially serviced at Fredrickson Rd) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.96	\$25.78
Transmission	\$2.56	\$1.07	\$3.62
Treatment	\$2.79	\$6.76	\$9.55
Storage	-	\$7.82	\$7.82
Disposal	\$1.19	\$1.18	\$2.38
Subtotal	\$11.35	\$37.79	\$49.15
Contingency & ELA	\$3.97	\$13.23	\$17.20
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$15.48	\$51.02	\$66.50

Table 7.13 – Preliminary Capital Cost Estimate for Option 3f (Treatment Facilities at Fredrickson Rd and in Balmoral Area, Priority 1 areas initially serviced at Fredrickson Rd) (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.96	\$25.78
Transmission	\$2.56	\$1.63	\$4.19
Treatment	\$2.79	\$5.70	\$8.50
Storage	-	\$6.55	\$6.55
Disposal	\$1.19	\$1.08	\$2.26
Subtotal	\$11.35	\$35.92	\$47.28
Contingency & ELA	\$3.97	\$12.57	\$16.55
Allowance for connections to Sorrento water supply	\$0.15	-	\$0.15
Total	\$15.48	\$48.50	\$63.97



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Placeholder page for Figure 7.2



8 OPTION 4 – Hybrid Regional Option

Option 4 is a combination of Options 1 and 2. The concept is to utilise SLE as an interim solution so that a community sewer system is operational as soon as possible. Once capacity is reached at SLE, rather than spend money expanding that system which has limited space available, CSRD will invest in a new, purpose built regional facility in the Balmoral area, which is designed to service the entire area. At that point, the SLE treatment facility can be:

- Returned to Shuswap Lake Estates for their own private use
- Kept running as a parallel system, either for exclusive SLE use, or for the wider community
- Decommissioned

Table 8.1 summarises the anticipated phasing that would occur for this option.

Table 8.1 – Phasing for OPTION 4

COMPONENT	PHASE 1	PHASE 2
Collection and Transmission	Construction of collection system for priority 1 areas in Blind Bay and Sorrento and connection to existing Shuswap Lake Estates STP	Construction of collection system for priority 2 areas
Treatment	No action	Construction of new partial-mix aerated lagoon treatment facility in Balmoral area Disconnection (permanent or temporary) of SLE
Storage	Construction of new effluent storage reservoir in Balmoral area Construction of new emergency storage reservoir in Balmoral area	No action
Disposal	Preparation of a minimum of 20 hectares of additional irrigation area (plus golf course)	Preparation of irrigation area

Option 4 has the benefit from Option 1 that a community sewer system can be up and running as soon as possible using existing infrastructure, and for a lower initial capital cost. It then avoids the complications of trying to expand SLE to fit the needs of the entire community, instead a purpose built, low maintenance facility will be built on land with plenty of space and excellent effluent reuse potential. There will still be some issues with this Option including:

- The structural issues associated with the SLE reservoir and lagoons still need to be addressed



- Agreement needs to be reached with SLE
- There are no locations in the vicinity that are suitable for rapid infiltration. The closest sites are several kilometres away and at significantly greater elevations. Emergency storage reservoirs may satisfy the requirement for an alternative disposal system but there is a residual risk that in the event of an extended period where reclaimed water standards are not being met by the treatment process there is no facility to deal with excess sewage.
- It may (depending on how SLE is utilised) create two parallel treatment facilities in the area in the long term

8.1 Configuration of System and Cost Estimate

The configuration of the system under Option 4 is shown in Figure 8.1. The preliminary capital cost estimate for this option is summarised in Table 8.2. A breakdown of the cost estimate is provided in Appendix C.

Table 8.2 – Preliminary Capital Cost Estimate for Option 4 (\$million)

COMPONENT	PHASE 1	PHASE 2	TOTAL
Collection system	\$4.82	\$20.01	\$24.83
Transmission	\$2.02	\$0.96	\$2.98
Treatment	\$3.19	\$7.53	\$10.72
Storage	\$2.77	\$6.21	\$8.97
Disposal	\$0.63	\$0.45	\$1.08
Subtotal	\$13.42	\$35.16	\$48.58
Contingency	4.70	\$12.31	\$17.00
Total	\$18.12	\$47.47	\$65.58

Placeholder page for figure 8.1



9 Summary of Preliminary Options

Based on the preliminary evaluation of options presented in Sections 5-8 it was decided not to carry out any further evaluation of Options 3b, 3d or 4. Options 3b and 3d involve servicing Sorrento prior to Blind Bay and it is considered that this does not meet the objectives of the project to provide a community sewer system. Option 4, like Options 3b and 3d, is significantly more expensive than the other proposed options.

9.1 Summary of Total Capital Costs

The preliminary capital cost estimate for the options is summarised in Table 9.1. A breakdown of costs is provided in Appendix C. There are a number of differences between the LWMP options and the options in this TM to be aware of when comparing the capital cost estimates including, but not limited to, the following:

- The design flows used to size the components in this TM are nearly 40% higher than those used in the LWMP. The design flows used in this TM account for the final OCP.
- The LWMP assumed that there would be rapid infiltration basins used for all options. For the options in this TM, treatment facilities in the Blind Bay area do not dispose to rapid infiltration, instead additional effluent and emergency storage is to be provided
- No allowance was made for irrigation pipework in the LWMP

For all options, the construction of a collection system makes up the largest proportion of costs in the order of 40% of the total capital cost. The next most expensive components are treatment and storage.

Table 9.1 – Summary of Preliminary Capital Cost Estimates (\$million)

OPTION	DESCRIPTION	PHASE 1	PHASE 2	TOTAL
1	Expansion of existing Shuswap Lake Estates treatment facility	\$20.67	\$41.29	\$61.96
2	New regional treatment facility in Balmoral area	\$21.80	\$38.95	\$60.74
3	Satellite treatment facility for Sorrento at Fredrickson Rd and for Blind Bay at either Shuswap Lake Estates or Balmoral			
3a	Blind Bay STP at Shuswap Lake Estates, priority 1 areas serviced at phase 1, priority 2 areas at phase 2	\$22.78	\$42.56	\$65.34
3c	Blind Bay STP in Balmoral area, priority 1 areas serviced at phase 1, priority 2 areas at phase 2	\$23.77	\$39.95	\$63.72
3e	Blind Bay STP at Shuswap Lake Estates, priority 1 areas in Sorrento and Blind Bay initially serviced at Fredrickson Rd	\$15.48	\$51.02	\$66.50
3f	Blind Bay STP in Balmoral area, priority 1 areas in Sorrento and Blind Bay initially serviced at Fredrickson Rd	\$15.48	\$48.50	\$63.97

Cost estimates for two options similar to Option 1 and Option 2 were completed during the LWMP process. The cost estimates for these options, updated to 2013 using the Engineering News Record (ENR) Construction Cost Index, are summarised in Table 9.2.

Table 9.2 – Summary of Cost Estimates from LWMP (Updated to 2013)

LWMP OPTION	DESCRIPTION	PHASE 1	PHASE 2	TOTAL
D	Shuswap Lake Estates Regional Facility	\$17.0	\$48.8	\$65.8
F	Balmoral Regional Facility	\$32.2	\$38.5	\$70.6

Table 9.1 shows that several options provide phase 1 capital costs in the same range as those in the LWMP. In particular options 3e, and 3f have phase 1 capital costs less than \$20 million. This is largely because in these cases the construction of a treatment facility (and the associated reservoirs) for Blind Bay are delayed until phase 2.

9.2 Cost Allocation

When there is phased implementation of a system, consideration must be given to the application of the parcel tax to unserved residents within a defined service area. Uniform application of the parcel tax across the entire service area is problematic as not all households will receive service at the same time.

One approach is to assign user fees only to those residents within the service area who are connected. Another approach is to collect user fees from everyone in the service area whether they are serviced or not to improve affordability. Finally, there can be a split of the costs so there is a balance between affordability (more users are taxed) and fairness (fewer users are taxed). For the purposes of comparing options, two cost breakdowns have been considered:

- Method A - Costs are divided only amongst those users receiving service at that phase.
- Method B - Costs are apportioned amongst the entire service area. Households that receive service (at phase 1) pay a larger proportion than those that do not. The remaining users pay additional fees when they receive service (at phase 2).

Details of both methods are summarised in Table 9.3. Other models are possible and can be studied when a preferred option is selected.



Table 9.3 – Proposed Cost Breakdown Methods

COST ELEMENT	METHOD A		METHOD B	
	HOUSEHOLDS SERVICED IN PHASE 1	HOUSEHOLDS SERVICED IN PHASE 2	HOUSEHOLDS SERVICED IN PHASE 1	HOUSEHOLDS SERVICED IN PHASE 2
Phase 1 Capital	100%	0%	60%	40% ⁸
Phase 1 O&M	100%	0%	100%	0%
Phase 2 Capital	0%	100%	0%	100%
Phase 2 O&M	Split equally per parcel		Split equally per parcel	

9.3 Household Costs

This section shows costs per parcel for capital costs, service connections and operation and maintenance costs.

9.3.1 Infrastructure Capital Cost

Total capital cost is amortised as an annual cost assuming the following criteria:

- 2/3 Government funding received
- Interest rate 4% per annum
- Amortisation period 20 years

The community sewer system is sized to service more properties than currently exist within the service area (to allow for growth). The current (existing) number of parcels is used to determine the amortised annual cost per parcel. This will give a realistic, if conservative, idea of the cost to the community of establishing a sewer system. At a later date the CSRD will need to establish a protocol for dealing with latecomers to the system⁹. The relevant parcel numbers are summarised in Table 9.4.

Table 9.4 – Parcel Numbers for Annual Household Cost Calculations

DESCRIPTION	NUMBER OF PARCELS
Priority 1 - households serviced at phase 1	559
Priority 2 - households serviced at phase 2	1827

The amortised annual costs per parcel (proposed parcel tax) for each cost breakdown method (refer Section 9.2) of is summarised in Table 9.5 and Table 9.6.

⁸ Covers sizing and construction of collection system.

⁹ There are an estimated 1,576 additional future parcels that will be created within the service area in the next 20 years



Table 9.5 – Amortised Annual Costs per Parcel – Cost Breakdown Method A

OPTION	TOTAL CAPITAL COST (\$million)		AMORTISED ANNUAL COST PER PARCEL (assuming 2/3 funding)			
	PHASE 1	PHASE 2	PHASE 1		PHASE 2	
			PRIORITY 1	PRIORITY 2	PRIORITY 1	PRIORITY 2
1	\$20.67	\$41.29	\$907	\$0	\$0	\$554
2	\$21.80	\$38.95	\$957	\$0	\$0	\$523
3a	\$22.78	\$42.56	\$1,000	\$0	\$0	\$571
3c	\$23.77	\$39.95	\$1,043	\$0	\$0	\$536
3e	\$15.48	\$51.02	\$679	\$0	\$0	\$685
3f	\$15.48	\$48.50	\$679	\$0	\$0	\$651

Table 9.6 – Amortised Annual Costs per Parcel – Cost Breakdown Method B

OPTION	TOTAL CAPITAL COST (\$million)		AMORTISED ANNUAL COST PER PARCEL (assuming 2/3 funding)			
	PHASE 1	PHASE 2	PHASE 1		PHASE 2	
			PRIORITY 1	PRIORITY 2	PRIORITY 1	PRIORITY 2
1	\$20.67	\$41.29	\$635	\$83	\$0	\$554
2	\$21.80	\$38.95	\$670	\$88	\$0	\$523
3a	\$22.78	\$42.56	\$700	\$92	\$0	\$571
3c	\$23.77	\$39.95	\$730	\$96	\$0	\$536
3e	\$15.48	\$51.02	\$475	\$62	\$0	\$685
3f	\$15.48	\$48.50	\$475	\$62	\$0	\$651

9.3.2 Service Connections

In addition to the annual cost, residents receiving service will also be required to pay a one time service connection cost for the portion of infrastructure located on their own property. The estimated service connection cost is \$5,000 including decommissioning of existing septic tanks. The estimated additional cost for a pumped service connection if required is \$500.

9.3.3 Operations and Maintenance

Operation and maintenance costs cover the costs of the system operator, chemical, energy and other consumables costs, repairs and replacements and other costs related to the operation of the system. The estimated O&M costs for a community sewer system for Blind Bay and Sorrento are summarised in Table 9.7 and Table 9.8. The main assumptions are:

- For Options 1, 2 and 4 operator costs are based on the assumption that a halftime commitment is required at phase 1 and a fulltime commitment at phase 2. For Option 3 it is assumed that a three quarter time commitment is required at phase 1 and a one and a half time commitment at phase 2.
- Electricity costs are based on a rate of 6 cents/kWh.
- Annual maintenance costs are assumed to be 3% of the total mechanical equipment costs.

Table 9.7 – Phase 1 Annual Operation and Maintenance Cost Estimate

OPTION	ANNUAL OPERATOR COST	ANNUAL POWER COST	ANNUAL MAINTENANCE COST	TOTAL ANNUAL O&M COST	ANNUAL O&M COST PER PARCEL
1	\$30,000	\$6,000	\$78,000	\$114,000	\$204
2	\$30,000	\$3,000	\$122,000	\$155,000	\$277
3a	\$45,000	\$8,000	\$111,000	\$164,000	\$293
3c	\$45,000	\$4,000	\$143,000	\$192,000	\$343
3e	\$45,000	\$4,000	\$89,000	\$138,000	\$247
3f	\$45,000	\$4,000	\$89,000	\$138,000	\$247

Table 9.8 – Phase 2 Annual Operation and Maintenance Cost Estimate

OPTION	ANNUAL OPERATOR COST	ANNUAL POWER COST	ANNUAL MAINTENANCE COST	TOTAL ANNUAL O&M COST	ANNUAL O&M COST PER PARCEL
1	\$60,000	\$6,000	\$263,000	\$299,000	\$125
2	\$60,000	\$12,000	\$207,000	\$249,000	\$104
3a	\$90,000	\$12,000	\$313,000	\$370,000	\$155
3c	\$90,000	\$21,000	\$256,000	\$322,000	\$135
3e	\$90,000	\$18,000	\$325,000	\$388,000	\$163
3f	\$90,000	\$18,000	\$262,000	\$325,000	\$136

9.3.4 Combined Costs

The combined costs payable by each household is summarised in Tables 9.8 – 9.11, assuming a two thirds Government grant is received for the infrastructure capital costs. For an explanation of the cost breakdown methods refer to Section 9.2. Note that the parcel tax is an annual fee repaid to the CSRD over a fixed term, the service connection fee is once off and the operations and maintenance cost is an annual fee.



Table 9.9 –Costs per Household for a Community Sewer System at Phase 1 – Cost Breakdown Method A

HOUSEHOLD	COST	OPTION					
		1	2	3a	3c	3e	3f
Priority 1 Households	Amortised Annual Cost	\$907	\$957	\$1,000	\$1,043	\$679	\$679
	O&M	\$204	\$277	\$293	\$353	\$247	\$247
	Subtotal	\$1,111	\$1,234	\$1,293	\$1,386	\$926	\$926
	Service Connection	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Priority 2 Households	Amortised Annual Cost	\$-	\$-	\$-	\$-	\$-	\$-
	O&M	\$-	\$-	\$-	\$-	\$-	\$-
	Subtotal	\$-	\$-	\$-	\$-	\$-	\$-
	Service Connection	\$-	\$-	\$-	\$-	\$-	\$-

Table 9.10 –Costs per Household for a Community Sewer System at Phase 2 – Cost Breakdown Method A

HOUSEHOLD	COST	OPTION					
		1	2	3a	3c	3e	3f
Priority 1 Households	O&M and Remaining Amortized Capital	Priority 1 households continue to pay O&M costs, plus any remaining amortised capital costs from Phase 1					
Priority 2 Households	Amortised Annual Cost	\$554	\$523	\$571	\$536	\$685	\$651
	O&M	\$125	\$104	\$155	\$135	\$163	\$136
	Subtotal	\$680	\$627	\$726	\$671	\$848	\$787
	Service Connection	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000



Table 9.11 –Costs per Household for a Community Sewer System at Phase 1 – Cost Breakdown Method B

HOUSEHOLD	COST	OPTION					
		1	2	3a	3c	3e	3f
Priority 1 Households	Amortised Annual Cost	\$635	\$670	\$700	\$730	\$475	\$475
	O&M	\$204	\$277	\$293	\$343	\$247	\$247
	Subtotal	\$839	\$947	\$993	\$1,073	\$722	\$722
	Service Connection	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Priority 2 Households	Amortised Annual Cost	\$83	\$88	\$92	\$93	\$62	\$62
	O&M	\$-	\$-	\$-	\$-	\$-	\$-
	Subtotal	\$83	\$88	\$92	\$93	\$62	\$62
	Service Connection	\$-	\$-	\$-	\$-	\$-	\$-

Table 9.12 –Costs per Household for a Community Sewer System at Phase 2 – Cost Breakdown Method B

HOUSEHOLD	COST	OPTION					
		1	2	3a	3c	3e	3f
Priority 1 Households	O&M and Remaining Amortized Capital	Priority 1 households continue to pay O&M costs, plus any remaining amortised capital costs from Phase 1					
Priority 2 Households	Amortised Annual Cost ¹⁰	\$554	\$523	\$571	\$536	\$685	\$651
	O&M	\$125	\$104	\$155	\$135	\$163	\$136
	Subtotal	\$679	\$627	\$726	\$671	\$848	\$786
	Service Connection	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000

9.4 Summary of Non-Cost Factors

Table 9.13 provides a complete summary of the various options for a community sewer system for the Sorrento, Blind Bay and Reedman Point area.

¹⁰ Households may continue to pay the amortised annual costs from phase 1 if phase 2 occurs within 20 years of phase 1



Table 9.13 – Summary of Community Sewer System Options

OPTION	PROS AND CONS
OPTION 1 Expansion of SLE	<p>Pros</p> <ul style="list-style-type: none"> • Utilises existing infrastructure • Avoids two parallel sewage treatment systems operating in Blind Bay • Will provide the earliest installation of a sewer system • Excellent effluent reuse potential in the surrounding area <p>Cons</p> <ul style="list-style-type: none"> • Concerns over the structural stability of the dam and lagoon structures (to be investigated) • Requires reaching an agreement with Shuswap Lake Estates • Small site requires use of mechanical treatment processes for additional capacity and hence solids treatment/reuse programme required • Additional effluent storage reservoir located on a separate site • No suitable sites for rapid infiltration in the area • The existing facility is located within a residential area and already receives complaints regarding odours. Expansion of the facility and addition of mechanical treatment processes and waste solids handling will worsen the odour problem.
OPTION 2 New Regional Facility at Balmoral	<p>Pros</p> <ul style="list-style-type: none"> • New, purpose built facility • Large site will be available • Excellent effluent reuse potential in the surrounding area <p>Cons</p> <ul style="list-style-type: none"> • Duplicate treatment plant running at SLE • No suitable sites for rapid infiltration in the area
OPTIONS 3a – 3e Satellite Treatment Plants	<p>Pros</p> <ul style="list-style-type: none"> • Greater flexibility in phasing and timing of construction • Opportunity to utilise existing infrastructure (if Shuswap Lake Estates option selected) • Opportunity to utilise reclaimed water through irrigation <p>Cons</p> <ul style="list-style-type: none"> • Will be two or three treatment plants operating in parallel in the area • Alternative method of effluent disposal (lack of rapid infiltration sites) will continue to be an issue for Blind Bay • Increased operation and maintenance costs • Use of rapid infiltration basins in Sorrento area may require some residents to be taken off domestic well water supply and added to the Sorrento water supply network.



Appendix A – Plan of LWMP Priority Areas

Figure 2 from LWMP Stage 2 Report - Earthtech

Appendix B – Plan of Potential Sites for Rapid Infiltration

Figure 1 from TM3 – Piteau for Opus DaytonKnight

Appendix C – Estimated Capital Costs for Preliminary CSS Options

A more detailed summary of the indicative capital costs for the preliminary options presented in this TM are presented in Appendix C.o. A more detailed breakdown is provided in Appendices C.1 to C.4. As noted in Section 4.8, the cost estimates are intended to be used for comparison and option selection only.

Notes:

- a) **Condition of Existing Shuswap Lake Estates Treatment Facility** - No allowance has been made for upgrades or refurbishment to the existing Shuswap Lake Estates STP, power or water supplies. A pre-purchase geotechnical investigation is required, but as it is recommended this takes place before this options is confirmed as a preferred option, it has not been allowed for in the capital cost estimate. The estimated cost for a geotechnical investigation is \$50,000.
- b) **Not Used**
- c) **Land Purchase** - The total land area required to be purchased to situate infrastructure is assumed to be 200% of the size of the summed component sizes. This is to allow additional space for access, expansion and other items. Where the treatment facility and reservoirs are co-located a single allowance is made for land purchase.
- d) **Location of Facilities in Balmoral Area** - The exact location of the proposed treatment facility in the Balmoral area is unknown. An allowance has been made for any treatment facilities (including reservoirs) that are to be located in the Balmoral area of an additional 2.5km distance from the existing SLE treatment facility.
- e) **Civil Works** - A nominal allowance has been made for provision of general civil works including roads, fencing and drainage.
- f) **Conversion of Existing Storage Reservoir** - A nominal allowance has been made for conversion of the existing storage reservoir at Shuswap Lake Estates to an emergency storage reservoir.
- g) **Irrigation Forcemain** - The lengths of forcemain assumed for irrigation are:

STP Location	Phase 1	Phase 2
Shuswap Lake Estates	1500m	2000m
Balmoral Area	1000m	2000m

- h) **Building** - Building to house blower equipment, headworks, electrical/controls, chlorine storage and operations.



Notes (continued):

- i) **Power Supply to Treatment Facility in Balmoral Area** - A review of the existing three-phase power supply in the area shows there is power along Notch Hill Road, Tappen Notch Hill Road and Hendrickson Road. An allowance of \$50,000 has been made for connection to the three-phase power supply to a treatment facility in the Balmoral area
- j) **Water Supply** - A nominal allowance has been made for provision of a well water supply
- k) **Power Supply to Sorrento Treatment Facility** - A nominal allowance of \$30,000 has been made for provision of a power supply to the Fredrickson Rd treatment facility site

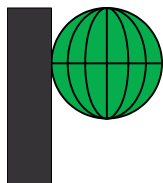


EXHIBIT 6

Piteau Associates

***Field Investigation & Preliminary Assessment of
Sewage Disposal
– 874 Dilworth Road***





PITEAU ASSOCIATES
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DRAFT TECHNICAL MEMORANDUM

TO: Mr. Terry Langlois
 CSRD

Our file: 3319 (3319-M02)

March 4, 2015

FROM: Remi Allard, M. Eng., P. Eng.
 Email: rallard@piteau.com

Re: Field Investigation and Preliminary Assessment of Sewage Disposal Potential at 874 Dilworth Road, Sorrento, Columbia Shuswap Regional District

Piteau Associates Engineering Ltd. (Piteau) was retained by Columbia Shuswap Regional District (CSRD) to assess the feasibility of in-ground disposal of sewage effluent on a site located at 874 Dilworth Road. The site includes legal properties defined by Parcel Identifier Number (PID) 013-815-351 and 013-815-831, which are owned by Mr. Ray Swan. The investigations were completed at the southern limits of the property where the Canadian National Railway (CNR) main rail line bisects the property.

Previous work was completed for CSRD to identify a site for effluent disposal at a location approximately 1 km to the east of the Swan Property, near the southern terminus of Frederickson Road (PID 013-813-838). Boreholes and test pits completed by Golder Associates Engineering Ltd. at the site (Golder, 1999) identified an alluvial fan deposit with sand and gravel materials suitable for effluent disposal. Further investigation was recommended for the site to identify the depth to groundwater and direction of subsurface flow in order to determine the volume that could be disposed. In 2014, Piteau completed a desktop assessment of the same site and determined that effluent disposal could potentially cause negative water quality impacts to residential water wells and surface water located down-gradient (Piteau, 2014). It was recommended to investigate alternate areas to the west of the Frederickson Road site, where similar alluvial fan deposits are present and where no residential development (water wells) are present.

An alluvial fan deposit was identified at the southern limits of the Swan Property, to the south of the CNR rail line. This letter report provides a summary of field investigations completed and the results of a preliminary level assessment of the potential for sewage disposal on the property.

Authorization for this work was provided by Mr. Terry Langlois of CSRD via email on September 9, 2014.

FIELD INVESTIGATIONS

Piteau staff supervised exploratory drilling of 6 test borings on the site in October 2014. The drilling was completed using a track-mounted hollow stem auger rig operated by Blue Max Drilling of Kelowna, BC. Logs for the test borings are provided in Appendix I. Selected soil samples from the borings were subjected to sieve analysis. Grain size distribution curves for the tested samples

are presented in Appendix II. Three of the test bores encountered groundwater (MW-1, MW-2 and MW-4) and were completed as monitoring wells. Water levels were measured and hydraulic response testing completed in the monitoring wells. The results of hydraulic response testing are presented in Appendix III. Double ring infiltrometer testing was completed at two locations and the results of this testing are also presented in Appendix III.

The locations of the test bores, monitoring wells and infiltrometer tests are shown in Fig. 1. A summary of the field investigation results is as follows:

SUMMARY OF FIELD INVESTIGATIONS IN 2014

Location Name	UTM east	UTM north	Ground Elev. (masl)	Well Depth (mbgs)	Static Water Level (mbtoc)	Water Level (masl)	Depth to Limiting Condition (mbtoc)	Unsat. Zone Thickness (m)	Hydraulic Conductivity (m/day)
MW-1	324300	5638341	493.5	14.81	14.02	479.48	14.02	12.85	2.0
MW-2	324130	5638363	518	13.32	13.11	504.89	13.11	11.14	0.6
MW-3	324393	5638558	461	5.18	-	-	5.18	5.18	1.4
MW-4	324482	5638489	459	15.24	6.1	452.9	3.7	6.45	0.6
MW-5	324366	5638886	432	5.79	-	-	5.79	5.79	-
MW-6	324351	5638424	485	5.8	-	-	5.8	5.80	0.8
INF-A	324427	5638498	467.5	-	-	-	-	-	300
INF-B	324267	5638343	497.5	-	-	-	-	-	33

Notes: UTM location and ground elevation data based on DEM data from ARCGIS online World Imagery. mbtoc is meters below top of casing; depth to limiting condition is depth to first occurrence of water, clay, till or bedrock; hydraulic conductivity determined using field methods

The UTM coordinates and surface elevation for each location were initially established in the field using a hand-help GPS device and adjusted using digital elevation model (DEM) data and aerial imagery accessed from the ARCGIS World Imagery web mapping service at the following URL:

<http://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9>

A clinometer and hip-chain were used to verify the relative difference in elevation between each borehole location. Stratigraphy and water level information were determined using the assigned surface elevation at each location.

The stratigraphy encountered was predominantly gravel, sand and silt to 15.2m depth, which is the maximum depth achievable with the auger drilling method used. A clay or clay till layer was intersected in MW-4 from 3.7 to 4.9m depth. MW-3, MW-5 and MW-6 were terminated at shallower depths as the auger rig hit "refusal", interpreted as encountering a hard till, or bedrock. The bedrock encountered in MW-3 and MW-4 supports the theory that buried bedrock ridges exist in the area, oriented roughly perpendicular to the base of the hills, in a northeast direction. The refusal in MW-6 at 6.1m depth is more likely associated with a buried boulder or clay till.

A summary of the stratigraphy encountered in each test bore is as follows:

SUMMARY OF HYDROGEOLOGICAL UNITS ENCOUNTERED

Hydrogeological Unit and Description	Depth Interval for Unit (meters below ground surface)					
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
1. GRAVEL	-	0.0 - 1.5	-	0.0 - 3.7	-	-
2. SAND (fine to medium)	0.0 - 6.5	1.5 - 2.1	0.0 - 5.2	-	0.0 - 5.8	0.0 - 6.1
3. CLAY / TILL	-	-	-	3.7 - 4.9	-	-
4. SILT / SAND	6.5 - 7.1	2.1 - 9.1	-	-	-	-
5. SAND (medium)	7.1 - 15.2	9.1 - 15.2	-	4.9 - 15.2	-	-
6. Bedrock	-	-	5.2 -	-	5.8 -	6.1 -

A geological cross section through the area was prepared based on the assigned hydrogeological units and measured water levels (Fig 2.) Fig. 1 shows the orientation of the cross section, along with a rough estimate of the extent and orientation of the buried bedrock ridges.

HYDROGEOLOGICAL ANALYSIS

The thickness of unsaturated materials in the area of MW-1 and MW-2 exceeds 10m. The direction of groundwater flow is to the northeast, which generally follows the topography in the area and the orientation of the buried bedrock ridges. The hydraulic gradient is roughly 0.12. The width of the fan deposit between the bedrock ridges is conservatively estimated to be 100m.

Hydraulic conductivity was determined by analyzing hydraulic response data with Aqtesolv, a commercially available software package (HydroSOLVE, 2014). Specific solutions in the software that were utilized include analytical methods by Bouwer-Rice (1976), Dagan (1978) and KGS (Hyder et al, 1994). Hydraulic conductivity was also estimated using Hazen's equation, which utilizes the 10% passing grain size from the sieve analyses completed on the selected soil samples (Fetter, 2001). Less weight was assigned to the values generated using the Hazen equation, as all soil samples were fine-grained and at the lower grain size limit applicable to use of this method. Based on the geometric mean of all results, hydraulic conductivity is highest to the southwest in the area of MW-1 and MW-2, which is consistent with conditions typically encountered at the highest elevation portion (apex) of a fan deposit. Hydraulic conductivity decreases to the northeast in MW-3, MW-4 and MW-6, within the distal portion of the fan. A summary of the methods used for analysis and hydraulic conductivity results is as follows:

SUMMARY OF HYDRAULIC CONDUCTIVITY ANALYSIS

Method of Analysis	Hydraulic Conductivity (m/day)						
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Geometric Mean
Bouwer-Rice	1.64	0.17	-	0.26	-	-	0.42
Dagan	2.33	0.69	-	0.69	-	-	1.04
KGS	-	-	-	0.95	-	-	0.95
Hazen	2.16	1.38	1.38	n.a.	-	0.78	1.34
Geometric Mean	2.02	0.55	1.38	0.55	-	0.78	0.92

Estimate of Disposal Capacity

A preliminary estimate of the disposal capacity for the area investigated was derived based on the concept of natural discharge capacity (NDC). NDC is dependent on the width and thickness of the unsaturated zone, the hydraulic conductivity (K) of the soils beneath the disposal area and the hydraulic gradient (i). The following equation was used to calculate the NDC:

$$NDC = KiLT$$

where:

K (hydraulic conductivity) = 0.9 m/day
i (hydraulic gradient) = 0.12
L (length of disposal field perpendicular to groundwater flow) = 100 m
T (thickness of unsaturated zone available for flow) = 8m

Unsaturated zone thickness was reduced from 10m to 8m to account for 2m of water level rise expected during spring runoff. Using the NDC methodology, the disposal capacity of this area is therefore in the order of 85 m³/day. For comparison, the maximum disposal rate for an 8m rise in the water table under a low hydraulic gradient condition (worst case scenario) was estimated. This was done using the Hantush solution (1967) in Aqtesolv, where the disposal area was maximized as represented by 3 basins of dimensions 90m by 15m. The maximum disposal rate using this method of calculation is roughly 80 m³/day. The high hydraulic gradient in the area is expected to have a greater influence on the effluent discharge capacity and therefore, 85 m³/day is considered more representative.

Estimate of Travel Times

For Class C (untreated) effluent, the minimum subsurface travel time between an infiltration field (including RI basins) and the nearest property line, location where effluent could come to surface, enter a surface watercourse, or is intercepted by a well, is 10 days (BCMoe, 2012).

Travel times can be estimated using the Darcy Equation as follows:

$$v^* = K * i / n$$

where:

K (hydraulic conductivity) = 0.9 m/day
i (hydraulic gradient) = 0.12
n (porosity) = 0.25

It is conservatively assumed that the vertical effluent flow velocity (infiltration rate) and time of travel to the limiting condition (water table) is immediate. The horizontal effluent flow velocity and time of travel to the were estimated using the slope of the water table (0.12) and a hydraulic conductivity of 0.9 m/day. The porosity was assumed to be 25%.

Solving for v*, the horizontal velocity of groundwater flow down-gradient of the area is 0.5 m/day. The corresponding times of travel for the nearest selected points are as follows:

- Point A - property boundary (*eastern limit of Swan Property (340m)*) = 680 days

- Point B - *seasonally flooded wetland area (330m) = 660 days*
- Point C - seasonal water course (200m) = 400 days
- Point D - water well (WTN 36206) located on Dilworth Road (794m) = 1588 days
- Point E - surface license (PD50478) on Dilworth Road (975m) = 1950 days

These locations are shown in Fig.1

DISCUSSION

Investigations completed to date have identified a 100m by 200m area suitable for effluent disposal to ground. The disposal capacity of this area is 85 m³/day, which is substantially less than the volume initially estimated. The difference is primarily due to the width of the disposal zone (perpendicular to groundwater flow) being limited by the 100m distance between buried bedrock ridges, which have yet to be appropriately characterized. The disposal capacity is also limited by the relatively low hydraulic conductivity of the medium and fine-grained sands that predominate in the fan deposit.

There is potential to increase the capacity for disposal by adding to the currently defined area. The best potential for additional disposal area exists to the west where similar fan deposits are expected to be present. Further field investigations are required to identify the thickness and hydraulic properties of unsaturated soils in this area. The locations, plus influence of buried bedrock ridges on disposal zone width also need to be determined. Less potential exists to add capacity to the south of the currently defined area, as the fan is expected to narrow to the south, which will also narrow disposal zone width.

There remains approximately 550m width within the contiguous Swan Property that lies along the base of the hill and to the west of the currently defined area that could potentially be investigated. If an additional 200m to 300m of disposal zone width can be identified, the total volume of effluent which can be handled could potentially be increased by 200 m³/day to 300 m³/day. Prior to any further drilling, a geophysical survey is proposed to determine the depths to bedrock through the area. A hammer seismic profile along the north side of the rail line is proposed.

A realistic estimate of the maximum effluent disposal capacity that can be developed at the south end of the Swan property is 300 m³/day to 400 m³/day.

LIMITATIONS

This investigation has been conducted using a standard of care consistent with that expected of scientific and engineering professionals undertaking similar work under similar conditions in B.C. No warranty is expressed or implied.

This report was prepared for the sole use of the Columbia Shuswap Regional District. Any use, interpretation, or reliance on this information by any third party is at the sole risk of that party. Piteau accepts no liability for such unauthorized use.

CLOSURE

We trust the information provided in this technical memorandum is sufficient for your present needs. Please contact Piteau if you have any questions or comments.

DRAFT

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Appendix I

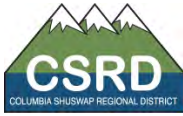
Appendix II

Appendix III

EXHIBIT 7

Gentech Engineering Sorrento Community Sanitary Sewer Opportunities





Sorrento Community Sanitary Sewer

Gentech Technical Memorandum #1: Project Summary

April 7, 2016



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APPENDICES

- Appendix 1 Hydrogeological Assessment in Support of Site Selection for Sorrento WWTP facilities, Columbia Shuswap Regional District Electoral Area “C”. September 10, 2015. By: Western Water Associates Ltd.
- Appendix 2 Dwg. No. S-1. Potential Sewer System Treatment Sites.
- Appendix 3 Hubland Road Test Pit Logs 18Feb2016. Fletcher Paine Associates Ltd., Consulting Geotechnical and Material Engineers.



1.0 INTRODUCTION

1.1 Background

The CSRD Area 'C' has a Liquid Waste Management Plan (LWMP) approved by the Minister of Environment. This plan is titled, *Liquid Waste Management Plan, Area 'C', Stage 3 Report. January 2009*", completed by Earthtech|AECOM Consultants. The LWMP outlined a detailed plan to provide sanitary sewer infrastructure for Sorrento, Blind Bay and Reedman Point.

Subsequent to the approval of the 2009 LWMP, studies have been conducted to evaluate the feasibility of defining a project(s) within the scope of the LWMP that would possibly be more successful in obtaining provincial and federal grant funding. In this regard, a report was completed to evaluate options for a community sanitary sewer system for Sorrento and Blind Bay. This report is titled, *'Community Sewer System Plan for Sorrento/Blind Bay, Area 'C': Summary Report. December 6, 2014'*", completed by OPUS DaytonKnight engineering consultants. This report outlined options for a liquid waste management system that would be feasible for the Sorrento and Blind Bay communities.

The overall costs projected to initiate and complete the LWMP have proven to be significant and have created an obstacle in applying for grant funding that would see the start of the required projects. As a result, in mid-2014 discussions were undertaken to determine whether a smaller area within the approved Area 'C' LWMP could be considered to get reasonably sized projects up and running at a cost that may prove to be more successful in receiving grant funding. In May 2015, Gentech Engineering Inc. was commissioned to evaluate whether a stand-alone Sorrento Community Sanitary Sewer system would be feasible, and have a high likelihood of receiving both provincial and federal grant funding.

This technical memo is a summary of the findings of the evaluation into the feasibility of a stand-alone Sorrento Community Sanitary Sewer system.



1.2 References

Since the 2000's, there has been a desire to investigate the potential to proceed with sewage treatment in CSRD Area 'C'. Studies have been done in order get to the stage where an approved Liquid Waste Management Plan, Stage 3 Report was completed. Subsequent studies, reports and technical memos have supplemented concepts for a viable liquid waste management plan.

- i. ***'Liquid Waste Management Plan, Area 'C', Stage 3 Report. January 2009.'***
By: Earthtech|AECOM Consultants.
- ii. ***'Blind Bay Servicing Options. December 2011.'*** By AECOM Consultants.
- iii. ***'Sorrento/Blind Bay Community Sewer System Plan. TM1 – Service Area Characterisation. June 27, 2013.'*** By Opus DaytonKnight Consultants Ltd.
- iv. ***'Sorrento/Blind Bay Community Sewer System Plan. TM2 – Financing Methodology.'*** By Opus DaytonKnight Consultants Ltd.
- v. ***'Technical Memorandum No. 3 – Hydrogeological Assessment for Sorrento/Blind Bay. August 6, 2013.'*** By Piteau Associates, Geotechnical and Hydrogeological Consultants.
- vi. ***'Sorrento/Blind Bay Community Sewer System Plan. TM4 – Review of Treatment Strategies.'*** By Opus DaytonKnight Consultants Ltd.
- vii. ***'Community Sewer System Plan for Sorrento/Blind Bay, Area 'C'. Summary Report. December 2013.'*** By Opus DaytonKnight Consultants Ltd.
- viii. ***'2013 Groundwater Monitoring Report – Blind Bay/Sorrento, BC. January 2014.'*** By Summit Environmental Consultants Ltd.
- ix. ***'Shuswap Lake Estates Sewer System. September 19, 2014.'***
Correspondence from Terry Barker, Shuswap Lakes Estates.
- x. ***'2014 Groundwater Monitoring Report, Columbia Shuswap Regional District, Blind Bay and Sorrento, B.C. December 2014.'*** By Western Water Associates Ltd., Consultants in Hydrogeology and Environmental Science.
- xi. ***'Hydrogeological Feasibility of Wastewater Disposal to Ground at the Frederickson Road Site, Near Sorrento, BC. June 10, 2014.'*** By Piteau Associates, Geotechnical and Hydrogeological Consultants.
- xii. ***'Field Investigation and Preliminary Assessment of Sewage Disposal Potential at 874 Dilworth Road, Sorrento, Columbia Shuswap Regional District. March 4, 2015.'*** By Piteau Associates, Geotechnical and Hydrogeological Consultants.



2.0 SUMMARY OF METHODOLOGY

2.1 Baseline Study Criteria

To develop the baseline criteria for a stand-alone Sorrento Community Sanitary Sewer (SCSS) system, several meetings were held with CSRD to discuss the optimal direction in which to proceed. At the meetings, the following were discussed:

- a) Feasibility of a stand-alone sewage collection and treatment facility would be of priority.
- b) The existing, private Shuswap Lake Estates sewage treatment facilities would not be considered as an option for the SCSS system.
- c) The feasibility of locating rapid infiltration ponds at the Frederikson Road site was eliminated as per a report, '*Hydrogeological Feasibility of Wastewater disposal to Ground at the Frederickson Road Site, Near Sorrento. June 10, 2014*', completed by Piteau Associates, Geotechnical and Hydrological Consultants.
- d) The feasibility of locating rapid infiltration ponds near 874 Dilworth Road in Sorrento was eliminated as per a report, '*Field Investigation and Preliminary Assessment of Sewage Disposal Potential at 874 Dilworth Road, Sorrento, Columbia Shuswap Regional District. March 4, 2015*', completed by Piteau Associates, Geotechnical and Hydrological Consultants.
- e) Spray irrigation of treated effluent would be investigated as the preferred method of disposal.
- f) Rapid infiltration will be required for both: i) the initial phases of the project until spray irrigation infrastructure is built; and, ii) emergency disposal for a completed treatment facility.
- g) The Sorrento Official Community Plan (OCP) as approved in late 2014 would be used as the basis to determine the most feasible area for phasing in the gravity sewage collection system. Importance should remain high for high density areas and properties on the shoreline of Shuswap Lake.
- h) Any proposed conceptual design of a treatment facility must be able to be expanded as additional collection areas are added to the system.
- i) Design criteria as outlined and used in the approved LWMP and in the OPUS DaytonKnight report would be confirmed and used to calculate estimated flows, etc., required for this study.

2.2 Proposal

With information received at various meetings and discussions with CSRD staff, Gentech Engineering Inc. prepared a proposal, '*Sorrento Sanitary Sewer System, Proposal for Engineering Services. May 1, 2015*'. Western Water Associates Ltd. (WWAL) would provide hydrogeological data as a sub-consultant. On approval to proceed, further information on task timelines and milestone dates was submitted to CSRD.



2.3 Treatment Plant Facility and Treated Effluent Reservoir Conceptual Design

Using data contained in both the approved LWMP and the OPUS DaytonKnight report – TM4, a conceptual design was undertaken for all facilities that would be required for a treatment facility. Based on future projections for **full build out** from the approved Liquid Waste Management Plan (LWMP), the OCP and calculations relevant to Sorrento only, the area required for a Sorrento waste water treatment plant (WWTP) and treated effluent storage reservoir (TESR) would be approximately 18ha to 20ha. Therefore, although it may take significant years to achieve Sorrento's ultimate full build out of $\pm 2,172 \text{ m}^3/\text{day}$ effluent flow for $\pm 5,288$ persons, an area of approximately **20ha** was used to determine potential sites for the treatment facility and treated effluent storage reservoir.

2.4 Treatment Plant Facility Site Selection Criteria

To initiate investigating whether there were feasible sites within the Sorrento area for a sewage treatment plant facility, a list of preliminary site criteria was developed by WWAL. These preliminary criteria included:

- a) Opportunities for buffer zone of 100m around the site and visible buffers (trees, topography) and other buffers such as roads and power lines.
- b) Sufficient area for expansion provided within the site.
- c) Shape of site (i.e. rectangular or square preferred.)
- d) Slope: some elevation change acceptable, but no steep slopes.
- e) Hydrology and drainage: no watercourses or wetlands on the site, nearest creeks are >30m from site.
- f) Soils: granular and/or well-compacted soils that are suitable for construction without the need for import.
- g) Groundwater: depth to groundwater (seasonal high) greater than 5m to minimize/eliminate need for dewatering during construction.
- h) Proximity to service area.
- i) Proximity to potential spray irrigation acreages and potential ground infiltration sites.
- j) General compatibility with surrounding land uses.

(These criteria were refined for the final report, *'Hydrogeological Assessment in Support of Site Selection for Sorrento WWTP facilities, Columbia Shuswap Regional District Electoral Area "C". September 10, 2015'*, completed by WWAL. Refer to Appendix 1.)

2.5 Orthographic Plan

As previous studies and reports had not considered the Sorrento area for a WWTP, a method needed to be devised for an aerial mapping study of the area surrounding Sorrento. Using internet resources and digital software, an orthographic plan was developed. The plan encompassed the general area of Sorrento and surrounding upland areas that could be researched for the potential location of a WWTP and TERS.



2.6 Treated Effluent Irrigation

Using the City of Armstrong treated effluent irrigation reservoir as an example, calculations of the area required for a TESR for Sorrento were undertaken. Using conservative values required by regulations, it was estimated that a TESR site would require approximately 17ha for the ultimate build-out flows.

The CSRD provided a list of potential irrigation users for the treated effluent. These properties were outlined and highlighted in green on, 'Dwg. No. S-1. *Potential Sewer System Treatment Sites*'. Refer to Appendix 2.

2.7 Potential Waste Water Treatment Plant Sites

Using the area of approximately 20ha required for both a WWTP and a TESR, and the criteria for site selection, potential parcels of land were plotted on the orthographic plan. Ten (10) parcels were identified for further investigation as potential sites and were highlighted on, 'Dwg. No. S-1. *Potential Sewer System Treatment Sites*'. Refer to Appendix 2.

2.8 Site Assessment

With the identification of potential sites/parcels on 'Dwg. No. S-1. *Potential Sewer System Treatment Sites*', the assessment proceeded to determine suitability for locating a WWTP and TESR. A field visit was undertaken to identify any obvious physical features related to the selected parcels.

The assessment of the parcels was completed by Western Water Associates Ltd. (WWAL), with the objectives as follows:

- Evaluate the potential WWTP sites identified by Gentech in terms of site suitability, from hydrological, geological and environmental impact perspectives.
- Inventory existing groundwater and surface water users near the potential WWTP sites.
- Complete a review of previous hydrogeological reports and provide comment on whether rapid infiltration is feasible and, if so, to what extent.

2.9 Engineering and Cost Evaluation of Sewage Collection Areas

One of the main objectives of the study was determine whether projects could be developed for phased construction that would be of reasonable cost. Using the phased construction approach, the treatment facility would obviously be required before any collection system was built. Preliminary costs were developed for a treatment facility that could potentially handle sewage flows of $\pm 300 \text{ m}^3/\text{day}$ for a 6-10 year horizon servicing ± 400 dwellings or $\pm 1,000$ persons, noting that expansion of this facility would be required as build out of the collection system occurred.

Potential collection areas for a Phase 1 project were outlined based on several different lift station locations. The collection areas generally followed the existing LWMP concept for the Village Center area. After a meeting with CSRD, it was determined that a CSRD owned property (old water treatment site) at 1207 Dieppe Road was a good location for



the lift station. Two options for a collection area boundary with the lift station at 1207 Dieppe Road were developed.

For a conceptual Phase 1 of construction that included treatment facility infrastructure and a potential initial collection area with lift stations, preliminary cost estimates were in the range of \$7Million to \$10Million.

3.0 RESULTS OF ASSESSMENT

3.1 Preferred Sites

WWAL grouped the ten potential parcels for evaluation into three (3) areas for evaluation. Based on the hydrological, geological and environmental evaluation, WWAL concluded the following (refer to Appendix 1):

- C1** The site with the fewest anticipated constraints, from a hydrogeological, geological and environmental impact perspective, appears to be **Parcel 4 in Areas 2**. Orthophoto coverage indicates that there is a topographical break on the property as well, which may facilitate construction of wastewater treatment lagoons and storage reservoir. Surficial deposits have not been investigated, but there appears to be some potential for rapid infiltration of effluent at this site as well.
- C2** The second most favourable site is **Parcel 1 in Area 1**. There is more development and existing surface water and groundwater use in this area than at Parcel 4 that could be impacted by WWTP construction. Further, there may be a relatively shallow groundwater table in this area. Recent hydrogeologic investigations indicate that there is some potential rapid infiltration of treated effluent nearby, which may be useful in the early stages of the sewer project before spray irrigation infrastructure is in place.
- C3** The shallow expected depth to bedrock at the Notch Hill sites is the largest anticipated constraint to constructing the WWTP facility in that area. Little is known about the surficial deposits in the area, but the potential for successfully incorporating rapid infiltration in the Notch Hill area is believed to be low.

3.2 Parcel 4

The CSRD contacted the owner of property that contains Parcel 4. The owner is an organic dairy farmer and has no interest in having a WWTP on or around any of his properties, which include Parcel 5 and Parcel 6. This eliminated the preferred and best sites for a WWTP near Sorrento.

3.3 Parcel 1

From an engineering perspective, Parcel 1 is not ideal, as it is at the far west end of the entire Sorrento area and a significant distance from the potential irrigation sites. Known difficult construction constraints such as excessive groundwater and extremely wet excavations would also be encountered for some of the transmission piping. Also, potential for rapid infiltration near this parcel was assessed as poor in the Piteau Associate reports.



3.4 Parcels 2 & 3

In order to explore options for a WWTP beyond the preferred sites identified in the WWAL report, consideration was given to assessing the feasibility of Parcels 2 & 3. Some initial constraints were noted, including proximity to housing and a potential watercourse in the southern portion of Parcel 3. On further investigation and discussions with CSRD, it was also confirmed that significant issues related to *‘shallow groundwater or surface water on the sites’* (WWAL). WWAL also noted the *‘proximity to and potential to adversely affect nearby surface water users’*. When all these constraints were evaluated, Parcel 2 & 3 would not be suitable for a WWTP and were not considered further.

3.5 WWAL Area 3 – Notch Hill: Parcels 6, 7, 8 and 10

As noted in WWAL conclusion C3 (refer to Section 3.1 above), there were a lot of geological unknowns associated with Area 3 – Notch Hill. The area is mainly *‘forested and mostly undeveloped lands’*. CSRD contacted the owners of property encompassed in Area 3 and found little or no interest in selling or having a WWTP located on their lands. On further consideration, the property owner for Parcel 10 was willing to entertain consideration of the use of his land for a WWTP. As one of the main objectives for a stand-alone Sorrento WWTP was to include rapid infiltration, it was decided that two test holes in Parcel 10 would provide information as to whether it would be feasible to continue evaluating Parcel 10.

Permission for two test holes in Parcel 10 was given by the owner. On February 18, 2016, two tests were dug. In the presence of a geotechnical engineer from Fletcher Paine Associates Ltd., one test hole was dug to approximately 4m (13ft) and the other to 3.2m (10.5ft). The general description of the material was compact to dense sand and gravel (refer to Appendix 3). This type of material would be suitable for treatment plant facility and treated effluent storage, but would not be suitable for rapid infiltration. Based on the unsuitability of the area for rapid infiltration, Parcel 10 could not be considered for a WWTP and TESR.



4.0 CONCLUSION

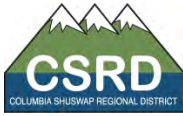
The investigation into the potential for a stand-alone waste water treatment plant (WWTP) and a treated effluent storage reservoir (TESR) for the community of Sorrento was thorough and encompassing. With the objective of having rapid infiltration as part of the solution for treated effluent and ultimately employing spray irrigation as the preferred method of treated effluent disposal, no suitable parcel of land was identified. The most probable and suitable sites were eliminated as a result of dis-interest by the property owners. Other sites were eliminated due to hydrological and geological unsuitability.

Pricing out of conceptual designs for both the proposed treatment facility infrastructure, treated effluent storage reservoir and sewage collection systems (phased) indicate that initial project size to initiate a stand-alone Sorrento Community Sanitary Sewer System would most likely be greater than \$10Million from an engineering perspective only.

If a Sorrento Community Sanitary Sewer System remains as an objective, other treatment and disposal methods would have to be considered.

Ernie C. Carson, P.Eng.

Jerry L. Andrew, CTech



Appendix 1

**Hydrogeological Assessment in Support of Site Selection for Sorrento WWTP facilities,
Columbia Shuswap Regional District Electoral Area “C”.**

September 10, 2015

By:

Western Water Associates Ltd.

September 10, 2015

WWAL Project 15-043-01

Mr. Ernie Carson, P.Eng.
Gentech Engineering Inc.
Box 328, #3 – 551 Trans-Canada Highway NE
Salmon Arm, BC
V1E 4N5

Re: Hydrogeological Assessment in Support of Site Selection for Sorrento WWTP facilities, Columbia Shuswap Regional District Electoral Area “C”

Western Water Associates Ltd. (WWAL) is pleased to provide this report to support the selection of a site for a future Wastewater Treatment Plant (WWTP) near Sorrento, B.C. The scope of work for this study is outlined in our proposal dated June 15, 2015.

PROJECT UNDERSTANDING AND BACKGROUND

The Columbia Shuswap Regional District (CSRD) conducted a Liquid Waste Management Plan for the communities in and around Shuswap Lake in the 2000s, and since approximately 2012 has been assessing the feasibility of providing municipal sewer service in the Blind Bay and Sorrento areas. CSRD retained Opus DaytonKnight (OPUS) to examine options for sewage collection, treatment and disposal and this study produced several technical memos and a report in late 2013. After reviewing several options, the CSRD chose to proceed with a phased approach to sewerage the Sorrento and Blind Bay areas, beginning with Sorrento.

Going into the OPUS Sewer System Plan project, it was assumed that treated wastewater from Sorrento could be disposed of to-ground through Rapid Infiltration Basins (RIBs). Previous assessment by Golder Associates in 1999 suggested that a site near Fredrickson Road was suitable for rapid infiltration. In support of OPUS Sewer System Plan project, three hydrogeological reports were prepared by Piteau Associates (2013, 2014, 2015). WWAL reviewed these reports, which in brief, essentially determined that the Fredrickson Road site and a second site near Dilworth Road (Swann property) were not suitable for the large scale disposal of wastewater to ground due to concerns with breakout and changes to the hydrology and hydrogeology downslope.

Without the ability to dispose of effluent to ground near a WWTP site, an alternate strategy for handling wastewater had to be developed. We understand that the approach to managing treated effluent flows will now be to construct an appropriate volume of storage supplying seasonal spray irrigation for agricultural fields in the area.

For a Sorrento stand-alone system, a concurrent engineering study by Gentech Engineering will confirm the potential service area and design flow. For the purposes of this proposal, we assume that the flow will be in the range of 2,000 to 3,000 m³/day when the entire Sorrento area is sewerage, but sewerage of the area will occur progressively in phases. We understand the total area needed for the WWTP facility including a large treated effluent storage reservoir is on the order of 20 ha (50 acres). This size requirement assumes a relatively deep storage reservoir with a depth of approximately 12 m.

PROJECT OBJECTIVES

WWAL's objectives for this assessment included the following:

- Evaluate the potential WWTP sites identified by Gentech in terms of site suitability, from hydrological, geological and environmental impact perspectives.
- Inventory existing groundwater and surface water users near the potential WWTP sites.
- Complete a review of previous hydrogeological reports and provide comment on whether rapid infiltration is feasible, and if so, to what extent.

Figure 1, attached, shows the general extent of the Sorrento project area. Subsequent maps show areas of interest in greater detail.

Concurrent with our evaluation, Gentech is completing a separate evaluation of the potential WWTP sites from an engineering and cost to construct point of view. When both are complete, the findings of the study are to be compared, ideally resulting in the clear identification of a preferred WWTP site.

SITE DESCRIPTION

Bedrock Geology

Bedrock geology in the project area is comprised of the Eagle Bay Formation – Mt. Ida Assemblage (BCGS 2005). In the northern and lower elevation parts of the study area, these rocks are mapped as fine grained sedimentary rocks (mudstone, siltstone and shale). In the southwestern and higher elevation part of the project area, bedrock is mapped as metamorphic (greenstone, greenschist). A north-south trending fault is mapped along the Davidson Road alignment in the center of the project area.

Surficial Geology

Surficial geology in the project area is shown on Figure 2, attached, as mapped by Fulton (1975). Surficial deposits in the study area are variable and relatively complex. On the hillsides, south of the study area, bedrock outcrop is common or blanketed by a thin veneer of colluvium or till. Fluvial and alluvial fan deposits are present on the northerly sloping areas near the railway corridor. Both the Fredrickson and Dilworth Road sites previously investigated are located on these fluvial or alluvial deposits, which are likely to be characterized by some of the coarsest-grained deposits in the area.

At the Sorrento town core and upslope agricultural lands, surficial deposits consist of a complex assemblage of lacustrine, morainal till and deltaic terrace deposits. On Notch Hill, some areas of bedrock outcrop are mapped, and reportedly overlain by morainal till in most places. A review of well logs on Notch Hill indicate that the morainal deposits are relatively thin, typically between 3 m and 6 m.

Hydrogeology

There are two Provincially-mapped aquifers in the study Area (Figure 3). The first, bedrock aquifer 227IIC, is located in the eastern part of the study area and centered around Notch Hill. Aquifer 227IIC is classified as having a low productivity, low demand and low vulnerability to contamination.

The second, sand and gravel aquifer 222IIC, is located west and south of Notch Hill. Aquifer 222IIC is a confined aquifer, classified as having a moderate productivity, low demand and low vulnerability to contamination. While

not mapped as present, a shallower aquifer system above Aquifer 222 is also present in places, indicated by the presence of dug wells and documented with monitoring wells installed for previous projects. This shallow aquifer system is likely unconfined, and limited to areas around perennial or seasonal drainages, and in areas where the aquitard overlying aquifer 222 pinches out.

CRITERIA FOR EVALUATING SITES

At the start of this project, Gentech identified 10 parcels as possible WWTP sites. These Parcels (and subsequently identified parcels) can be grouped into three Areas, as shown on Figures 4 through 6. Each of these Areas is discussed and evaluated below.

Part of WWAL's mandate for this project was to develop criteria for evaluating the suitability of the possible WWTP sites, from hydrogeological, geological and environmental impact perspectives. The following criteria were applied in our assessment of each Parcel:

Criteria	Rationale
Expected depth to bedrock	Bedrock outcrop or near surface bedrock would pose significant challenges to construction of a treated effluent storage reservoir, which is expected to be 12 m deep. Areas with greater depth to bedrock are preferable.
Depth to Water Table / Presence of Shallow Groundwater	Areas with a shallow water table would complicate construction of treatment lagoons and storage reservoir, and may require significant dewatering during construction.
Presence of Surface Water	The presence of surface water courses and wetlands, which would require special consideration during construction, is considered a detriment.
Proximity to Wells	Construction of the WWTP, lagoons, and the possibility of incorporating rapid infiltration of effluent has the potential to impact nearby groundwater users. The absence of or a low density of wells near the WWTP site is preferable.
Proximity to Points of Diversion	Construction of the WWTP, lagoons, and the possibility of incorporating rapid infiltration of effluent has the potential to impact nearby surface water users. The absence of or a low density of surface water users near the WWTP site is preferable.
Potential to Incorporate Rapid Infiltration On the Site or Nearby	While not necessarily critical to the success of the project, rapid infiltration of effluent during early phases of the project (before flows become large and before spray irrigation infrastructure is constructed) could be considered, and if possible, would be an asset.

AREA 1 – Dilworth Road / Swann Property Area

Figure 4 shows the extent of Area 1 with orthophoto coverage that illustrates land use in the area. Area 1 is in the general vicinity of the Swann Property site that was evaluated in 2014 as a possible RIB site. Area 1 consists primarily of large parcels that have been previously cleared for agriculture, as well as some forested parcels in the east.

Parcel 1 identified by Gentech is located in Area 1, and is part of a larger parcel of land owned by the Swann family. As shown on Figure 4, Parcel 1 is located just north of the site investigated by Piteau in 2014 for RIB feasibility.

The Piteau assessment indicates that there is at least 6 m and in most cases greater thickness of surficial deposits above bedrock, and that bedrock features at the site investigated may include northeast trending ridges. There are few reported water wells in the area, but those present to the east and west near the rail line indicate 30 m or more of surficial deposits overlying bedrock.

Groundwater was encountered in three of six monitoring wells completed at and downslope of the RIB investigation site, at depths between 5 and 14 m below grade. Area 1 is located above mapped sand and gravel aquifer 222IIC, and it is likely that parts of Area 1 overlie a shallower unconfined aquifer as well.

In terms of surface water features, Gulch Creek is mapped as present east of Parcel 1. No other surface water courses are mapped in the area, but orthophoto coverage suggests that shallow groundwater or seasonal wetland conditions may exist on Parcel 1 and to the northwest.

Tables 1 and 2 summarize selected information for reported water wells and surface water points of diversion in the area. There are few water wells reported in Area 1, and those present are completed in both the deep confined aquifer system (222IIC) and underlying bedrock aquifers. There are 7 surface water points of diversion in Area 1, six of which are associated with Gulch Creek to the east or north of Parcel 1. These POD's are for both domestic and irrigation uses.

Table 1: Reported Wells in and Near Area 1

Well Tag Number	Well Depth (ft)	Water Depth (ft)	Well Yield	Depth to Bedrock (ft)	Aquifer Type	Owner
61344	160	125	20 GPM	90	Bedrock	Bill Hook
59422	122	n/a	4 GPM	107	Bedrock	Dave Inkster
36206	120	n/a	6 GPM	n/a	Sand and Gravel	Dennis Wells
83854	239.5	n/a	25 UGPM	n/a	Sand and Gravel	Wamstecker
58239	125	72	6 GPM	n/a	Sand and Gravel	Bill Hook

Table 2: Reported Surface Water Points of Diversion in and Near Area 1

POD Tag Number	Stream Name	Use	Quantity	Licensee
PD50520	Gulch Creek	Domestic	2.273 MD	David John Kurylowich
PD50519	Gulch Creek	Domestic	2.273 MD	P & Victoria L Tessier Henry
PD50510	Gulch Creek	Domestic	2.273 MD	Edwynne A Swann
PD50509	Gulch Creek	Domestic	2.273 MD	Glenn Frederick & Coleen Aria Jackson
PD185287	Gulch Creek	Irrigation	24792.985 MY	Raymond Edward Swann
PD76069	Best Creek	Land Improve	TF	Kelly Kevin Craig & Clarke Carma Dee
PD50388	McCall Spring	Domestic	4.546 MD	Lavington Florence Metal
PD50528	Dilworth Creek	Irrigation	2466.96 MY	Archie & Edwynne Swann
PD50528	Dilworth Creek	Domestic	4.546 MD	Archie & Edwynne Swann
PD50532	Louise Spring	Domestic	2.273 MD	Philip L & Doris Marilyn Clark
PD70750	Wolf Spring	Domestic	2.273 MD	Clark G & Joan E Quintin

Notes:

- 1) MD = m³/day; 2) MY = m³/year; 3) TF = Total Flow

Area 1 Summary

Parcel 1 and the property immediately south (see area indicated on Figure 4) are potentially good locations for a WWTP site for several reasons. It is likely bedrock will be found at depths of at least 6 m in most of the area, and shallow groundwater, while potentially present, is likely at depths greater than 5 m. Being sparsely developed, there are few groundwater wells and only a handful of Points of Diversions in the area which could potentially be effected by the construction of the lagoons and storage reservoir. There is the potential that deep excavation for a storage reservoir in this area could affect the local shallow groundwater regime, and as a result affect water availability at PODs to the north and down-gradient.

In addition, the Piteau investigation in this area found that rapid infiltration was feasible, but at rates much lower than the full build-out wastewater flows. It is possible that some rapid infiltration could be employed in this area in the early stages of the Sorrento Sewer Project, to accommodate early phase wastewater flows before spray irrigation infrastructure is in place.

AREA 2 – Fredrickson Road Area

Figure 5 shows the extent of Area 2 with orthophoto coverage that illustrates land use in the area. The Fredrickson Road RIB site investigated by Golder in 1999 and by Piteau in 2014 is located on the southwestern edge of Area 2. Area 2 consists mainly of large agricultural parcels, but is bordered to the north by medium density residential development. The majority of Area 2 is underlain by mapped sand and gravel aquifer 222IIC, and in the northeast adjoins bedrock aquifer 227IIC.

Four Parcels (2 through 5) were identified by Gentech and fall within Area 2.

Parcels 2 and 3 are located adjacent to Dilworth Road and Davidson Road. Based on well logs in the area, Parcels 2 and 3 likely overlie relatively thick (>30m) surficial deposits, and shallow bedrock is not expected to be an issue at these locations. Shallow groundwater and surface water are likely to be constraints to development, particularly on Parcel 2. Orthophoto coverage indicates a seasonal wetland complex is present on Parcel 2, and previous work by Piteau suggests these wetlands are groundwater fed. There are also several active surface water POD's on Parcel 2 which would be impacted by lagoon and storage reservoir construction.

Parcel 3 is only partially cleared, however field reconnaissance identified a wetland area or seasonal watercourse along the eastern tree line. It is likely that there is a sufficient thickness of surficial deposits for lagoon and storage reservoir construction, however the wetland/water course area could be considered environmentally sensitive, and shallow groundwater is expected to be an issue on Parcel 3.

Parcels 4 and 5 are located at higher elevations, adjacent to the rail right of way. Both parcels are cleared, and no surface Points of Diversion are reported on the properties or in the immediate vicinity. No surface water courses are mapped on either Parcel, however orthophoto coverage suggests a drainage ditch may be present on Parcel 5 extending to the north; this may result in a shallow water table and near surface saturation on portions of Parcel 5. There are few well logs in the area of Parcel 4 and 5, and those closest are located to the south and likely up-gradient. In terms of expected depth to bedrock, well logs in the vicinity (e.g. WTN83983) indicate at least 60 m of surficial deposits are present.

Table 3. Reported Wells in and Near Area 2

Well Tag Number	Well Depth (ft)	Depth to Water (ft)	Well Yield	Depth to Bedrock (ft)	Aquifer Type	Owner
97187	200	79	30 USGM	n/a	Unknown	Pennerosa Farms
97335	280	n/a	0.33 USGM	55	Sand and Gravel	Pennerosa Farms
97336	119	n/a	n/a	135	Sand and Gravel	Pennerosa Farms
59857	275	78	10 GPM	n/a	Sand and Gravel	Gus Betke
56021	137	n/a	0	n/a	Sand and Gravel	Dave Culver
58148	50	30	3 GPM	31	Bedrock	Shalon Terra Holding
25632	95	75	8 GPM	n/a	Sand and Gravel	Ken Mcleod
32620	155	84	4 GPM	n/a	Sand and Gravel	J K Ranches
38862	155	84	4 GPM	n/a	Sand and Gravel	J K Ranches
27341	105	n/a	30 GPM	n/a	Sand and Gravel	John Lindsay
51718	55	30	12 GPM	n/a	Sand and Gravel	Wish
83863	210	n/a	30 USGM	n/a	Sand and Gravel	Pennerosa Farms
58006	225	40	2.5 GPM	45	Bedrock	Shalon Terra Holding
58239	125	72	6 GPM	n/a	Sand and Gravel	Bill Hook
83983	209	n/a	18 USGM	n/a	Sand and Gravel	Dowding
99203	48	11	10 USGM	n/a	Sand and Gravel	Lawrence

Table 4. Reported Surface Water Points of Diversion In and Near Area 2

POD Tag Number	Stream Name	Use	QUANTITY	LICENSEE
PD75109	Brock Brook	Land Improve	TF	Edward & Charlotte Jackson
PD50478	Brock Creek	Domestic	2.273 MD	Maxine C Janzen
PD50478	Brock Creek	Irrigation	1850.22 MY	Walter E & Maxine C Janzen
PD50478	Brock Creek	Domestic	2.273 MD	Marcel & Donna Lessard
PD50475	Brock Creek	Storage (non-power)	1233.48 MY	Edward & Charlotte Jackson
PD50475	Brock Creek	Irrigation	1233.48 MY	Edward & Charlotte Jackson
PD50475	Brock Creek	Land Improve	TF	Edward & Charlotte Jackson
PD50495	Abear Brook	Domestic	2.273 MD	Edward S & Rena M Szybunka
PD50490	Esther Spring	Domestic	2.273 MD	Rondald V & Lauralee T Depatie
PD50489	Vernon Spring	Domestic	2.273 MD	Rodney & Leisya Woods
PD50480	Brock Creek	Land Improve	TF	John & Sharon A Deboer
PD50488	Harcourt Spring	Domestic	2.273 MD	Brian E & Shelley Y Larsen
PD50482	Lindsay Slough	Irrigation	24669.6 MY	John & Sharon A Deboer
PD50482	Lindsay Slough	Land Improve	TF	John & Sharon A Deboer

Notes:

- 1) MD = m³/day; 2) MY = m³/year; 3) TF = Total Flow

Area 2 Summary

Several potential issues have been identified on Parcels 2 and 3 which make them less attractive as WWTP sites. The main issues relate to shallow groundwater or surface water on the sites, and proximity to and the potential to adversely affect nearby surface water users.

Parcels 4 and 5 are more prospective sites due to their locations at high elevations and away from surface water. In our opinion, Parcel 4 is the best candidate for a WWTP site in Area 2. It is harder to comment on the potential for rapid infiltration in this area, but the apparent absence of surface water and the thickness of surficial deposits (which are mapped as alluvial deposits) on Parcel 4 indicate it may be feasible. A more detailed site investigation would be required to confirm the feasibility of rapid infiltration on Parcel 4.

AREA 3 – Notch Hill Area

Figure 6 shows the extent of Area 3 with orthophoto coverage that illustrates land use in the area. Area 3 is located on Notch Hill, and we understand this area is attractive from an engineering perspective in that a WWTP site in this area could take advantage of the higher elevations to distribute treated wastewater using gravity pressure.

All of the parcels identified in Area 3 (6 through 10) occupy forested and mostly undeveloped lands. Area 3 is mapped as overlying bedrock aquifer 227IIIC. There is only one well reported on Parcels 6 through 10 and relatively few reported wells in the area. A cluster of wells are present northwest of Parcels 6 and 7 associated with a residential subdivision in that area. The majority of reported wells are completed in bedrock aquifer 227IIIC.

Bedrock is mapped as outcropping to the east and south of Parcels 6 through 10, and may outcrop in some areas on Parcels 6 through 10. Based on well logs in the area, the depth to bedrock on Parcels 6 through 10 can be expected to be in the 3 m to 6 m range. Owing to the elevation and location of Parcels 6 through 10 on a small ridge, the potential for widespread shallow groundwater is low, and alluvial (sand and gravel) aquifers are likely not present in most areas.

There are no mapped water courses on Parcels 6 through 10, and no reported Points of Diversion except for three located near the northeast corner of Parcel 10.

Table 5. Wells in and Near Area 3

Well Tag Number	Well Depth (ft)	Depth to Water (ft)	Well Yield	Depth to Bedrock (ft)	Aquifer Lithology	Owner
46366	240	70	6 GPM	32	Bedrock	Hawes
46399	360	210	5 GPM	40	Bedrock	Halsey
22347	112	12	0.3 GPM	24	Bedrock	C E Gleave
35060	305	n/a	0	43	Bedrock	Hans Kirchner
37404	350	n/a	10 GPM	n/a	Bedrock	George Ewert
34769	200	n/a	15 GPM	43	Bedrock	Ervert George
84884	500	n/a	0	75	Bedrock	Sagesser
58925	326	225	4 GPM	n/a	Silt and Sand	Bernard Guilbault
22858	90	19	0	n/a	Bedrock	E Agar
8309	120	n/a	340 GPH	n/a	Broken Rock and Clay	George Ewert

Table 6. Reported Surface Water Points of Diversion In and Near Area 3

POD Tag Number	Stream Name	Use	Quantity	Licensee
PD52125	Crispi Spring	Domestic	2.273 MD	Dondald N & Margaret Patricia Underhill
PD69991	Sophie Pond	Stockwatering	2.273 MD	Una Mary St Clair-Moniz
PD69991	Sophie Pond	Domestic	2.273 MD	Una Mary St Clair-Moniz
PD62363	Sophie Pond	Conserv. Construct. Works	22202.64 MY	Una Mary St Clair-Moniz
PD52130	Sophie Pond	Irrigation	37004.4 MY	Una Mary St Clair-Moniz
PD52130	Sophie Pond	Irrigation	24669.6 MY	Una Mary St Clair-Moniz
PD52133	Sophie Pond	Irrigation	24669.6 MY	Una Mary St Clair-Moniz
PD52133	Sophie Pond	Irrigation	37004.4 MY	Una Mary St Clair-Moniz
PD52135	Sophie Pond	Stockwatering	2.273 MD	Lyons Vernon Lyle & Shore Sharon Patric
PD52126	Croce Spring	Domestic	2.273 MD	Dondald N & Margaret Patricia Underhill
PD52128	Cripps Spring	Domestic	2.273 MD	Jerrold Alexander Code
PD52128	Cripps Spring	Domestic	2.273 MD	Donald C & Christina D Paterson

Notes:

- 1) MD = m³/day; 2) MY = m³/year; 3) TF = Total Flow

Area 3 Summary

There are both positive and negative factors associated with Parcels 6 through 10 and the Notch Hill area in general. Positive factors include limited development, and therefore a low potential to affect existing groundwater and surface water users. There is also little surface water in the area and shallow groundwater is not expected to be an issue. The largest issue with a WWTP site in the Notch Hill area is an expected shallow depth to bedrock in most places (3 – 6 m) which may complicate or increase the cost associated with the construction of a deep treated effluent storage reservoir and other WTP infrastructure.

It is worth noting that there are several small, natural depressions with standing water on Notch Hill, located to the east of Parcel 9. It is possible that these depressions could serve as lagoon sites, similar to a natural lake that is used by the City of Vernon for treated wastewater storage prior to use for spray irrigation. There are several Points of Diversion associated with these depressions, as shown on Figure 6 and summarized in Table 6.

There is little information available in the Notch Hill area on which to base an opinion as to the potential for rapid infiltration of effluent. Surficial geology in the area is mapped as morainal till, which based on area well logs is expected to be relatively thin. Overall, we believe the potential for rapid infiltration in the Notch Hill Area is likely low, due to expected low permeability of sediments, and the possibility of breakout downslope.

CONCLUSIONS

Based on our assessment we offer the following conclusions:

- C1** The site with the fewest anticipated constraints, from a hydrogeological, geological and environmental impact perspective appears to be **Parcel 4 in Areas 2**. Orthophoto coverage indicates that there is a topographical break on the property as well, which may facilitate construction of wastewater treatment lagoons and storage reservoir. Surficial deposits have not been investigated, but there appears to be some potential for rapid infiltration of effluent at this site as well.

- C2** The second most favourable site is **Parcel 1 in Area 1**. There is more development and existing surface water and groundwater use in this area than at Parcel 4 that could be impacted by WWTP construction. Further, there may be a relatively shallow groundwater table in this area. Recent hydrogeologic investigations indicate that there is some potential rapid infiltration of treated effluent nearby, which may be useful in the early stages of the sewerage project before spray irrigation infrastructure is in place.
- C3** The shallow expected depth to bedrock at the Notch Hill sites is the largest anticipated constraint to constructing the WWTP facility in that area. Little is known about the surficial deposits in the area, but the potential for successfully incorporating rapid infiltration in the Notch Hill area is believed to be low.

We note that there are several natural depressions/ponds on Notch Hill, to the east of Parcel 9, which may have potential to serve as storage lagoons.

RECOMMENDATIONS

- R1** Compare the results of our evaluation of Parcels with the engineering assessment being completed and determine if there is a clear, preferred choice for a WWTP facility.
- R2** Depending on the results of that comparison, a detailed site assessment will likely be necessary to confirm the feasibility of constructing a WWTP facility at the preferred location. The assessment would better quantify depths to bedrock and shallow groundwater which may be factors in lagoon and storage reservoir design and construction.
- R3** Once a preferred WWTP site is identified, confirm whether rapid infiltration of effluent will be needed or would be an asset in the early stages of the sewerage project before spray irrigation of effluent can be implemented. If so, a site specific evaluation of the feasibility of rapid infiltration may be required, and can be combined with R2, above.

CLOSURE

We trust the information provided in this report addresses your needs at this time. Please note that there are limitations that apply to our assessment, as outlined on the attached standard limitations page. If you have any questions or wish to discuss any of our findings, do not hesitate to contact the undersigned.

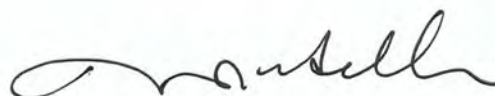
Western Water Associates Ltd.

Reviewed By:



Ryan Rhodes, P.Geo., P.Geol
Hydrogeologist

Attachments: Figures 1 through 6



Doug Geller, M.Sc., P.Geo
Senior Hydrogeologist

References:

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- Piteau Associates. 2015. Field Investigation and Preliminary Assessment of Sewage Disposal Potential at 874 Dilworth Road, Sorrento, Columbia Shuswap Regional District. March 4, 2015.

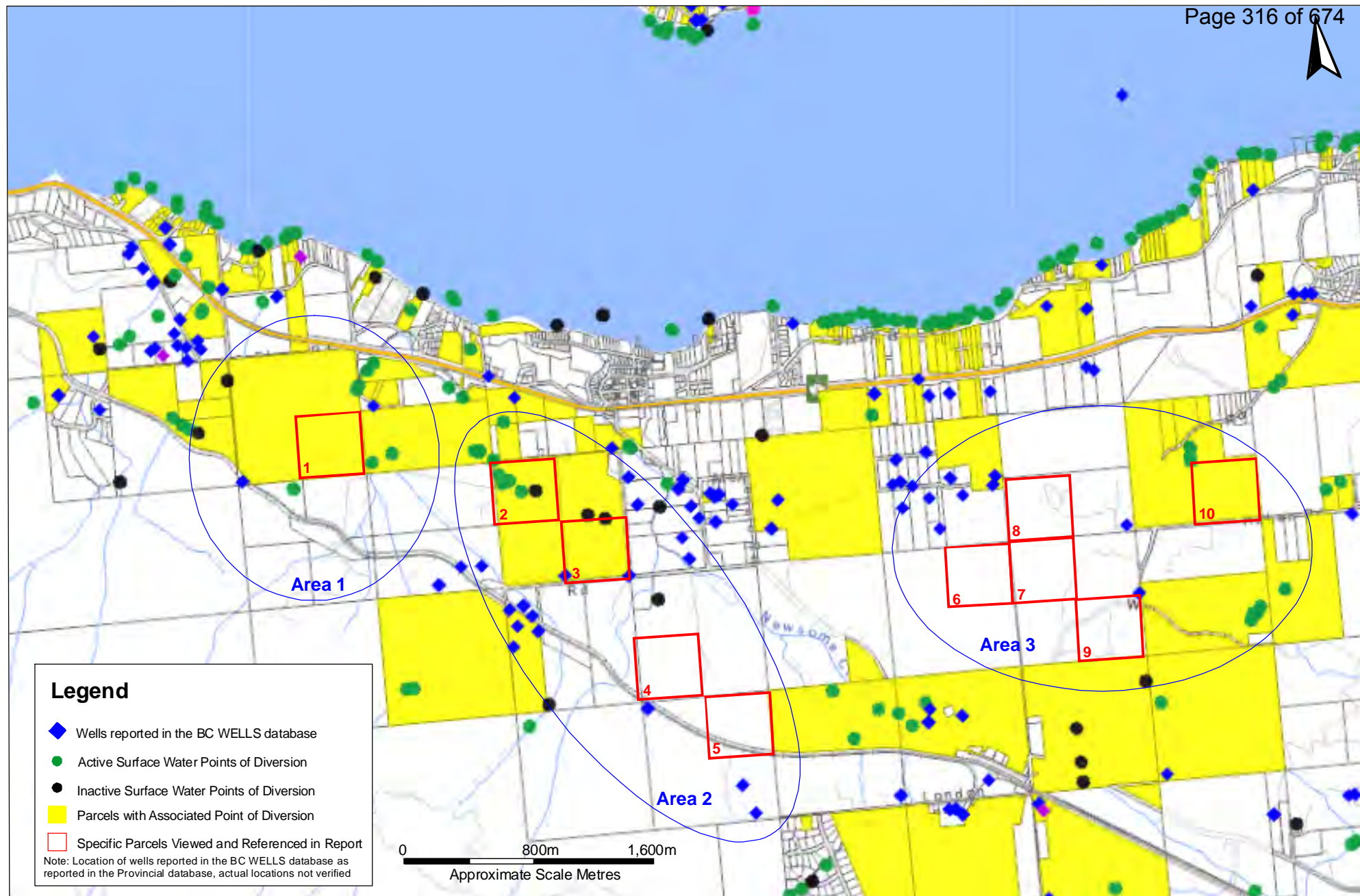


Figure 1 - General Location of Study Area

Date: Aug 2015

Image Source: BC Water Resources Atlas (MFLNRO 2015)

WWAL Project: 15-043-01

Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

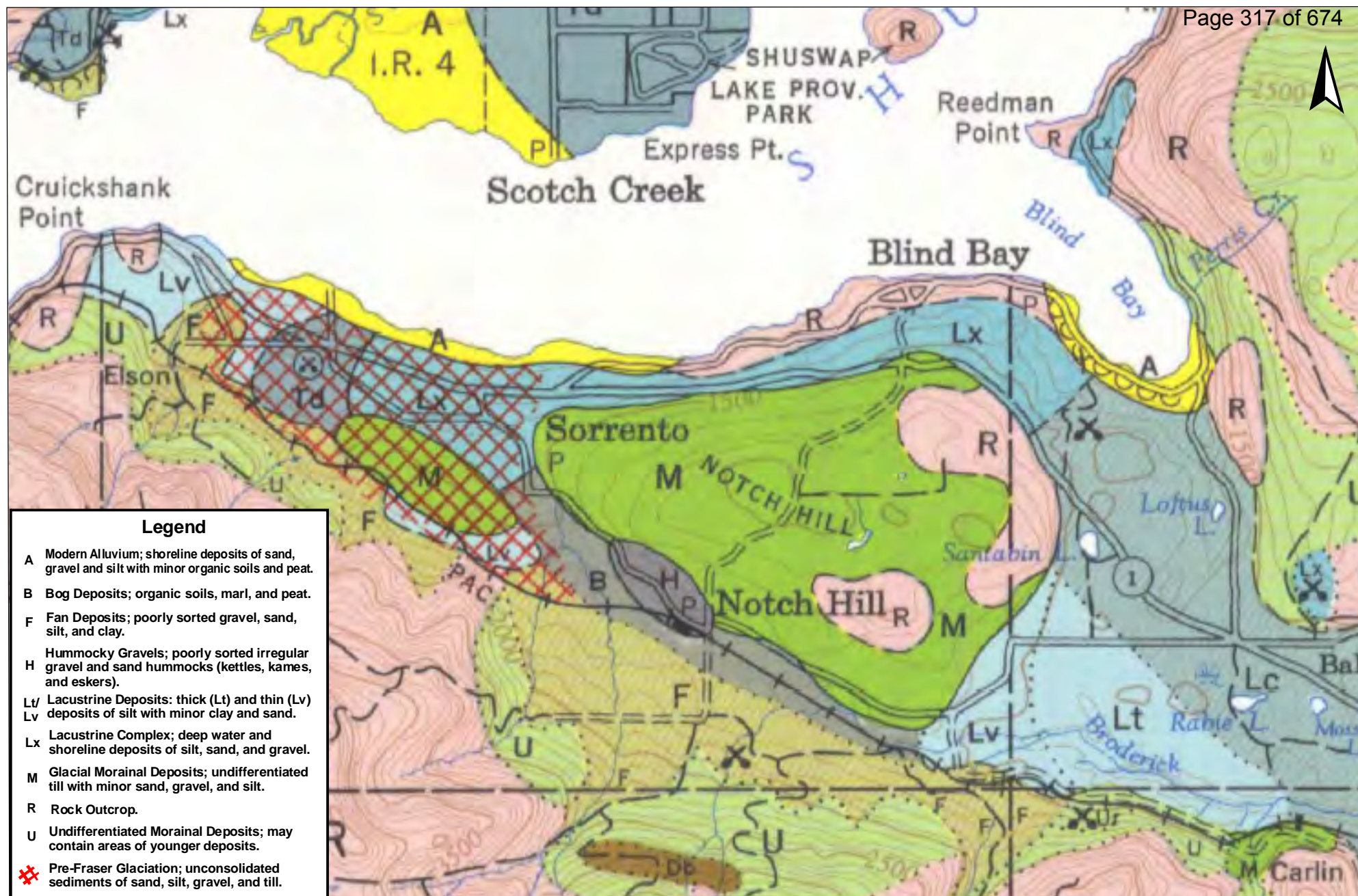


Figure 2 - Surficial Geology Mapping in the Sorrento Area

Date: Aug 2015

Image Source: Fulton, 1965

WWAL Project: 15-043-01

Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

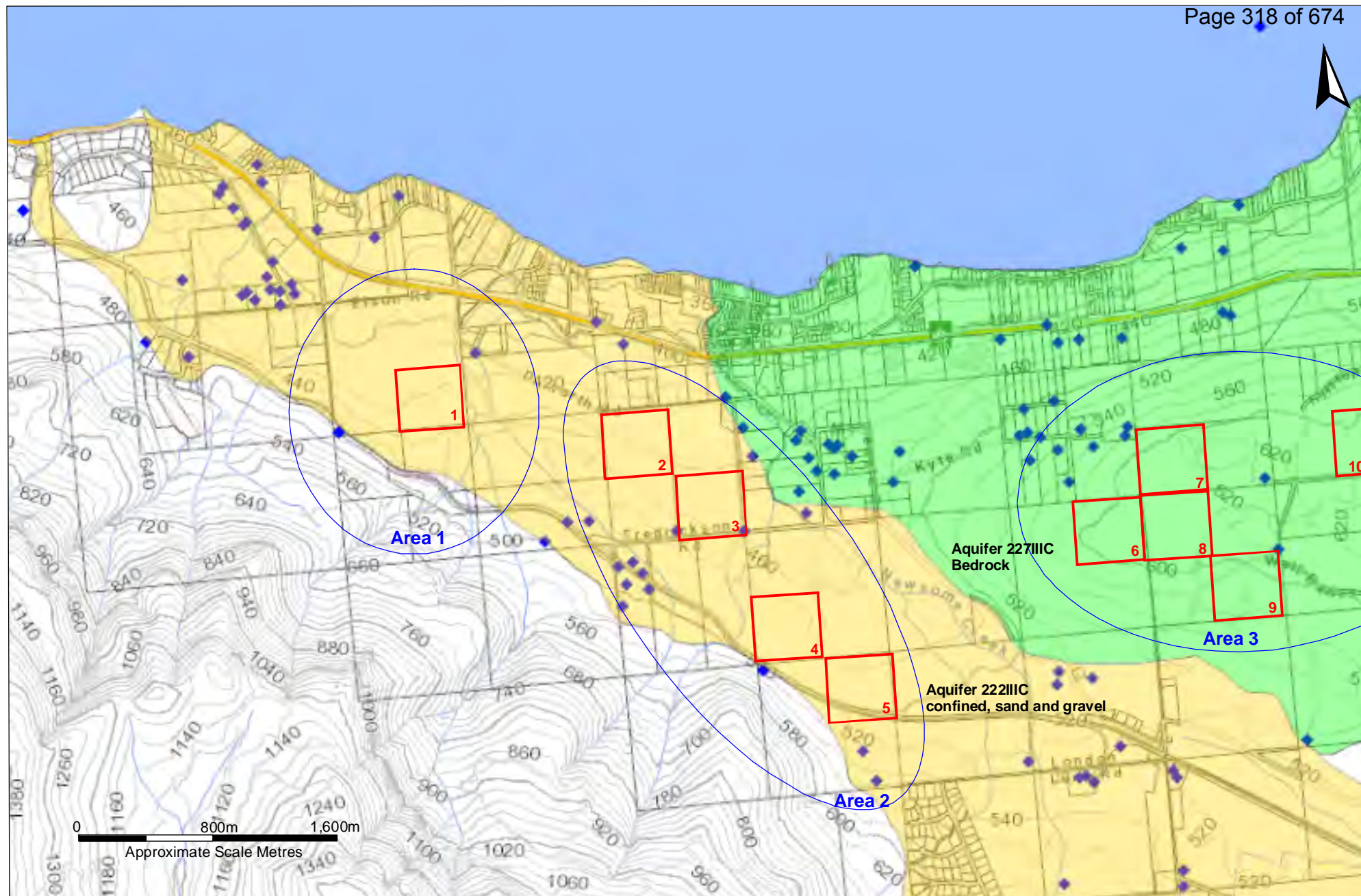


Figure 3 - Mapped Aquifers in the Sorrento Area

Date: Aug 2015

Image Source: BC Water Resources Atlas (MFLNRO 2015)

WWAL Project: 15-043-01

Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

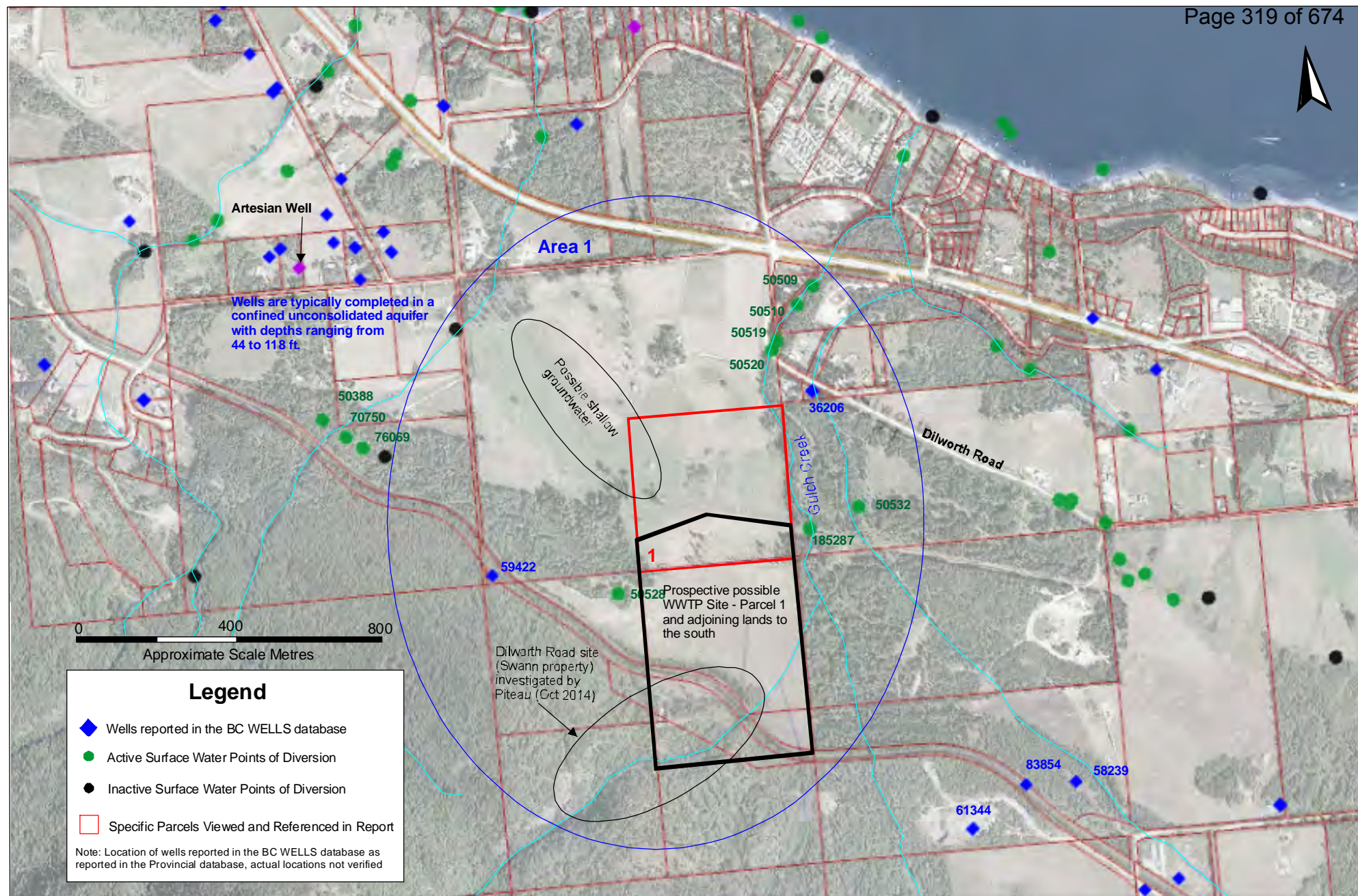


Figure 4 - Area 1 with reported wells, points of diversion and orthophoto coverage

Date: Aug 2015

Image Source: BC Water Resources Atlas (MFLNRO 2015)

WWAL Project: 15-043-01

Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

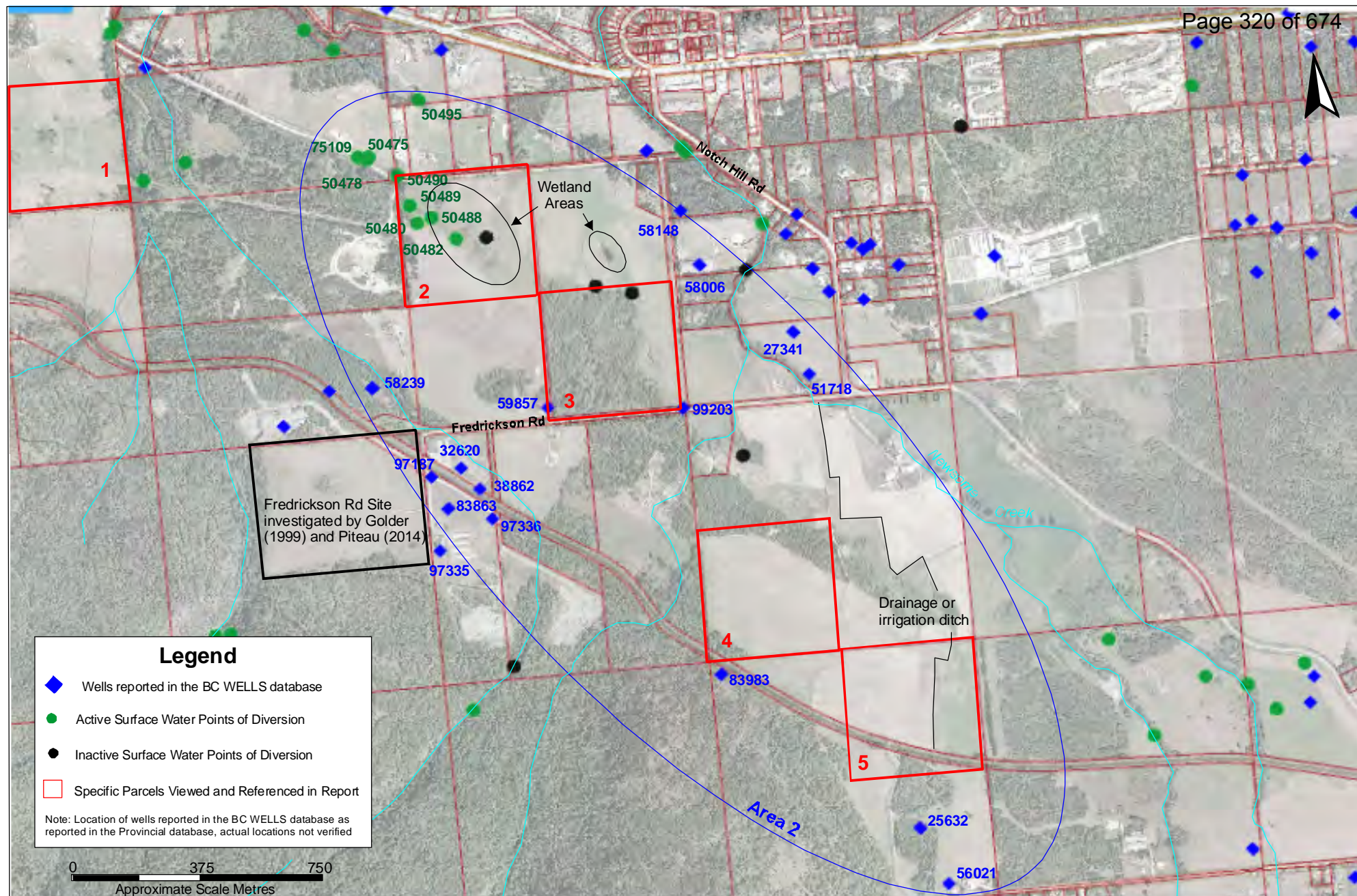


Figure 5 - Area 2 with reported wells, points of diversion and orthophoto coverage

Date: Aug 2015

Image Source: BC Water Resources Atlas (MFLNRO 2015)

WWAL Project: 15-043-01

Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

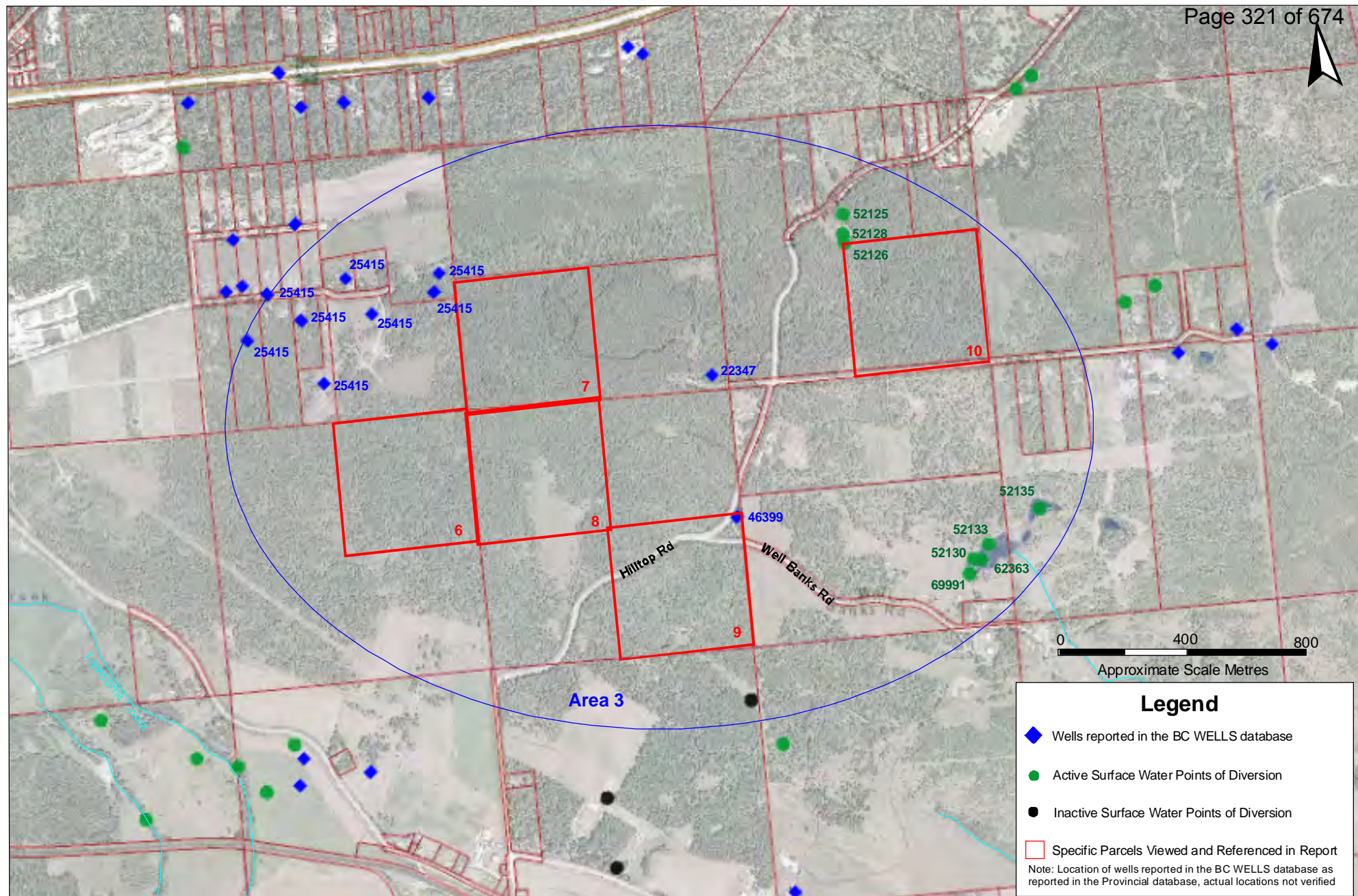


Figure 6 - Area 3 with reported wells, points of diversion and orthophoto coverage

Date: Aug 2015

Image Source: BC Water Resources Atlas (MFLNRO 2015)

WWAL Project: 15-043-01

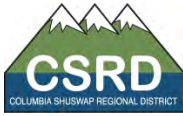
Drawn by: RR

Checked by: DG

Client: Gentech / CSRD

Western Water Associates Ltd. Standard Report Limitations

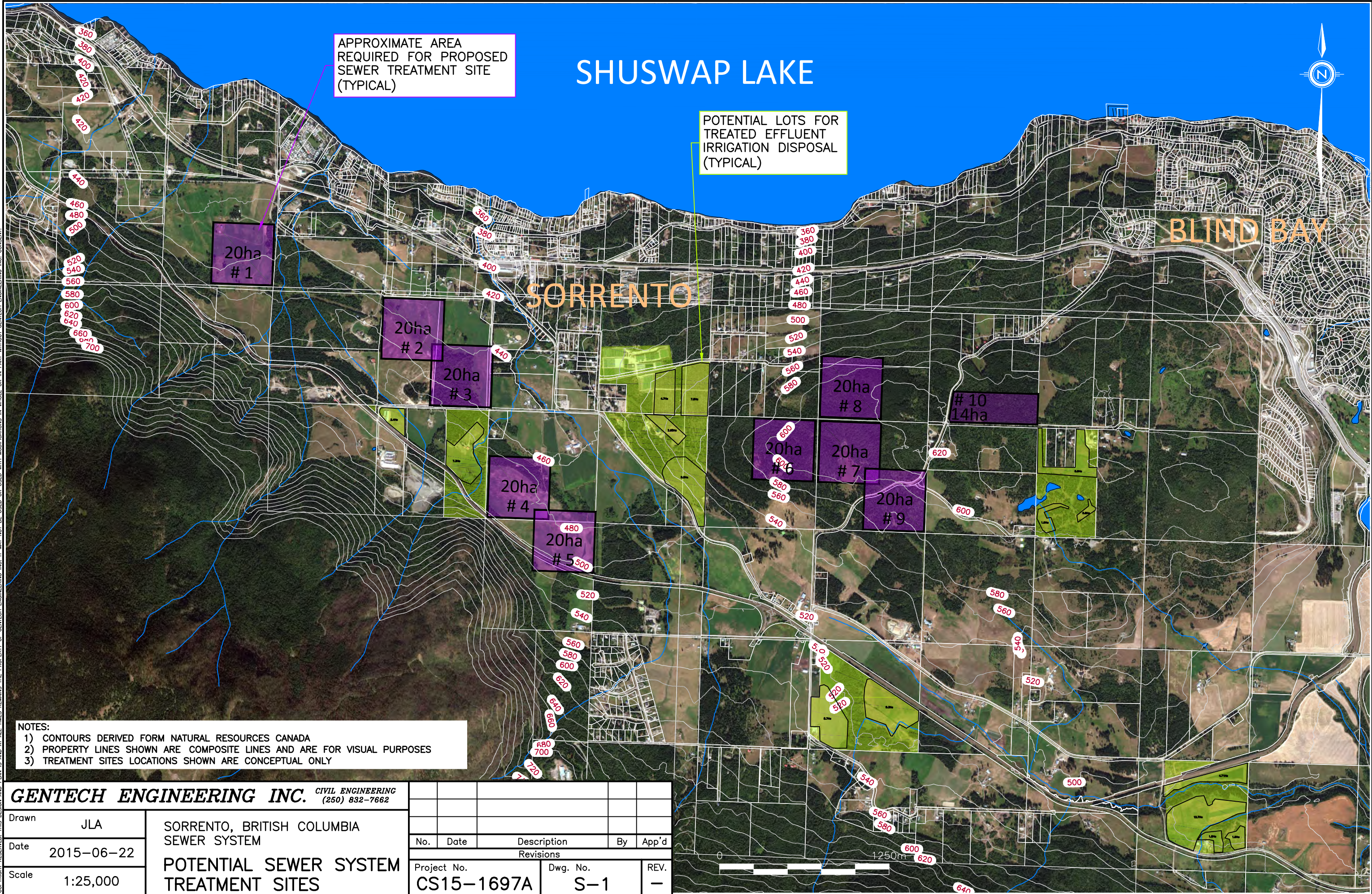
1. This Document has been prepared for the particular purpose outlined in the work scope that has been mutually agreed to with the Client.
2. The scope and the period of service provided by Western Water Associates Ltd are subject to restrictions and limitations outlined in subsequent numbered limitations.
3. A complete assessment of all possible conditions or circumstances that may exist at the Site or within the Study Area referenced, has not been undertaken. Therefore, if a service is not expressly indicated, it has not been provided and if a matter is not addressed, no determination has been made by Western Water Associates Ltd. in regards to it.
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8. No responsibility is accepted by Western Water Associates Ltd for incomplete or inaccurate data supplied by others.
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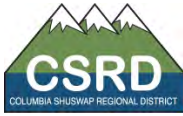


Appendix 2

**Dwg. No S-1
Potential Sewer System Treatment Sites
June 22, 2015**

PLOT April 5, 2016 COMPUTER-C-C:\PROJECTS\CSRD\CS15-1697A - SORRENTO COMMUNITY SEWER SYSTEM\CS15-1697A S-1 SORRENTO SEWER SITES.DWG (XREF-DWG-NAMES)
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Appendix 3

Hubland Road Test Pit Logs 18Feb2016

**Fletcher Paine Associates Ltd.
Consulting Geotechnical and Materials Engineers**

**Test Pit Location Plan****Figure: 6259-1**

Date: 18-Feb-2016

Scale: nts

Record of Exploration - Test Pit No. 1

Project No: 6259

Project: Huband Road Test Pit Logs

Client: CSRD





Project Location: Sorrento, BC

Test Pit Location: See Figure 6259-1

Excavation Contractor: Mounce Construction Ltd.

Excavation Date: February 18, 2016

Excavation Method: metal tracked excavator





SUBSURFACE PROFILE			SAMPLE	
Depth (m)	Symbol	Description	Sample Number	Sample Type
0		Ground Surface		
		TOPSOIL forest floor, silty		
		SAND AND SILT gravelly, dense, brown, damp		
1			1	G
2				
		SAND some silt to silty, compact to dense, brown, damp	2	G
3			3	G
		SAND AND GRAVEL silty, very dense, brown, dry to damp	4	G
4		End of test pit at 4.0 m No groundwater seepage encountered during test pit excavation		

Fletcher Paine Associates Ltd.
2250 - 11th Avenue
Vernon, B.C. V1T 7X8
Ph. (250) 542-0377 Fax. (250) 542-1220
fletcherpaine@shawlink.ca

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Record of Exploration - Test Pit No. 2

Project No: 6259**Project:** Huband Road Test Pit Logs**Client:** CSRD**Project Location:** Sorrento, BC**Test Pit Location:** See Figure 6259-1**Excavation Contractor:** Mounce Construction Ltd.**Excavation Date:** February 18, 2016**Excavation Method:** metal tracked excavator

SUBSURFACE PROFILE			SAMPLE	
Depth (m)	Symbol	Description	Sample Number	Sample Type
0		Ground Surface		
		TOPSOIL forest floor, silty		
		SAND AND SILT gravelly, trace cobbles, dense, brown, damp		
1			1	G
		SAND silty, some gravel, compact to dense, brown, damp	2	G
2				
		SAND AND GRAVEL silty, trace cobbles, very dense, brown, dry to damp		
3			3	G
		End of test pit at 3.4 m No groundwater seepage encountered during test pit excavation		
4				

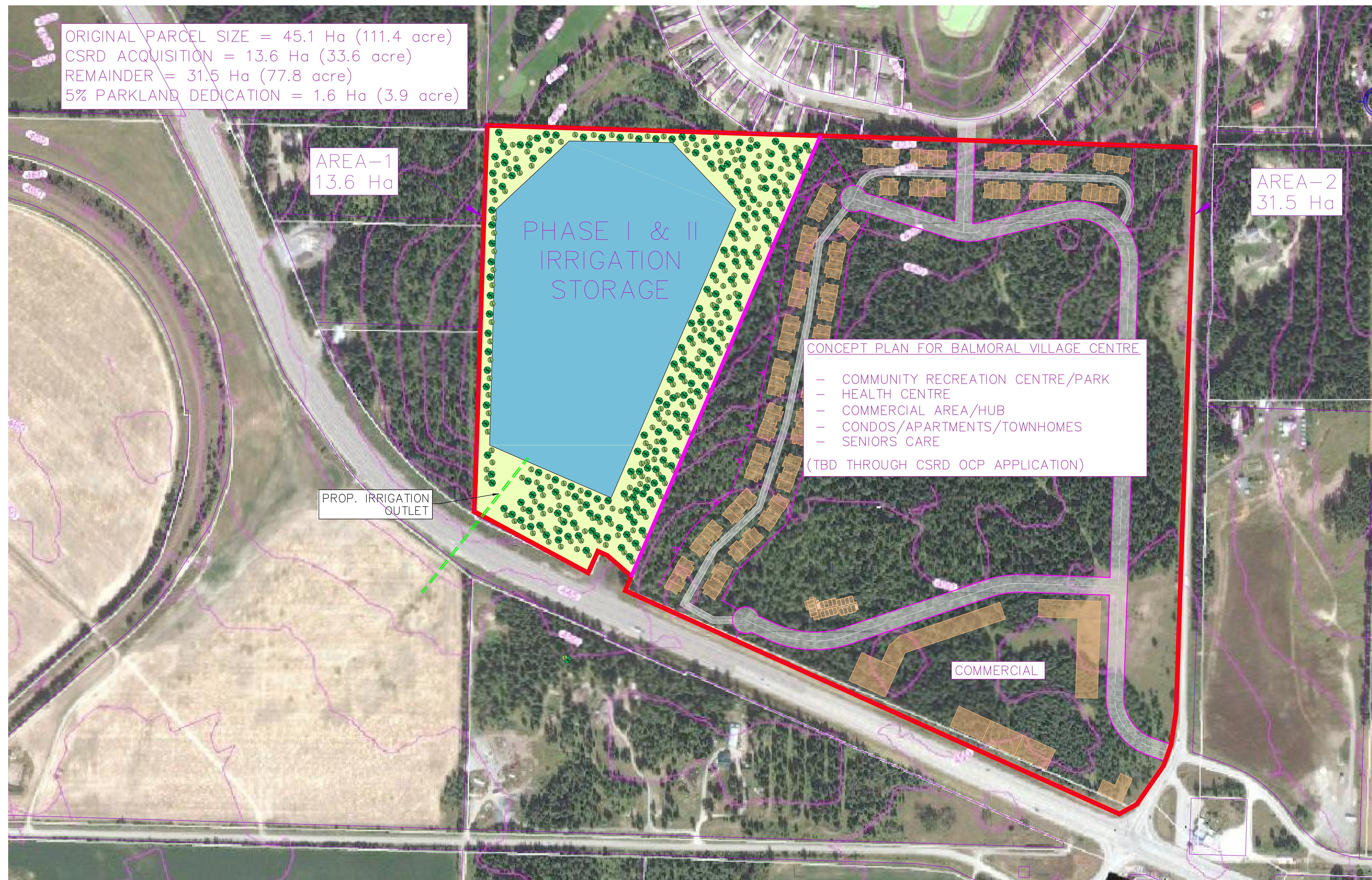
Fletcher Paine Associates Ltd.
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 Vernon, B.C. V1T 7X8
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 fletcherpaine@shawlink.ca

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EXHIBIT 8

Concept Plan for Balmoral Property





CONCEPT PLAN ONLY

SHUSWAP LAKE ESTATES
BLIND BAY VILLAGE CENTER

PROJECT: **BLIND BAY VILLAGE CENTER**

SCALE: 0 20 1:2000 100m

DRAWING DATE: **DECEMBER 2017**

REVISION DATE:

DRAWING TITLE: **CONCEPT PLAN**

DRAWING NUMBER: **17-101 - 030**

REVISION: **0**

EXHIBIT 9

Paul Demenok, Director Electoral Area C

Letter of Support





COLUMBIA SHUSWAP REGIONAL DISTRICT

PO Box 978, 555 Harbourfront Drive NE, Salmon Arm, BC V1E 4P1
T: 250.832.8194 | F: 250.832.3375 | TF: 1.888.248.2773 | www.csrld.bc.ca

January 11, 2018

Agricultural Land Commission
133-4940 Canada Way
Burnaby, BC V5G 4K6

Email: ALCBurnaby@Vicotira1.goc.bc.ca

Dear Sirs,

This letter is to outline my strong support for the application to the Agricultural Land Commission from the Columbia Shuswap Regional District to exclude the land known as the Balmoral corner, located at the corner of Balmoral Road and Highway 1 for the purposes of constructing a reclaimed water storage facility. This application is fully consistent with the provincially-approved Liquid Waste Management Plan, as well as the Official Community Plan, for Area C of the CSRD. Please note that both of these plans underwent extensive community consultations and reflect the views of this community.

In addition to the above, there is a number of very good reasons to proceed with this important infrastructure project, and these include:

1. **Agricultural Benefits-** The use of treated effluent has proven to be a highly successful way to significantly enhance agricultural productivity in similar communities in this region, such as Armstrong. The effluent from this treatment plant will be used to support and improve local agricultural operations. In turn, agricultural use of the effluent will enhance the sustainability and economic viability of the farms in the Balmoral area. In effect, this will help to ensure that this land remains cultivated and contributes to the agricultural output of this province for generations to follow.
2. **Environmental Benefits-** There are thousands of homes and businesses in the Blind Bay/Sorrento area that utilize onsite septic systems to dispose of waste water. Over many decades of use, it is apparent that many, if not most of these septic systems are now in their end stages of useful life. Local water monitoring studies, supported by the CSRD, have shown that *e coli* and *fecal coliforms* are present in levels above Canadian raw water standards at a number of test locations, including ground water sites in Blind Bay and Sorrento. Appropriate treatment of waste water and disposal of the effluent to support agricultural operations more distant from Shuswap Lake will reduce the environmental pressures on the critically important Shuswap watershed. It should be noted that there are considerations to designate the Shuswap watershed as a sensitive receiving environment.

.../2

ELECTORAL AREAS

A GOLDEN-COLUMBIA
B REVELSTOKE-COLUMBIA

C SOUTH SHUSWAP
D FALKLAND-SALMON VALLEY

E SICAMOUS-MALAKWA
F NORTH SHUSWAP-SEYMOUR ARM

MUNICIPALITIES

GOLDEN
REVELSTOKE

SALMON ARM
SICAMOUS

3. **Economic Benefits-** The implementation of community waste water treatment will provide significant economic benefits to the entire South Shuswap area. It will enable higher density developments, including assisted living and nursing home accommodations that are in very high demand in this area. It will allow for more affordable housing options and new amenities such as recreational, commercial, and medical facilities. Given that there is a population of about 8,000 people living in CSRD Area C, one can quickly appreciate why the community is so strongly supportive of this initiative.
4. **Social/Cultural Benefits-** The provincially-sponsored Age-Friendly study conducted in the South Shuswap indicated that infrastructure improvements are needed before the residents in this area can successfully age in place. With a majority of the population in Area C aged over 50 years, it is important to provide the infrastructure that will encourage residents to remain in this area.

Given these important and timely benefits, I would encourage the Agricultural Land Commission to approve the application to exclude this land from the Agricultural Land Reserve. It is clear that doing so will result in the achievement of a scenario where all interests, especially those related to agriculture, will strongly benefit.

Thank you very much for your kind consideration of this request.

Sincerely,



Paul Demenok
CSRD Electoral Area C Director

EXHIBIT 10

John Born

***Letter of Interest
– 500 Acres of Spray Irrigation***



John Born
Village Ranch Ltd.
2087 Peterson Rd
Box 481
Sorrento, BC V0E 2W0

September 15, 2017

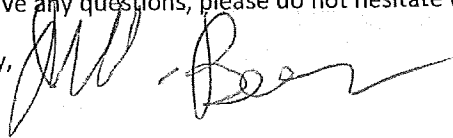
To Whom It May Concern:

This letter is intended to provide the Columbia Shuswap Regional District with an indication of our interest in utilizing reclaimed water on our farm lands from a future waste water treatment system in the Blind Bay area.

The Village Ranch Ltd. has approximately 1000 acres of farm land, 500 of which is in close proximity to the planned reclaimed water storage reservoir and would be ideal for spray irrigation. Some of the farm land currently has limited irrigation and other portions have no irrigation at this time. The addition of reclaimed water will increase the productivity of these lands, particularly in dry years such as what we are currently experiencing in 2017.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'John Born', written over the word 'Sincerely,'.

John Born, President
Village Ranch Ltd.

EXHIBIT 11

Chamber of Commerce Letter of Support





November 15, 2017

Columbia Shuswap Regional District
Attention: Paul Demenok, Area C Director

Dear Mr. Demenok:

Re: Chamber Support for Shuswap Lake Estates

On behalf of the Board of Directors for the South Shuswap of Commerce, I write this letter in support of an application to the Agricultural Land Commission being made requesting release of the lands situated at the corner of Balmoral Road and the Trans Canada Highway.

On behalf of the business community, the South Shuswap Chamber of Commerce fully supports the Columbia Shuswap Regional District acting as agent on behalf of Shuswap Lake Estates to make application to the Agricultural Land Commission to request release of the aforesaid property from the Agricultural Land Reserve.

There is a gross shortage of available land for potential development and commercial use which restricts investment in our area. Our tax assessment is very unbalanced, being 97% residential and only 3% commercial. Together with our Economic Development Department, the Chamber would like to work towards remedying that situation through the attraction of new business to the area. Having the subject lands at Balmoral Road and the Trans Canada Highway will be a positive step in that direction.

Warm Regards,

A handwritten signature in black ink, appearing to read "Mark Lane".

Mark Lane, President
South Shuswap Chamber of Commerce

EXHIBIT 12

Mel Arnold, MP
Letter of Support



Dm
PT
GC
CP

<input type="checkbox"/> CAO	<input type="checkbox"/> Agenda	Ownership:
<input checked="" type="checkbox"/> Works	<input type="checkbox"/> Reg Board	File#
<input type="checkbox"/> DS	<input type="checkbox"/> In Camera	04302003
<input type="checkbox"/> Fin/Adm	<input type="checkbox"/> Other Mtg	
DEC 22 2017		
<input type="checkbox"/> Ec Dev	RECEIVED	Ack Sent:
<input type="checkbox"/> IT	<input type="checkbox"/> Staff to Report	<input type="checkbox"/> Fax
<input type="checkbox"/> Parks	<input type="checkbox"/> Staff to Respond	<input type="checkbox"/> Mail
<input type="checkbox"/> SEP	<input type="checkbox"/> Staff Info Only	<input type="checkbox"/> Email
<input type="checkbox"/> HR	<input type="checkbox"/> Dir Mailbox	
<input type="checkbox"/> Other	<input checked="" type="checkbox"/> Dir Circulate	

Mel Arnold, MP
North Okanagan - Shuswap



Provincial Agricultural Land Commission

133-4940 Canada Way
Burnaby, B.C.
V5G 4K6

Handwritten note: L2: V. Arnold to Director Demenok please L2: NB > Mr. Arnold indicated the letter is per Director Demenok. L2: Shybon

December 19, 2017

Dear Sir/Madam,

I am writing to express my support for the application to the Provincial Agricultural Land Commission from the Columbia Shuswap Regional District (CSRD) seeking an exclusion of the land known as the Balmoral corner, at the northwest corner of Balmoral Road and Highway 1 in the Shuswap Valley for the purposes of constructing a waste water treatment facility.

I understand that this application is consistent with the provincially-approved Liquid Waste Management Plan, as well as the Official Community Plan for Area C of the CSRD. There are a number of ecological, agricultural, economic and social benefits that this important infrastructure project could provide.

The proposed construction of a waste water treatment facility would eliminate the need for thousands of homes and businesses in the Blind Bay-Sorrento area to rely on onsite septic systems- many of which are in their end stages of operational life. Local water monitoring studies at test locations in Blind Bay and Sorrento have shown that e coli and fecal coliforms levels exceed thresholds prescribed by Canadian raw water standards.

Residents and businesses need the opportunity to transition off of their personal septic systems and the proposed waste water treatment facility would provide this opportunity. Given that there is a population of about 8,000 people living in CSRD Area C, one can quickly appreciate why the community is so strongly supportive of this initiative. Clearly, this is an important step towards reducing and eliminating the introduction of e coli and fecal coliforms to the Shuswap watershed.

The application of treated effluent in agricultural operations has been proven to safely enhance agricultural production in similar communities of this region, such as Armstrong, B.C. As such, the treated effluent from the proposed treatment plant will

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Ottawa ON K1A 0A6
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Mel.Arnold@parl.gc.ca



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Constituency
1-3105-29th St.
Vernon BC V1T 5A8
Tel: (250) 260-5020
Fax: (250) 260-5025
Toll Free: 1-800-665-5040
Mel.Arnold.C1@parl.gc.ca

be used to support and improve nearby agricultural operations and make them more sustainable.

The proposed waste water treatment facility will provide significant economic benefits to the entire South Shuswap area by allowing future development to occur sustainably. Future development of assisted living, nursing home accommodations, affordable housing and new amenities such as recreational, commercial, and medical facilities will require the services of this facility.

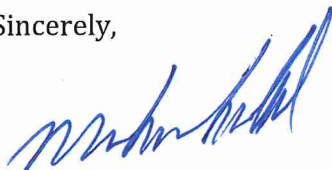
The proposed facility will also provide infrastructure that will help residents age in place- a need identified in the provincially-sponsored Age-Friendly study conducted in the South Shuswap. With a majority of the population in Area C aged over 50 years, it is important to provide the infrastructure that will support a sustainable lifestyle for all residents.

I would encourage the Provincial Agricultural Land Commission to consider these valuable ecological, agricultural, economic and social benefits as you undertake your assessment of CSRD's request for an exclusion of the lands in question from the Agricultural Land Reserve.

The construction of a waste water facility at Balmoral will greatly assist efforts to protect the Shuswap watershed while also providing residents with valuable benefits allowing them to grow and age in place.

Thank you very much for your kind consideration of this request.

Sincerely,



Mel Arnold, Member of Parliament
North Okanagan- Shuswap

Ottawa
218 Justice Building
House of Commons
Ottawa ON K1A 0A6
Tel: (613) 995-9095
Fax: (613) 992-3195
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Toll Free: 1-800-665-5040
Mel.Arnold.C1@parl.gc.ca

EXHIBIT 13

Greg Kylo, MLA

Letter of Support



Legislative Office:

Parliament Buildings
Victoria, B.C. V8V 1X4
Phone: 250-953-0965
Fax: 250-387-9100

Constituency Office:

PO Box 607
202A - 371 Alexander Street NE
Salmon Arm, B.C. V1E 4N7
Phone: 250-833-7414
Fax: 250-833-7422
Toll Free: 1 877 771-7557
email: Greg.Kyllo.MLA@leg.bc.ca



**Province of
British Columbia**
Legislative Assembly



Greg Kylo, M.L.A.
Shuswap

Tuesday, December 19, 2017

Mr. Darcy Mooney
PO Box 978
781 Marine Park Drive NE
Salmon Arm BC, V1E 4P1

Dear Darcy Mooney,

As MLA for the Shuswap, I am happy to provide this letter of support to the Columbia Shuswap Regional District for their application to the Agricultural Land Commission in their efforts to exclude the land known as the Balmoral Corner from the Agriculture Land Reserve. This land is located at the corner of Balmoral Road and Highway 1.

I understand that this application for land exclusion is to construct a Waste Water Treatment facility and it is consistent with the provincially-approved Liquid Waste Management Plan, as well as the Official Community Plan for Area C of the CSRD.

Best of luck with your application.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Greg Kylo'.

Greg Kylo, MLA
Shuswap

EXHIBIT 14

Shuswap Watershed Council Letter of Support





#

19 December 2017

Agricultural Land Commission
 133-4940 Canada Way
 Burnaby, BC
 V5G 4K6

RE: Support for the Columbia Shuswap Regional District's application for exclusion from ALR

Dear ALC Chair Frank Leonard and Okanagan Panel Vice Chair Gerald Zimmermann,

I am writing on behalf of the Shuswap Watershed Council (SWC) to express support for the Columbia Shuswap Regional District's (CSRD) application to the Agricultural Land Commission to have a parcel of land known as "Balmoral Corner" excluded from the Agricultural Land Reserve for the purpose of constructing a wastewater treatment plant.

The SWC's vision is *Enhanced water quality that supports human and ecosystem health and the local economy in the Shuswap watershed*. In principle, the SWC supports actions that improve and/or protect water quality in our watershed.

In addition to being consistent with the SWC's vision, I believe there are other reasons – in support of agriculture and water quality – to approve the exclusion application and enable the wastewater treatment project to proceed:

1. Agricultural benefits: the plan for the treatment plant includes the use of the plant's treated effluent in spray irrigation, which will support and improve local agricultural operations and enhance the sustainability of the farms in the Balmoral area.
2. Environmental benefits: Thousands of homes and businesses in the Blind Bay and Sorrento areas are currently utilizing on-site septic systems to dispose of waste water. Water monitoring has shown high levels of *E. coli* and fecal coliforms at a number of sites in Blind Bay and Sorrento. A wastewater treatment facility will reduce the environmental pressures on our critically important Shuswap watershed.

The benefits of the CSRD's planned wastewater treatment plant at Balmoral will benefit both agriculturalists and the water quality in our watershed. Therefore, we encourage the Agricultural Land Commission to approve the CSRD's exclusion application. I thank you in advance for your consideration.

Sincerely,

Paul Demenok
 Chair, Shuswap Watershed Council
 Director, Columbia Shuswap Regional District Area 'C' South Shuswap
pdemenok@csrd.bc.ca

EXHIBIT 15

Columbia Shuswap Regional District Electoral Area C – South Shuswap Official Community Plan

COLUMBIA SHUSWAP REGIONAL DISTRICT

Electoral Area 'C' Official Community Plan Bylaw No. 725

THIS CONSOLIDATED BYLAW IS NOT INTENDED TO BE USED FOR LEGAL PURPOSES

CONSOLIDATED FOR CONVENIENCE ONLY WITH:

Bylaw 725-02

Bylaw 725-08

August 24, 2017

INFORMATION SHEETS ON THE BYLAWS WHICH WERE CONSOLIDATED
INTO BYLAW NO. 725

BYLAW NO. 725-02 - Adopted February 19, 2015

- Added new subsection 3.3.2.9, Blind Bay Resort
- Amended Map

BYLAW NO. 725-08 - Adopted July 20, 2017

- Added new subsections, Section 3 - 3.4.2.7, Section 4 - 4.2.2.4, Section 12 -12.5.5.17,

COLUMBIA SHUSWAP REGIONAL DISTRICT

ELECTORAL AREA 'C' OFFICIAL COMMUNITY PLAN
BYLAW NO. 725

A bylaw to adopt the Electoral Area 'C' Official Community Plan Bylaw No. 725

WHEREAS the Board of the Columbia Shuswap Regional District wishes to adopt an Official Community Plan;

AND WHEREAS the Board has examined the plan in conjunction with its financial plan and waste management plans;

AND WHEREAS the Board has referred the plan to the Provincial Agricultural Land Commission; adjacent municipalities and regional districts; First Nations; school district board; and Provincial and Federal agencies for comment;

AND WHEREAS the Board has held a Public Hearing;

NOW THEREFORE the Board of the Columbia Shuswap Regional District, in open meeting assembled, hereby enacts as follows:

1. South Shuswap Official Community Plan Bylaw No. 700 and amendments thereto are hereby repealed.
2. PART 1 "BROAD OBJECTIVES AND POLICIES" of Schedule A of Kault Hill Rural Land Use Bylaw No. 3000 and amendments thereto are hereby repealed.
3. Schedule B (OCP Designations Maps) of Kault Hill Rural Land Use Bylaw No. 3000 and amendments thereto are hereby repealed.
4. The following schedules attached hereto are hereby made part of this bylaw and adopted as the Official Community Plan for Electoral Area 'C':
 - a. Schedule A (the Official Community Plan text)
 - b. Schedule B (Land Use Designations – Overview)
 - c. Schedule C (Land Use Designations – Mapsheets)
 - d. Schedule D (Aggregate Potential Map)
 - e. Schedule E (ALR Map)
 - f. Schedule F (Present and Proposed Parks, and Present and Proposed Public and Institutional)
5. If any section, subsection, sentence, clause, or phrase of this Bylaw is for any reason held to be invalid by the decision of any court of competent jurisdiction, the invalid portion shall be severed and the decision that is invalid shall not affect the validity of the remainder.

6. This Bylaw may be cited as the "Electoral Area 'C' Official Community Plan Bylaw No. 725."

READ a first time this 17th day of November, 2011.

READ a second time this 20th day of June, 2013.

PUBLIC HEARINGS held: 28th day of August, 2012;

15th day of January, 2013;

and 13th day of August, 2013.

READ a third time this 12th day of September, 2013.

RECEIVED THE APPROVAL of the Minister of Community, Sport and Cultural Development this

12th day of February, 2014.

ADOPTED this 20th day of March, 2014.

Charles A. Hamilton
CHIEF ADMINISTRATIVE OFFICER

David Raven
CHAIR

CERTIFIED true copy of Bylaw No. 725
read a third time.

CERTIFIED true copy of Bylaw No. 725
as adopted.

Chief Administrative Officer

Chief Administrative Officer

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Section 1. Plan Vision and Framework

1.1 Vision Statement

The South Shuswap is a special place with a distinct character and ambience. Its unique qualities include Shuswap Lake (the Lake), which forms the heart of the community and offers beautiful views, recreational opportunities, a valuable fisheries resource, and a source of domestic water. Other components of this unique ambience include the upland community areas, the tree-clad mountains, their undulating silhouettes against the sky, the well-maintained farms and ranches and their functionally expressive architecture, and the diverse social and aesthetic qualities of the various neighbourhoods. This Plan seeks to have all new developments preserve and, if possible, enhance these qualities.

Looking forward 100 years, the vast majority of the South Shuswap will remain rural, with productive agriculture, extensive forests, rugged terrain, and natural shorelines.

Throughout the coming century, the sustainability of Shuswap Lake is paramount. All public and private decisions must protect the Lake from over-development, environmental pollution, human and agricultural wastes. Concurrently, agricultural land must also be protected.

In the next 20 years, development is anticipated to be at a moderate scale, and less intensive than the Okanagan Valley. Small pockets of settlement along Shuswap Lake will stay much as they are today. Sunnybrae, White Lake, and Eagle Bay will likely be serviced with sewer and water, making way for a modest amount of primarily residential development. The Sorrento Village Centre will be serviced with sewer and water, allowing for detached and multi-unit residential, commercial, and business-industrial uses. These uses will be concentrated around the Village Centre and away from the lakeshore. Higher density residential, commercial and industrial development outside the Village Centre and 'Balmoral Corner' will be strongly discouraged; although the OCP supports such uses at the 'Balmoral Corner', the lands are in the ALR and previous applications to exclude the land for uses other than agriculture have been refused by the ALC.

South Shuswap residents and businesses will practise stewardship to allow rural lands, parks and accesses to the lakes to be available for future generations. Developed areas will include greenways that encourage people to walk and bicycle, and will have ample undeveloped land to allow for plant and animal diversity.

1.2 Sustainable Planning Principles

Nine principles provide the foundation for the Plan. Together, they point towards a more “sustainable community”, one that is continually adjusting to meet the social and economic needs of its residents within the context of the finite carrying capacity of the natural environment, and climate change, to accommodate these needs.

Principle 1

All measures to protect and restore the natural environment will be used, and emphasis placed on Shuswap Lake, White Lake and their interlinked watersheds and foreshores. The CSRD will collaborate with all other jurisdictions that have impact on these Lakes.

Principle 2

To maintain large areas of rural landscape throughout the South Shuswap while encouraging gradual, sustainable, moderate and efficient development in the existing settled areas.

Principle 3

A range of housing choices is supported, taking into account affordability for existing residents, particularly for young families and seniors. Only ground-oriented housing is appropriate near the Lakes; more dense forms of housing must be located away from the Lakes.

Principle 4

Agriculture, tourism and forestry are supported as the foundations of the economy, while economic diversification that has low impact on the area’s character and natural environment is encouraged. The establishment of a business park that attracts clean industries and complements existing businesses is also encouraged.

Principle 5

Safe roads, improved public transit, and opportunities for safe cycling and walking are encouraged as an alternative to driving. Relocation of the Trans-Canada Highway around Sorrento and intersection upgrades to improve safety of the travelling public at the Trans-Canada Highway / Balmoral Road intersection are high priorities.

Principle 6

Public accesses to the shorelines of the lakes of the South Shuswap and, in particular, providing parks and facilities that are suitable for families with children and teens are encouraged. Further development of low-impact, outdoor recreation activities throughout the South Shuswap is encouraged, while expansion of commercial houseboat operations outside of municipal boundaries is discouraged.

Principle 7

A region-wide approach to correct inferior water and sewage treatment systems and a comprehensive, affordable liquid waste management plan that takes into account the latest technologies is supported, in order to fully protect groundwater, lakes and streams.

Principle 8

A concentration of community facilities in the Sorrento and Balmoral areas, including retail, cultural, health and emergency services is supported.

Principle 9

Active community involvement within the South Shuswap, including planning decisions related to land use, housing, servicing, parks and transportation is supported.

1.3 Plan Framework

Once adopted, the South Shuswap / Electoral Area C Official Community Plan (OCP or the Plan) will be one of the Columbia Shuswap Regional District (CSRD)'s most important documents. The Plan sets out objectives and policies to guide the CSRD Board of Directors future decisions pertaining to land use, buildings, infrastructure, and community services. There are several reasons for adopting a comprehensive Official Community Plan covering the entire lands and waters of the South Shuswap:

- Guides any works undertaken or bylaws enacted by the Regional District to be consistent with the Plan;
- Allows the Regional District to use two specific measures that are unavailable without an OCP, Development Permit Areas and Development Approval Information Areas ;
- Provides prospective developers and investors, as well as existing residents and businesses, with a “roadmap” to follow in the preparation of an application for development, buildings and other structures, including moorage;
- Conveys to other governments, including their ministries and agencies, the wishes of the community/local government with respect to the services provided by these other government entities;
- Gives assurance to other levels of government when considering potential funding for works and services that a long term Plan is in effect. Funding may be contingent on a Plan being in place for capital-intensive infrastructure such as water and sewer systems.

The CSRD also has a number of bylaws and policy plans that have influenced this Plan. One of these is the CSRD's Strategic Plan (2008-2012). That Plan has four guiding principles:

- | | |
|--------------------------|--------------------------------|
| ○ Regional Collaboration | ○ Economic Sustainability |
| ○ Social Sustainability | ○ Environmental Sustainability |

Where the CSRD does not have jurisdiction, the OCP may only state the broad objectives related to that matter. The following government entities have jurisdiction on certain matters, and have been consulted as part of this planning process:

- Agricultural Land Commission
- BC Interior Health Authority
- BC Ministry of Agriculture and Lands
- Ministry of Community, Sport & Cultural Development
- BC Ministry of Energy & Mines
- BC Ministry of Environment
- BC Ministry of Forests, Lands & Natural Resource Operations
- BC Ministry of Transportation & Infrastructure
- (Canada) Department of Fisheries and Oceans
- School District #83 (North Okanagan-Shuswap)
- The Little Shuswap Indian Band
- The Adams Lake Indian Band
- Thompson Nicola Regional District
- North Okanagan Regional District
- City of Salmon Arm

1.4 Geographic Context & Existing Land Uses

With a land area of 506 km², Area C is the smallest electoral area in the Regional District. It covers just 2.0% of the total land area of the Columbia Shuswap Region, but is home to 15% of its population. The resident population at the 2011 Census of Canada was recorded as 7,662.

The countryside of Area 'C' varies from rolling hills at approximately 1500 metres to lush valleys and scenic lakeshores at approximately 350 metres.

The South Shuswap has a variety of land uses. Housing and cabins line Shuswap Lake and White Lake, while farms and ranches dominate the upland bench and valleys. Although there are no incorporated municipalities within Area C, there are a number of settled areas that have their own unique character and history — Sorrento, White Lake, Blind Bay, Eagle Bay, Reedman Point, Tappen, Sunnybrae, Notch Hill, Skimikin, Carlin and Wild Rose Bay. Some key local characteristics include:

- The areas around Notch Hill, Carlin and Tappen are well suited for the production of agricultural crops and value-added activities associated with agriculture. These areas are located away from the most populated areas of the community, and the majority of the land falls within the Provincially-designated "Agricultural Land Reserve".
- The mountainous area that divides the Salmon Arm and the main West Arm of Shuswap Lake occupies over 300 square kilometres of rural resource lands. Most of this is Provincial Crown land, and dominated by forestry. There is also similar rugged terrain in the Skimikin area, west of the Tappen Valley. The timbered area consists of a variety of forest types – Douglas fir, spruce, pine, cedar and hemlock. The major biogeoclimatic zones are the Interior Cedar Hemlock and Interior Douglas Fir with smaller areas of Engelmann Spruce Subalpine Fir (ESSF). These upland areas provide recreational opportunities — hiking, wildlife viewing, cross country skiing and mountain biking — enjoyed by residents and visitors alike.

- Sorrento is a long-established commercial area with a fascinating history and a lively arts culture. Located along the Trans-Canada Highway towards the western edge of Area C, Sorrento has a mix of service and retail commercial, tourist accommodation, professional offices, and housing. The area has a water system and several privately-operated community sewer services. The Sorrento business community has been actively working on plans to improve the viability and appearance of the commercial area.
- Elsewhere within Area C, there are convenience stores and services meeting the day-to-day needs of local residents and tourists.
- While the South Shuswap currently has a limited number of industrial enterprises, there is significant potential for employment growth. The Trans-Canada Highway and Canadian Pacific Rail both pass through the South Shuswap, providing transportation links to major centres across the country.
- The Shuswap has long been a favourite destination for summer vacationing, and a pattern of small motels, bed and breakfasts, and rental cabins and cottages has emerged. With improvements to the highway system, getting to the Shuswap is now safer and faster. At the time of writing of this plan, there were no major destination resorts in the South or North Shuswap.
- The community halls of the South Shuswap provide a venue for residents to meet and socialize, and the library hosts a range of services for the community. Two schools — in Carlin and Sorrento — provide elementary and middle schooling for students.
- Much of the property adjacent to the Lakes are privately owned, although there are a number of small accesses gradually being improved by the CSRD. Overnight camping facilities are available at Herald Provincial Park, White Lake Provincial Park, Cinnemousun Narrows Provincial Park and Skimikin Lake Recreation site.

Section 2. Protecting Our Lake Community

Sustainable Principle

All measures to protect and restore the natural environment will be used, and emphasis placed on Shuswap Lake, White Lake and their interlinked watersheds and foreshores. The CSRD will collaborate with all other jurisdictions that have impact on these Lakes.

The quality of Shuswap Lake is the most important issue to South Shuswap residents. Not only is Shuswap Lake an important amenity, it is the primary source of drinking water, and the habitat for a wide variety of aquatic life, waterfowl, and plants. It was evident throughout the planning process, that the Lake and its shoreline environment must be protected for the use and enjoyment of future generations.

As revealed through the concurrent Shuswap Lake Integrated Planning Process (SLIPP), 14 agencies from every level of government have legal jurisdiction over some aspect of the lakes.

The objectives and policies of this section focus on the sensitive environments in and around the Lake, and include measures to mitigate damage to the water quality and natural habitats that primarily fall within the jurisdiction of the Regional District.

2.1 Water Quality of Shuswap Lake

Shuswap Lake remains a relatively healthy aquatic environment. However, as the amount of development around the Lake intensifies, it becomes more susceptible to human contamination. Most properties have on-site septic systems. In proper conditions, these systems can adequately dispose of sewage; however when inadequate conditions exist, such as failed or saturated tile fields, it can lead to sewage leaching into groundwater or the Lake, causing serious contamination.

The mountains surrounding Shuswap Lake are formed of granite that results in a very low input of nutrients. Historically, Shuswap Lake has been very clear, with a high oxygen content owing to the low amount of organic matter. However, as a result of agricultural and human waste entering the groundwater, and the failure of some community sewer systems that discharge into the Lake, the nutrient levels have been increasing leading to unsightly and potentially hazardous situations. **E. Coli has been detected in increasing concentrations in groundwater and levels of chloride, nitrates and sulphate have risen along the foreshore between Sorrento and Blind Bay. With clear evidence of deterioration of the Lake, the CSRD has renewed efforts towards sustainable, acceptable liquid waste management for the South Shuswap.**

2.1.1 Objectives

- .1 To protect the water quality of Shuswap Lake and its watershed.
- .2 To maintain healthy aquatic and groundwater environments and protect people from contaminated water.

2.1.2 Policies

- .1 Regardless of the level or type of treatment, the discharge of liquid waste (human, agricultural, industrial) into Shuswap Lake, White Lake and other natural waterbodies is unacceptable. In the event that a sewer system is available, properties within the service area will be required to connect to the system.
- .2 Any new commercial, industrial, and institutional development must connect to a community sewage system. Existing residential development must connect to a community sewage system, when capacity is available.

The Regional District will:

- .3 Implement its Liquid Waste Management Plan (LWMP);
- .4 Assume control over private community sewage systems if the proper circumstances exist, and if there is support to do so from residents and the Provincial government, the users will fund the cost of operating and maintaining the system;
- .5 Investigate opportunities for one or more marine pump-out(s) to a land-based discharge system located away from the residential areas of Shuswap Lake;
- .6 Request the Interior Health Authority to prohibit any further use of dry wells for liquid waste management, and recommend that the Interior Health Authority continue to work with property owners towards replacement of these existing dry wells and failing septic systems as appropriate;
- .7 Work to enhance environmental awareness and promote activities that protect the water quality and natural aquatic habitat;
- .8 Use the full range of planning tools and regulatory measures to protect the watershed and water quality of Shuswap and White Lakes. These include zoning bylaws, development permits, building regulation, and, potentially, statutory covenants; and
- .9 Work with federal and provincial ministries and agencies, including the Shuswap Lake Integrated Planning Process (SLIPP), to implement strategies that protect and enhance the quality of the lakes and streams of the South Shuswap.

2.2 Watershed

Shuswap Lake is a large lake system that is fed from a variety of sources, including Shuswap River, Salmon River, Eagle River, Adams River, Seymour River and Anstey River. Several small creeks and streams also flow into the Lake, including Scotch Creek, White Creek, Celista Creek and Adams Creek. There is only one outlet from the Lake — Little River at the west end of the Lake.

Activities within the watershed can significantly impact the water quality of the area lakes. Stormwater runoff in developed areas can contain contaminants that flow into rivers, streams or ditches, and eventually into the lakes. Agricultural operations can also impact the watershed, through the spreading of manure or livestock grazing too close to a watercourse. Poor forest practices can also have negative impacts on the watershed by increasing suspended solids in streams and lakes.

2.2.1 Objectives

- .1 To protect Shuswap and White Lake watersheds from land uses and practices that jeopardize their water quality.
- .2 To facilitate information exchange between local residents and environmental stewardship organizations and resources.

2.2.2 Policies

The Regional District will:

- .1 Continue to work with SLIPP, and other government agencies and non-governmental agencies to facilitate collaboration and joint decision-making on issues that impact the watershed.
- .2 Advise and expect agricultural operators to adhere to the Agricultural Control Regulation under the BC Environmental Management Act and the BC Health Act.
- .3 Advise and expect agricultural operators to collaborate with the BC Agricultural Council in the implementation of the Canada-BC Environmental Farm Program.
- .4 Advise and expect forestry companies to use responsible forestry practices when logging near a watercourse, and to follow the Federal Department of Fisheries and Oceans Habitat Management Operating Principles for Crown and Private Forest Harvesting.
- .5 Disseminate educational information to the public about the importance of responsible stewardship of the watershed and expect property owners and developers to consider the use of permeable surfaces when landscaping their properties.
- .6 Implement the Riparian Areas Regulation of the Fish Protection Act by establishing a Riparian Areas Regulation Development Permit Area along the Lakes, rivers, streams, and other watercourses, requiring proposed activities and development to be subject to a science based assessment conducted by a Qualified Environmental Professional (QEP).

2.3 Shoreline Environment

Shorelines are among the most sensitive natural environments, as they are where two ecosystems merge — an aquatic ecosystem and a terrestrial ecosystem. Shoreline environments experience a significant amount of pressure from human activity, including the impacts from watercraft use. Private boat docks are common throughout the South Shuswap.

Though much of the upland of Shuswap and White Lake is privately owned, the Provincial Crown owns nearly all areas located between the high and low watermarks of lakes, streams and rivers. Individuals cannot build on, or develop, aquatic Crown land without the Province's authorization. If an owner of the adjacent upland property proposes to construct moorage, a licence of occupation for moorage is required from the Integrated Land Management Bureau.

2.3.1 Objectives

- .1 To maintain the unique physical and biological characteristics of the shoreline environment.
- .2 To maintain shoreline habitats to protect them from undesirable development.
- .3 To manage the foreshore to ensure appropriate use and prevent overdevelopment.

2.3.2 Policies

- .1 Non-moorage uses other than passive recreation are not acceptable on the foreshore. These include facilities such as beach houses, storage sheds, patios, sun decks, and hot tubs. Additionally, no commercial uses, including houseboat storage or camping, are acceptable on the foreshore.
- .2 Land owners must not alter the natural habitat and shoreline processes unless specifically authorized. The placement of fill and the dredging of aquatic land are not generally acceptable.
- .3 Encourage the Integrated Land Management Bureau, when carrying out reviews of foreshore tenure applications, to take the foregoing objectives and policies into consideration, with emphasis on the environmental sensitivity of the foreshore areas, as well as ensuring an appropriate relationship with upland areas.
- .4 Private moorage owners and builders will comply with the Ministry of Environment's Best Management Practices for Small Boat Moorage on Lakes, and minor works policies published by Transport Canada, Navigable Waters Protection Division prior to construction of any foreshore moorage (works).
- .5 Encourage Government agencies with mandates for protecting the environmental integrity of lakes in the South Shuswap to carry out scientific research and water quality testing to determine whether the quality of lake water near the shoreline is deteriorating, and if it is, to determine the cause(s) of the deterioration, and take steps toward correcting the situation.

The Regional District will:

- .6 Assess and strive to protect sensitive fish habitat when implementing the boat launching facilities provisions of the Electoral Area C Parks Plan;
- .7 Encourage waterfront owners to consider shared docks in the interests of having one larger dock that extends into deep water, rather than a number of individual docks that are in relatively shallow water with higher fish habitat values;

- .8 Advise and expect property owners to replace older, on-site sewage systems with newer technology to prevent potential contamination of the shoreline;
- .9 Advise and expect property owners not to remove vegetation along the shoreline that could result in erosion, loss of food and nutrients for fish, and loss of shade for young fish; landowners must refer to the Ministry of Environment's Best Management Practices for Hazard Tree and Non Hazard Tree Limbing, Topping or Removal; and
- .10 Implement Lakes Zoning Bylaw 900 which sets out regulations pertaining to the placement of docks and buoys

2.4 Fish and Aquatic Habitat

Some of the most sensitive fish and aquatic habitats are in close proximity to the shoreline. Human activity along the shoreline can have a substantial impact on the health of aquatic habitats.

2.4.1 Objective

- .1 To identify significant fish and aquatic habitat, including spawning habitat and protect these areas from human encroachment.

2.4.2 Policies

The Regional District will:

- .1 Implement the Riparian Areas Regulation guidelines to help protect fish and aquatic habitats.
- .2 Expect landowners and developers to refer to the Department of Fisheries and Oceans — Land Development Guidelines for the Protection of Aquatic Habitat, when constructing near any watercourse.
- .3 Use data from the Shuswap Watershed Mapping Project to assist in its decision-making.

2.5 Watercraft Owners and Operators

Boating is a recreational activity enjoyed by many residents and visitors. There is a variety of watercraft on the lakes, including powerboats, sailboats, jet skis, houseboats, canoes and kayaks. When used responsibly, watercraft can have limited impact on the lake environment. However, misuse can lead to water quality degradation and destruction of fish and wildlife habitat. Examples of unlawful practices include dumping of black water (raw sewage) and “grey water” into the lakes. Irresponsible practices include boating through sensitive environments, gasoline spills and parking on sensitive shorelines. These concerns apply equally to commercial watercraft businesses and private owners.

With the increasing volume of motorized boating there are also concerns about impacts on human safety and quiet enjoyment. While it is recognized that greater education of the boating public and improved enforcement of existing regulations are necessary, some people feel that — in the interest of long-term sustainability — ways and means should be investigated to place limits on motorized boating.

2.5.1 Objective

- .1 To be active, responsible stewards of the environmental quality of all lakes while enjoying boating in the South Shuswap.

2.5.2 Policies

- .1 All watercraft users (commercial and private) will be required to dispose of liquid waste through pump-outs that connect into a community sewer system.

The Regional District will:

- .2 Work with the houseboat industry to protect the quality of Shuswap Lake. This includes the expectation that Shuswap houseboat rental companies will install grey water holding tanks on houseboats;
- .3 Expect the houseboat / watercraft industry to develop more sewage pump out stations, or other methods of appropriate sewage treatment, along Shuswap Lake;
- .4 Advise and expect privately-operated houseboat owners to meet the same standards as the commercially-operated houseboat industry;
- .5 Encourage the BC Ministry of Environment to more consistently enforce the prohibition of the dumping of grey water into Shuswap Lake.
- .6 Continue to enforce the marine noise control bylaw;
- .7 Develop public boat launching facilities in appropriate locations as recommended in the Electoral Area C Parks Plan, and provide these facilities with sufficient parking and washroom facilities to meet the needs of the public;
- .8 In co-ordination with watercraft users and the houseboat industry, create public awareness of sensitive shorelines and ecosystems, and advise watercraft users against entering these areas; and
- .9 In consultation with all interests, initiate a study of motorized boating on Shuswap Lake (and, potentially, White Lake). At a minimum, there will be three goals to this study: to investigate the impact of motorized boating; to investigate a maximum capacity of motorized boating; and to consider various strategies to minimize negative impacts of motorized boating.

2.6 Eurasian Water Milfoil

Aquatic plants are an important part of the biology of lakes and other water bodies, providing food, habitat and rearing areas for a variety of organisms. Some aquatic plants, including the Eurasian water milfoil, have undesirable effects, especially when they are too abundant or become established in unwanted locations.

Eurasian water milfoil is not native to North America. It was first observed in B.C. in Okanagan Lake in 1970. It has since spread to the lakes of the South Shuswap. Management strategies include preventive efforts (education, surveillance of non-infested areas), placing bottom coverings on new populations to prevent lake-wide infestations, root removal and harvesting.

2.6.1 Objective

- .1 To manage and try to prevent the further spread of milfoil in the lakes of the South Shuswap.

2.6.2 Policy

- .1 The Regional District, along with community environmental groups and the boating industry, expects boaters to reduce the spread of water milfoil and other aquatic weeds by clearing all plant material from boats, motors, trailers, wet wells, and anchors. These plants should be disposed of far away from water bodies.

Section 3. Growing Gradually and Wisely

Sustainable Principles

Large areas of rural landscape throughout the South Shuswap will be maintained while encouraging gradual, sustainable, moderate and efficient development in the existing settled areas.

A range of housing choices is supported, taking into account affordability for existing residents, particularly for young families and seniors. Only ground-oriented housing is appropriate near the Lakes; more dense forms of housing must be located away from the Lakes.

Agriculture, tourism and forestry are supported as the foundations of the economy, while economic diversification that has low impact on the area's character and natural environment is encouraged. The establishment of a business park that attracts clean industries and complements existing businesses is also encouraged.

3.1 General Land Use Management

The policies of this Plan aim to protect the rural character of this area, yet allow modest growth in settled areas that are, or will be, serviced by community water and sewer systems. By directing growth to the Village Centre and Secondary Settlement Areas as shown on Schedule B Land Use Designations – Overview, and Schedule C Land Use Designations - Mapsheets, there will be less impact on the rural and natural areas of the community, thereby protecting natural habitat and preserving the area's highly valued rural character. This settlement pattern will also facilitate shorter vehicle trips, as well as encourage more walking, bicycling and the use of public transit.

3.1.1 Objectives

- .1 To be thoughtful and careful stewards of the lands and waters of the South Shuswap to allow future generations an opportunity to appreciate and benefit from wise choices made by today's elected decision-makers.
- .2 To manage growth by directing development and redevelopment in existing settled areas and to discourage development outside these areas.
- .3 To provide a clear separation between rural and non-rural lands to preserve both rural and non-rural lifestyle choices.
- .4 To prevent inappropriate uses of shorelines, especially in areas with high fish habitat values.
- .5 To support the growth and long-term viability of the agricultural industry in the South Shuswap.
- .6 To support forestry, mining and recreational uses provided they follow all Provincial regulatory requirements, and avoid conflicts with residential areas.

- .7 To work towards providing a range of housing types in the South Shuswap, principally within the Village Centre and Secondary Settlement Areas.
- .8 To provide for a range of commercial services within the Village Centre and Neighbourhood Commercial designations that meet the needs of South Shuswap residents and visitors.

3.1.2 Policies

- .1 Land uses and activities that adversely affect safety, health, or liveability within Area C are not supported. Temporary use permits are not supported.
- .2 The Sorrento Village Centre, established on Schedules B and C, will accept much of the residential, retail and business development in Area C and will be connected to community water and sewer systems. **Future development of a Balmoral Village Centre, at the northwest corner of the Balmoral Road/Highway #1 intersection, is dependent on approval from the ALC, as it lies within the ALR; this plan does not presume the ALC's position on the future uses of this land and does not support development pressure or speculation based on the plan's support of this area as a Village Centre as previous applications to exclude these ALR lands have been refused by the ALC.**
- .3 Secondary Settlement Areas in the South Shuswap are established on Schedules B and C, as Blind Bay, Sunnybrae, White Lake and Eagle Bay.
- .4 Outside the Village Centre and Secondary Settlement Areas, new residential development is generally discouraged unless co-located with an agricultural use. Strip commercial development between these development areas is not acceptable.
- .5 Development will only be considered in areas with lower environmental values within the Village Centre and Secondary Settlement Areas, thereby allowing for the protection of areas with higher environmental values as well as agricultural lands.
- .6 Except as required to improve the health and safety of existing development, no public funds will be expended for the capital cost of extending water and sewer servicing to lands outside the Village Centre and Secondary Settlement Areas.
- .7 Agricultural uses on ALR lands are supported in all land use designations. Agricultural uses on non-ALR lands may be supported in all land use designations subject to compatibility with adjacent land uses and setbacks set out in the zoning bylaw.
- .8 As per the authority granted under the Local Government Act s.904 and s.905, consider creating an 'Amenity Policy' to guide developers making applications to the CSRD, and to assist staff and the Board in considering land use applications. The policy should detail a range of density bonusing alternatives and voluntary contributions that are of a community benefit such as parkland dedication, infrastructure development, affordable housing, and public facilities.
- .9 At the time of introducing zoning regulations to unzoned areas, existing uses and structures may be recognized in the zoning bylaw and that recognition will be considered

as conforming to this OCP. New development, however, must conform to the policies and land use designations in this OCP.

3.2 Village Centre (VC)

3.2.1 Objective

To allow for a variety of residential and commercial development within Sorrento.

3.2.2 Policies

- .1 This designation applies to areas within Sorrento as outlined on Schedules B and C.
- .2 Permitted land uses within the Village Centre include: residential (see *Policy 3*), retail including food services, offices, business and personal services, community and health-related services, public and institutional uses, recreation, arts and cultural activities, highway commercial uses, personal, professional and financial services. Small-scale light industrial uses whose operations are compatible with adjacent uses are also permitted.
- .3 Residential development is subject to the following housing forms and maximum densities:

Detached	5 units/ac (1 unit/0.2 ac) 12 units/ha (1 unit/0.08 ha)
Semi-detached	8 units/ac (1 unit/0.13 ac) 20 units/ha (1 unit/0.05 ha)
Townhouse	12 units/ac (1 unit/0.13 ac) 30 units/ha (1 unit/0.03 ha)
Apartment	30 units/ac (1 unit/0.03 ac) 74 units/ha (1 unit/0.01 ha)

- .4 Residential units above ground floor commercial establishments and live-work units may be permitted and encouraged.
- .5 New development in the form of pedestrian- oriented “mainstreet” building types or infill that creates enclosed nodes/courtyards is strongly encouraged.
- .6 Resilient “mainstreet” building types are encouraged that allow development of a mix of uses (retail, office, residential) and which can be adjusted in response to market demands. In Sorrento, predominantly commercial buildings are encouraged to locate within or adjacent to already established commercial parcels to build on a contiguous commercial core.
- .7 All new subdivisions and all new rezoning applications which would increase existing residential densities or require additional sewer or water capacity must be connected to both a community sewer system and a community water system. Where community sewer and water system servicing is not feasible, the maximum allowable density is 1 unit / ha (1 unit / 2.47 ac).

- .8 Where possible, new development will include dedicated pedestrian and non-motorized linkages to and through the development.
- .9 Main street mixed use building types are encouraged to improve the quality of the streetscape along the corridor, to increase the density and vitality of the core, and to make better use of vacant and under- used sites. This will create a stronger definition of the pedestrian environment. Building facades should have active frontages, where entries and active uses (food service patios, display areas, or public realm enhancements) orient towards the street. This will also help to create a village core in which it is possible to more easily walk between stores and services, providing maximum pedestrian activity along the public street.
- .10 New commercial, industrial, multi-family and intensive residential development within the Village Centre is subject to the Form & Character Development Permit Area Guidelines.

3.3 Secondary Settlement Areas

3.3.1 Objective

- .1 To allow for predominantly residential development and some neighbourhood commercial development within Blind Bay, Eagle Bay, Sunnybrae and White Lake.

3.3.2 Policies

- .1 This designation applies to areas within the Blind Bay, Eagle Bay, Sunnybrae and White Lake Secondary Settlement Area boundaries, as outlined on Schedules B and C.
- .2 Permitted land uses within the Secondary Settlement Areas include: residential, neighbourhood commercial uses, recreational residential, community and health- related services, institutional uses, recreation, arts and cultural activities.
- .3 Residential development is subject to the housing forms and maximum densities of each land use designation within the Secondary Settlement Area Boundaries (i.e. Neighbourhood Residential (NR), Country Residential (CR), etc).
- .4 Expansion of the Blind Bay Secondary Settlement Area south of the Trans-Canada Highway may be supported if there is both community sewer and community water servicing available and if the majority of the land to be included is non-ALR land.
- .5 In the Eagle Bay and White Lake Secondary Settlement Areas, re-designation to Medium Density may be supported through a successful rezoning application and connection to both community water and sewer systems. For the White Lake community, a road capacity assessment should be completed prior to new Medium Density development.
- .6 All new subdivisions and all new rezoning applications which would increase existing residential densities or require additional sewer or water capacity must be connected to both a community sewer system and a community water system. Where community sewer and water system servicing is not feasible, the maximum allowable density is 1 unit / ha (1 unit / 2.47 ac).

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- .7 Where possible, new development will include dedicated pedestrian and non-motorized linkages to and through the development.
- .8 New commercial, industrial, multi-family and intensive residential development within the Secondary Settlement Areas is subject to the Form & Character Development Permit Area Guidelines.
- .9 Notwithstanding subsections 3.1.2.5, 3.3.2.2, 3.6.1.1, 3.6.2.1, 3.7.2.1, 3.7.2.2, 3.8.2.1 and 3.8.2.2, the waterfront portion of the Blind Bay Resort properties, legally described as Lot A, Section 17, Township 22, Range 10, W6M KDYD, Plan 14713 and that part of Strata Lot C Section 17 Township 22 Range 10 W6M KDYD, Strata Plan KAS3359 lying north of Blind Bay Road can be considered for re-designation to Resort Commercial and for rezoning to allow an extension of the resort development onto the waterfront portion of the aforementioned properties.

3.4 Residential

3.4.1 Policies

- .1 New residential development will be directed to the Village Centre and Secondary Settlement Areas identified on Schedules B and C. Outside these areas, residential development is discouraged unless co-located with an agricultural use.
- .2 Residential development is subject to the following land use designations, housing forms and maximum densities:

Land Use Designation	Housing Form	Maximum Density
Medium Density (MD)	Detached	5 units/ac (1 unit/0.2 ac) 12 units/ha (1 unit/0.08 ha)
	Semi-detached	8 units/ac (1 unit/0.13 ac) 20 units/ha (1 unit/0.05 ha)
	Townhouse	12 units/ac (1 unit/0.13 ac) 30 units/ha (1 unit/0.03 ha)
Neighbourhood Residential (NR)	Detached, Semi-detached	2 units per 1 acre (1 unit/0.2 ha)
Country Residential (CR)	Detached, Semi-detached	1 unit per 1 acre (0.4 ha)
Rural Residential (RR)	Detached, Semi-detached	1 unit per 2.5 acres (1 ha)
Rural Residential 2 (RR2)	Detached, Semi-detached	1 unit per 5 acres (2 ha)
Small Holdings (SH)	Detached, Semi-detached	1 unit per 10 acres (4 ha)
Medium Holdings (MH)	Detached, Semi-detached	1 unit per 20 acres (8 ha)
Large Holdings (LH)	Detached, Semi-detached	1 unit per 25 acres (10 ha)
Rural Holdings (RH)	Detached, Semi-detached	1 unit per 148 acres (60 ha)

- .3 Cluster forms of development are encouraged within the Sorrento Village Centre and Secondary Settlement Areas to reduce the amount of land affected by residential growth

when the permitted number of units is clustered on part of the site, and the remaining area is protected in a natural state. Where cluster developments are located near natural features, such as waterbodies, the cluster development should be directed away from the natural features. Areas near the features should be protected common or public areas.

- .4 Bed and Breakfast businesses are appropriate provided they are consistent with the residential character of the neighbourhood and provide adequate on-site parking. Additional conditions for Bed and Breakfast businesses will be included in the zoning bylaw.
- .5 One secondary suite is appropriate in a detached home provided it is compatible with surrounding residential uses. Additional conditions related to a secondary suite will be included in the zoning bylaw.
- .6 Agricultural uses are appropriate in all designations. Outside ALR lands, agricultural uses are supported to an intensity compatible with surrounding uses. On ALR lands, agricultural uses are subject to the Agricultural Land Commission Act and Regulations.
- BL725-08 .7 Notwithstanding 3.4.2.2, above, maximum allowable density within the MD designation are permitted to increase to a total of 19.0 units/ha on Lots 1 and 2, Sections 7 and 8, Township 22, Range 10, West of 6th Meridian, Kamloops Division Yale District, Plan KAP79111, only.

3.5 Residential Resort (RT)

3.5.1 Objective

- .1 To recognize existing residential resort developments and provide for limited potential within Secondary Settlement Areas.

3.5.2 Policies

- .1 Residential resort refers to recreational vehicles, modular homes and recreational cabins located in a park-like setting with shared amenities.
- .2 New applications for Residential Resort (RT) will be directed to locate in the Secondary Settlement Areas, but must be located away from the waterfront.
- .3 All new subdivisions and all new rezoning applications which would increase existing densities or require additional sewer or water capacity must be connected to both a community sewer system and a community water system. Where community sewer and water system servicing is not feasible, the maximum allowable density is 1 unit / ha (1 unit / 2.47 ac).
- .4 The maximum density for new recreational residential dwellings is 12 units/ac (30 units/ha).

EXHIBIT 16

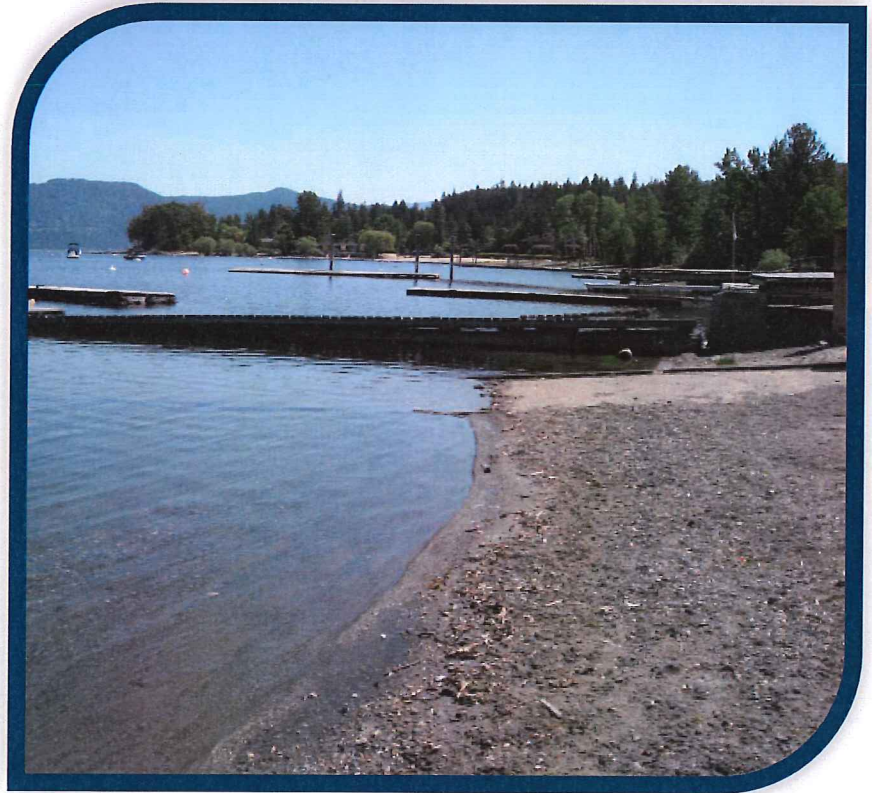
Western Water Associates Ltd 2016 Groundwater Monitoring Report – Blind Bay & Sorrento



2016 GROUNDWATER MONITORING REPORT COLUMBIA SHUSWAP REGIONAL DISTRICT BLIND BAY AND SORRENTO, B.C.

Prepared for:

**Columbia Shuswap
Regional District
555 Harbourfront Drive NE
PO Box 978
Salmon Arm, B.C. V1E 4P1**



Prepared by:

**Western Water Associates Ltd.
#106 - 5145 26th Street
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December 2016

Project: 14-024-12

Dec. 30, 2016

Project # 14-024-12

Hamish Kassa, Environmental Services Coordinator
Columbia Shuswap Regional District
555 Harbourfront Drive NE
P.O. Box 978
Salmon Arm, B.C., V1E 4P1

Dear Mr. Kassa:

Re: 2016 Blind Bay and Sorrento Groundwater Quality Monitoring Report

Western Water Associates Ltd. (WWAL) is pleased to provide the 2016 Groundwater Monitoring Report for Blind Bay and Sorrento, B.C.

This report summarizes the background, method, and results for the monitoring program conducted at Blind Bay and Sorrento in 2016. Further, the report also provides recommendations for the program in subsequent years.

We trust that the professional opinions and advice presented in this document are sufficient for your current requirements. Should you have any questions, please contact the undersigned.

WESTERN WATER ASSOCIATES LTD.



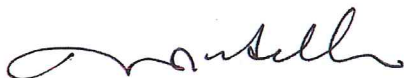
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1. INTRODUCTION

1.1 Project Background

In 1983, upon the request of the Columbia Shuswap Regional District (CSRD), Urban Systems Ltd. conducted a study of drainage and sewage disposal for the communities of Blind Bay and Sorrento (Figure 1). Potential private sewage disposal system (PSDS) breakout locations and foreshore aesthetics (e.g. effluent odour along Shuswap Lake shoreline) were identified in the study and recommendations for diverting surface drainage were made (Urban Systems Ltd. 1983).

The groundwater monitoring program for the Blind Bay and Sorrento areas is part of a larger study that currently involves the following other communities in the CSRD: Celista/Magna Bay, Sunnybrae, Swansea Point, White Lake, Anglemont, Malakwa, and Seymour Arm. This report details the findings of monitoring events conducted in 2016 at Blind Bay and Sorrento. Urban Systems Ltd. conducted water quality monitoring from 1995 to 1999, and Golder subsequently monitored from 2000 to 2007 (Golder 2007). No sampling was done in 2008 and Associated Engineering (formerly Summit Environmental Consultants Inc.) executed the monitoring between 2009 and 2013. In 2014 Western Water Associates Ltd. (WWAL) was awarded the regional monitoring contract and we are pleased to provide the results of the groundwater program at Blind Bay and Sorrento in this report.

In 1994, Golder Associates (Golder) performed a preliminary assessment of groundwater quality and found that at Blind Bay and Sorrento deteriorating water quality, most likely related to septic impacts was occurring. Blind Bay was observed to have more issues of PSDS breakout and surface drainage than Sorrento (Urban Systems Ltd., 1983). In 1995, Golder conducted a drilling program and installed eight groundwater monitoring wells at Blind Bay and Sorrento. Two of the installed wells were dry (BH-1 and BH-5), two were completed in bedrock (BH-3 and BH-7), and four were completed in unconsolidated deposits of sand or silt (BH-2, BH-4, BH-6, and BH-8). Well logs for the monitoring wells are provided in Appendix A. The Liquid Waste Management Plan for Area C Stage 3 Report recommended development of a community sewer system and wastewater treatment plant (AECOM 2009). Plans to install the system began in 2013-2014, and may cover both areas in one system or potentially separate projects for Sorrento and Blind Bay. Water quality monitoring is being continued during the planning process. More recently (2015), Western Water Associates Ltd. and Gentech Engineering have collaborated to provide CSRD with preliminary treatment facility site evaluations for an initial component of the sewerage project that would involve just Sorrento.

1.2 Objective and Scope

To meet the goal of assessing potential impacts of PSDS on groundwater quality at Blind Bay and Sorrento (the “site”), the objectives of the program are to collect and analyze groundwater samples, and interpret analytical results. The tasks undertaken were as follows:

- Collect and submit to the laboratory, water samples from a network of domestic and monitoring wells, foreshore locations, and surface water sites;
- Analyze the data and prepare the final annual report (this document); and
- Review the results with the CSRD Project Manager at the end of each year and revise the program for future years, if warranted.

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2. SITE DESCRIPTION

This section describes geographic location, bedrock and surficial geology of the study area, historical climate data, hydrologic data, and hydrogeology data for Blind Bay and Sorrento. Further, a description of the monitoring network that was sampled in 2016 is provided.

2.1 Location

Neighbouring communities Blind Bay and Sorrento are located on the southern shore of the western arm of Shuswap Lake. The communities of Sorrento and Blind Bay are approximately 19 km and 25 km east of Chase, B.C., respectively and directly across Shuswap Lake from Scotch Creek (Figure 1). Sorrento, approximately 6 km due west of Blind Bay, straddles Trans-Canada Highway 1 (Highway 1), while Blind Bay is mostly situated on the northeast (lake) side of Highway 1. Topography consists of north and northeast facing slopes, ranging in elevation from 350 metres above sea level (m asl) near the lake to approximately 500 m asl in upland regions at Blind Bay and Sorrento. Blind Bay has more steeply sloped topography than Sorrento. Figures 2 and 3 show monitored sample locations as well as site overviews for Blind Bay and Sorrento, respectively.

Blind Bay's population was 1,738 and Sorrento's population was 1,255 in the last published census in 2011 (StatsCan 2011). As we understand, residents at Blind Bay and Sorrento operate individual PSDS. We are aware of three lake-based community water systems in the area: Sorrento (Sorrento Waterworks) and Blind Bay (Cedar Heights Waterworks) are CSRD owned systems that provide water to portions of each area, while the remaining homes in outlying areas are serviced by private individual or community water wells except for Shuswap Lake Estates who also operate a privately-owned community water system with a lake intake. Residential development at Blind Bay is largely within 1 km of the shoreline. Areas upslope to the southwest of Highway 1 are largely forested with limited urban development. The majority of residential development at Sorrento is within 500 m of the Shuswap Lake. Land use along the upper reaches of Newsome Creek, which runs north through Sorrento eventually discharging into Shuswap Lake (Figure 3), is agricultural, as is much of the region southwest of Highway 1.

2.2 Geology

Bedrock geology underlying the sites is comprised of sedimentary and metamorphic rocks including limestone, conglomerate, greenstone, skarn, micaceous and calcareous quartzite, and marble from the Mount Ida Assemblage (Massey et al 2005). The formation was formed during the Paleozoic Era, approximately 250 to 540 million years ago. Bedrock geology just west of Sorrento consists predominately of sedimentary rocks sandstone, shale, and coal and igneous rocks andesite, basalt, tuff, and breccias of the Kamloops Group (66 to 23 million years ago) (Massey et al 2005). Blind Bay has more predominant bedrock outcropping than Sorrento.

Surficial geology consists primarily of alluvium, glaciofluvial tills, and collapsed lacustrine sediments (Massey et al 2005; Fulton 1995). Low-lying areas near the foreshore include alluvial, channel, and shoreline deposits with the occasional bedrock outcropping.

The near surface sediments (upper 2 m) in the Blind Bay area are silt with clay and fine to medium sand lacustrine and fluvial in origin and shoreline deposits of sand and gravels (Fulton 1995). Bedrock is typically encountered at depths of 3 m to 15 m. Notch Hill is the predominant topographic feature of Blind Bay and extends to Shuswap Lake. There are several natural drainage channels (gullies) in the area.

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Near surface sediments (upper 2 m) at Sorrento are comprised of sandy silt, lacustrine origin, and sand and gravels, which are beach deposits and fluvial in origin (Fulton 1995). Predominant materials below these upper sediments are clay, sands, silts, gravels, and bedrock. Bedrock is encountered at various depths, typically from 12 m to 30 m (MoE 2015).

2.3 Climate, Hydrology and Hydrogeology

Climate data for the region are derived from the Salmon Arm Airport climate station (Climate STN ID 1166R45), approximately 20 km south of the site and at an elevation of 527 masl. Climate averages for this station are available from 1980 to 2010. During this period, the recorded average annual temperature and total precipitation at the climate station were 7.4°C and 653 mm/year, respectively (Environment Canada 2016). The recorded mean monthly temperatures ranged from -3.7°C in January and December to 19.1°C in July. The recorded mean monthly precipitation ranged from 33.9 mm in February to 82.4 mm in November. Table 1 summarizes the climate data.

Table 1: Monthly Average Climate Data (STN 1166R45: 1982 - 2007)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Avg.
Temperature													
Daily Average (°C)	-3.7	-1.6	3	8	12.5	16.2	19.1	18.5	13.2	6.7	0.6	-3.7	7.4
Precipitation													
Rainfall (mm)	11.2	14.7	32.5	43.1	59.4	65.7	46.1	37.5	43.4	53.6	50.7	11	468.9
Snowfall (cm)	56.2	19.2	9.2	0.6	0	0	0	0	0	0.7	31.6	66.8	184.2
Precipitation (mm)	67.4	33.9	41.7	43.6	59.4	65.7	46.1	37.5	43.4	54.2	82.4	77.8	653

Source: Canadian Climate Normals (Environment Canada, 2016)

Blind Bay and Sorrento are both located on the western arm of Shuswap Lake, in the South Thompson River watershed. Historically, the closest monitored hydrometric station was Shuswap Lake near Sorrento (STN 08LE047). Although the station is no longer active (1923 to 1979), basin characteristics at this location make this station a good reference for water discharge in the area. The 1979 hydrograph for Shuswap Lake indicates that the highest levels occur in early June after spring freshet. This is also evidenced by the Shuswap lake hydrometric station near Salmon Arm (STN 08LE070) and the Adams River near Squilax Station (STN 08LD001) with peak water level in May and June and lowest water levels between late September through February prior to freshet. The yearly hydrologic cycle, driven by snow melt in the upper watershed, influences the regional and local groundwater flow at the site; therefore, we use the hydrograph to help select the most appropriate water quality sampling dates.

There are three provincially mapped aquifers in the Blind Bay study area. Bedrock aquifer 227IIIC is mapped across the western region of Blind Bay and is classified as having a low productivity, low demand, and low vulnerability. Sand and gravel aquifer 232IIIC is mapped in the upper (southern) region of Blind Bay in the lacustrine deposits of the Fraser Glaciation, and is classified as having a low demand, moderate productivity, and low vulnerability. To the east, a second bedrock aquifer 233IIIB is recorded as having low demand, low productivity, and moderate vulnerability. Demand describes local reliance on the groundwater water source, productivity indicates relative well yields, and vulnerability describes the potential for contaminants to move from the surface into the aquifer. The general location of these aquifers is shown in Figure 2. Well logs for monitoring wells BH-2, BH-3, BH-4, BH-6, and BH-7, all of

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which are in the Blind Bay area, show sand or sand and gravel to depths ranging from 3.4 metres below ground surface (m bgs) to 7.6 m bgs. Bedrock was intercepted in BH-3 and BH-7 at depths of 3.4 and 7.6 m bgs, respectfully. Monitoring well logs are provided in Appendix A.

In the Sorrento area, there are two provincially mapped aquifers, which include bedrock aquifer 227IIC to the east and sand and gravel aquifer 222IIIC to the west. Aquifer 222IIIC is situated within the lacustrine and fluvial deposits and is described as having a low demand, moderate productivity, and low vulnerability.

There are approximately 115 provincially registered wells in the Blind Bay and Sorrento area; with most of the wells located in the upper regions along community boundaries. Of these 115 registered wells, approximately 40 are completed within the underlying bedrock aquifer and the remainder have either unknown completion depths or are completed within the unconsolidated sand and gravels. The well depths within the unconsolidated aquifers (Aquifers 232IIIC and 222IIIC) range between 10 m (33 ft) and 121 m (397 ft), with an average depth of 37 m (121 ft). Inferred groundwater flow direction is typically from south (uplands) to north towards Shuswap Lake, driven by topography. Local groundwater flow within the unconsolidated aquifers bordering Shuswap Lake may show more fluctuation in flow direction due to seasonal changes in lake stage. Preferential flow pathways of fine-grained deposits, either natural or artificial in origin, can allow water into underlying sands where it may travel rapidly for considerable distances. In places, shallow stratigraphy along the Shuswap Lake foreshore features alternating grain sizes or buried paleo-channels that result in variable permeability of the sediments and complex groundwater flow paths (Golder 1994).

2.4 Monitoring Network

The monitoring network at Blind Bay and Sorrento includes foreshore, surface water, private domestic wells, and monitoring wells. Minor changes to the program occurred during the spring 2015 sampling event. The existing program did not include sampling along the western edge of the site at Sorrento, where large to moderate size residences have been developed. Based on the 2015 investigation, a foreshore (hyporheic zone) sample location (MPL-6) was added to the program in 2016, which was sampled in May 2016 only. Alternatively, in October 2016, WWAL field staff investigated two other areas along the western section of Sorrento, where development of large size residences has occurred in recent years. During the investigation, a culverted stream flowing through a property onto the beach and discharging into Shuswap Lake (Culvert Stream) and a foreshore location (HZ-5) along the same property was sampled for select water quality parameters.

Previously sampled domestic well LOC-12 has been considered the background well in the past; however, the chloride concentrations at LOC-12 are elevated, indicating anthropogenic input, see Appendix B for historic water quality results. A new background domestic well (DMW-1) was added to the program in 2015 and was monitored in 2016. DMW-1 is located farthest upgradient and situated in an area of relatively minimal residential development; therefore, it is ideal to represent background (ambient) groundwater quality at the site. Monitoring well BH-6 (Blind Bay) was not sampled in 2016 as it has been dry since 2000. Further, Sorrento irrigation well LOC-17IW has not been sampled since 2011 and LOC-17SW was not sampled in October 2016 due to inability to access the well head.

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The 2016 monitoring network included the following sites:

Blind Bay:

- two domestic water supply wells (LOC-16, DMW-1);
- four monitoring wells (BH-2, BH-3, BH-4, BH-7);
- two groundwater springs (surface water) (LOC-11, LOC-24); and
- three foreshore locations (MPL-2, MPL-3, MPL-5).

Sorrento:

- one water supply well (LOC-17SW);
- one monitoring well (BH-8);
- two surface water locations, Shuswap Lake and a groundwater spring (SW-1, LOC-2b);
- three foreshore locations (MPL-1, MPL-4, and MPL-6); and
- one exploratory foreshore location (HZ-5) and one exploratory surface water location (Culvert Stream).

Monitoring location descriptions are provided in Table 2 and 3 for Blind Bay and Sorrento, respectively and all sample locations are shown on Figure 2 and 3, respectively. The location of monitoring wells was selected based on a preliminary assessment of groundwater quality in Blind Bay and Sorrento by Golder in 1994. This assessment showed PSDS indicators along the lake shore and other downgradient locations (groundwater supply wells and surface water springs) were elevated in PSDS indicators, showing localized impact areas (Golder 1994).

Sampling at the site occurs twice annually with the 2016 sampling events occurring on May 24 and October 18, 2016.

Table 2: 2016 Monitoring Program Blind Bay

Site location	Depth of Well (m)	Aquifer Type	Location Description
Groundwater Sites			
DMW-1	5	Unconfined	South side of Trans Canada Hwy 1, at east on Husband Road.
LOC-16	n/a	Unconfined (clay, sand & rock)	On Blind Bay Road, approximately 170 m east of Centennial Drive.
BH-2	7.8	Unconfined (sand)	Near Shuswap Lake on Centennial Drive.
BH-3	9.8	Bedrock	At the corner of Centennial Drive and Woodland Place.
BH-4	8.1	Unconfined (sandy silt)	At the corner of Leisure Road and Chalet Drive.
BH-7	10.4	Bedrock	On Blind Bay Road at the Cedar Heights water system pump house.

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Surface Water Sites	
LOC-11	Groundwater spring in the back yard of residence on Blind Bay Road approximately 100 m west of MPL-5.
LOC-24	Groundwater spring on the west side of residence on Blind Bay Road approximately 230 m east of Marine Drive.
Foreshore Sites	
MPL-2	At beach access on the corner of Blind Bay Road and Centennial Drive.
MPL-3	Eastern shore of Blind Bay at the boat launch on Eagle Bay Road.
MPL-5	At the beach access on Blind Bay Road, approximately 100 m east of LOC-11.

Note: n/a indicates information that was unavailable; Aquifer lithology for LOC-16 is inferred from nearby well logs.

Table 3: 2016 Monitoring Program Sorrento

Site location	Depth of Well (m)	Aquifer Type/ Primary Lithology	Location Description
Groundwater Sites			
LOC17-SW	n/a	n/a	At the community park on Davidson Road.
BH-8	3.9	Unconfined (gravelly sand)	At the corner of Dieppe Road and Caen Road near the Caen Road Community Park.
Surface Water Sites			
SW-1			Shuswap Lake on private dock, west of MPL-1 and BH-8.
LOC-2b			Groundwater spring beside Markwart Road Boat Launch.
Culvert Stream			Along the shore of Shuswap Lake, approximately 320 m east of Cobeaux Road.
Foreshore Sites			
MPL-1			At the Caen Road Community Park.
MPL-4			On the beach at the Sorrento Place on the Lake mobile home park on Buckley Road.
HZ-5			Along the shore of Shuswap Lake, approximately 300 m east of Cobeaux Road.

Note: n/a indicates information that was unavailable.

3. METHODS

The following section outlines the program methods, including parameters sampled and field techniques used for the program.

3.1 Sampling parameters

The 2016 laboratory assessed water quality parameters included the following:

- Alkalinity, total (as CaCO₃);
- Nutrients: ammonia (as N), nitrate (as N), nitrite (as N), dissolved phosphorus, and orthophosphate;
- Anions (bromide, chloride, fluoride, and sulphate)
- Bacteriological: Escherichia coli, fecal coliforms, and total coliforms (monitoring and domestic wells only);
- Hardness, dissolved (as CaCO₃); and
- Dissolved metals (total metals for SW-1 and LOC-2b; once per year).

Field measurements of pH, electrical conductivity (EC), temperature, and oxidation-reduction potential (ORP) were also recorded during purging and immediately before sampling.

The Culvert Stream and the foreshore location (HZ-5) along the western edge of Sorrento were analyzed for field parameters (pH, EC, temperature, ORP), along with anions (chloride, bromide, fluoride, and sulphate), nutrients (nitrate [as N], nitrite [as N], and orthophosphate), and alkalinity.

3.2 Sampling Method

WWAL sampling protocol follows procedures described in the British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples (MoE 2013).

The following outlines the procedures used to sample monitoring wells at Blind Bay and Sorrento. Low flow sampling was performed with a peristaltic pump was used to extract water from the well until parameter stabilization (field measured EC, pH, temperature and ORP) was observed. Once purging of the wells was complete, water samples were collected directly from the outflow tube into new sample bottles provided by the laboratory. Clean nitrile gloves were worn while purging and sampling. Dedicated tubing was used at each sample locations, which is replace each year.

Foreshore samples were collected by extracting water from a small pit dug a few metres from the shoreline of the lake. The top few inches of water in each hand pit was skimmed off to remove the initial water released from storage by the adjacent sediments. Prior to sample collection, field-measured parameters were recorded. Samples were then collected directly from the foreshore locations.

The surface water samples were taken in accordance with MoE procedures and protocols.

All samples were stored in coolers with ice, and transported under chain-of-custody protocol to CARO Analytical Services, a laboratory accredited by the Canadian Association for Environmental Analytical Laboratories. Samples were submitted to the laboratory within the required holding time for bacteriological analysis.

A triplicate sample, taken in 2016 for the groundwater monitoring program, showed relative percent difference (RPD) lower than 10% for all parameters except copper, lead, sulphur and ammonia which were above 17% RPD. Further, microbiological parameters showed significant variability with high RPD

but this is not unusual when sampling living organisms. From results of the triplicate sampling we see that the quality of the data does not affect conclusions made in this report.

4. RESULTS AND DISCUSSION

The following section describes the results of the water quality sampled at the sites in 2016. Water quality guideline exceedances in 2016 (Blind Bay - Table 4 and Sorrento - Table 5), along with temporal and spatial trends for the Blind Bay and Sorrento groundwater monitoring program are discussed (Figures 4 to 8). Table 6 summarizes pertinent water quality results for the new locations sampled in 2016 (HZ-5, and Culvert Stream). The descriptive statistics (average, maximum, minimum and count) for select water quality results from between 2000 and 2016 are summarized in Tables 7 (Blind Bay) and Table 8 (Sorrento) with the full water quality database for all historic and current results provided in Appendix B. The 2016 analytical reports provided by the laboratory are found in Appendix C.

Our analysis of potential septic impacts on the receiving environment employs two main approaches:

- direct comparison of monitoring results to guidelines (i.e. does a problem exist); and
- trend analysis (i.e. is the situation changing over time or spatially, and if so, in what direction).

Our findings can then be used to inform decisions about future monitoring priorities as well as provide insight into which CSRD communities should be prioritized for centralized wastewater treatment. Sometimes, the results are inconclusive, pointing to the need for more data. Gaps in data are typically filled by adding wells and eliminating redundant sample locations, and more rarely, by modifying the list of sampling parameters. In this way, the monitoring process is iterative in nature.

The purpose of sampling at foreshore locations is to assess concentrations of septic indicator parameters in the hyporheic zone (zone of mixing between groundwater and surface water) just before groundwater discharges into Shuswap Lake. Concentrations of indicator parameters may vary in the hyporheic zone depending on the dynamics of groundwater and surface water interaction. During spring freshet, the lake stage will be higher than the adjacent groundwater level, creating flow reversal and potentially flooding of PSDS closest to the lake. During the fall sampling, there is less dilution the groundwater caused by snowmelt runoff in the spring, and

The groundwater monitoring sites were selected to sample shallow, potentially PSDS impacted groundwater, upgradient of the lake and downgradient of the residentially developed areas at Blind Bay and Sorrento. Surface water samples are taken from groundwater springs (LOC-2b, LOC-11, and LOC-24), Culvert Stream, and Shuswap Lake (SW-1) to evaluate water quality of the surface water receptors (see Figures 2 and 3 for sampled site locations).

Time series plots are provided for the indicator parameters nitrate, chloride, sodium and electrical conductivity. Figure 4 shows nitrate and chloride for Blind Bay, Figure 5 shows Sulphate and electrical conductivity for Blind Bay and Figure 6 shows nitrate and chloride Sorrento, Figure 7 shows Sulphate and electrical conductivity for Sorrento. Figure 8 shows dissolved and total sodium for both Blind Bay and Sorrento. Plotted results below the reportable detection limit are displayed as one-half the reportable detection limit.

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Assessing potential impact on the receiving environment from operation of PSDS is the objective of the current groundwater monitoring program at Blind Bay and Sorrento. The receptors of concern are the shallow groundwater adjacent to the lakes and the surface water bodies, Newsome Creek (Sorrento) and Shuswap Lake. Therefore, the 2016 water quality results were compared to the following applicable guidelines and standards:

- Guidelines for Canadian Drinking Water Quality Maximum Acceptable Concentration (health-based guideline) (GCDWQ MAC) and Aesthetic Objective (based on aesthetic considerations) (GCDWQ AO) (Health Canada 2014);
- B.C. Approved Water Quality Guidelines for freshwater aquatic life (BCAWQG AL) and Working Water Quality Guidelines for freshwater aquatic life (BCWWQG AL) (MoE 2015); and
- B.C. Contaminated Sites Regulation 375/96, Schedule 6, Generic Numerical Water Standards for Freshwater Aquatic Life (CSR AW) (MoE 1997).

Table 4 (Blind Bay) and Table 5 (Sorrento) provide a list of exceedances in water quality guidelines relevant to operation of PSDS. Therefore, exceedances in metal species (iron, manganese, aluminum, chromium, uranium, selenium, and arsenic) not associated with PSDS impact likely related to the proximity to bedrock and the naturally high mineral content of the groundwater in the area are not listed in Tables 4 and 5. However, Appendix B lists all water quality exceedances for reference.

Note that the BCAWQG AL and BCWWQG AL guidelines are intended to be applied to surface waters; whereas the CSR AW standards are intended to be applied to groundwater within the vicinity of surface water bodies. This distinction is important when assessing exceedances of phosphorus as at the majority of monitored sites phosphorus exceeds the BCAWQG AL and BCWWQG AL; however, phosphorus does not exceed the CRS AW standards at any of the monitored locations.

Owners of domestic wells were notified by WWAL of any exceedances of the GCDWQ MAC.

Table 4: 2016 Water Quality Exceedances by Guideline at Blind Bay

Sampling Location	Guideline	2016 Exceedances
Surface Water Locations		
LOC-11	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ MAC	E. coli (counts), Fecal coliforms (counts), Total coliforms (counts)
LOC-24	GCDWQ AO	pH [F]
Foreshore Locations		
MPL-2	GCDWQ AO	pH [F], Temperature [F]
MPL-3	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ AO	Temperature [F]
MPL-5	BCAWQG AL	Phosphorus (dissolved), Sulphate
	GCDWQ AO	pH [F], Sulphate, Temperature [F]

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Groundwater Locations		
DMW-1	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ MAC	Total coliforms (counts)
LOC-16	GCDWQ MAC	E. coli (counts), Fecal coliforms (counts), Total coliforms (counts)
	GCDWQ AO	pH [F]
BH-2	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ AO	pH [F]
BH-3	BCAWQG AL	Phosphorus (dissolved), Sulphate
	GCDWQ AO	pH [F], Sulphate
	BC CSR AW	Sulphate
BH-4	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ AO	pH [F]
BH-7	GCDWQ AO	pH [F]

Note: MPN= most probable number (a unit of measurement for pathogenic bacteria – see guideline notes in Appendix B)

[F] = field result(s)

Table 5: 2016 Water Quality Exceedances by Guideline at Sorrento

Sampling Location	Guideline	2016 Exceedances
Surface Water Locations		
Loc-2b	BCAWQG AL	Phosphorus (dissolved)
Foreshore Locations		
MPL-1	BCAWQG AL	Phosphorus (dissolved)
MPL-4	BCAWQG AL	Phosphorus (dissolved)
MPL-6	BCAWQG AL	Phosphorus (dissolved)
Groundwater Locations		
BH-8	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ MAC	Total coliforms (MPN)
LOC-17-SW	BCAWQG AL	Phosphorus (dissolved)
	GCDWQ MAC	Total coliforms (counts)

Note: MPN= most probable number (a unit of measurement for pathogenic bacteria – see guideline notes in Appendix B)

[F] = field result(s)

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Table 6: Summary of 2016 Water Quality Results at Newly Sampled Locations

Sample Location			Culvert Stream	HZ - 5
Sample Date			October 18, 2016	October 18, 2016
Analyte	Units	GCDWQ Standards		
Conductivity	µS/cm	N/A	555	841
pH	pH units	7 - 10.5	8.7	7.3
Temperature	°C	AO 15	10.5	10.9
Chloride	mg/L	AO ≤ 250	31.9	8.58
Nitrate as N	mg/L	MAC = 10	0.066	0.368
Nitrite as N	mg/L	MAC = 1	< 0.01	< 0.01
Phosphate, Ortho as P	mg/L	N/A	< 0.01	< 0.01
Sulfate	mg/L	AO ≤ 500	10.5	11.1
Alkalinity, Total as CaCO ₃	mg/L	N/A	370	469

4.1 Nitrate

Nitrate is a septic associated parameter of direct concern for its potential effect on human health and the environment. Generally, nitrate concentrations greater than 3 mg/l are typically considered to reflect human impacts (MoE 2007).

Surface Water

Water quality at the surface water locations in both Blind Bay and Sorrento has remained relatively stable since 2000. Concentrations of nitrate at the Blind Bay locations (LOC-11 and LOC-24) remain elevated, with averages (2000 to 2016) between 2.5 mg/l and 8 mg/l, respectively. See Table 7, which provides the descriptive statistics of select water quality parameters. The groundwater spring in Sorrento (LOC-2b) also has elevated concentrations of nitrate with average of 3.51 mg/l, indicating anthropogenic impact at these locations. Nitrate at SW-1 (Shuswap Lake at Sorrento) is low compared to all other routinely sampled surface water locations at an average concentration of 0.16 mg/l and ranges between 0.01 mg/l and 0.58 mg/l. Nitrate at the Culvert Stream (Sorrento) was below average concentrations at all other surface water locations in Blind Bay and Sorrento at 0.066 mg/l (Table 6).

Foreshore

Blind Bay foreshore location MPL-5 historically exceeds GCDWQ MAC guidelines for nitrate (2011, 2012, and 2014); however, in 2016 concentrations were among the lowest observed at this location at 3.37 mg/l and 4.24 mg/l in May and October 2016. Nitrate remains variable and elevated above all other foreshore locations at MPL-5. Foreshore sites MPL-2 and MPL-3 (Blind Bay) are similar and have remained relatively low (< 3 mg/l) and stable since 2000. A spike in nitrate occurred in May 2016 at MPL-2 (2.23 mg/l), which is two orders of magnitude higher than the previous (< 0.01 mg/l; November 2015) and the subsequent (0.013 mg/l; October 2016) sampling events. MPL-4 (Sorrento; added to the program in 2010) has been slightly more variable and elevated above Blind Bay foreshore locations MPL-2 and MPL-3; however, concentrations have remained below 0.7 mg/l since 2012. Foreshore location MPL-1 (Sorrento) is variable compared to other foreshore sites with a range of 5.82 mg/l (Figure 6). Similar to MPL-2, a spike occurred at MPL-1 in May 2016, where concentrations increased by an order of magnitude to 4.29 mg/l from 0.89 mg/l (November 2015). Concentrations have since fallen to historical levels at 0.418 mg/l (October 2016).

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Nitrate at the new foreshore investigation site (MPL-6; 0.732 mg/l) in Sorrento is similar to average concentrations at MPL-4, above average concentrations at MPL-2 and MPL-3 and below average concentrations at MPL-1 and MPL-5 (Tables 7 and 8). Similar to MPL-2 and MPL-3, the concentration of nitrate at exploratory sample HZ-5 is low (0.368 mg/l). Blind Bay foreshore location MPL-5 remained elevated above other foreshore locations at the site in 2016 and has shown this trend since sampling started at that location in 2010. MPL-5 is located on the shoreline in the sand and gravel aquifer 222IIC and directly downgradient of a densely-developed area in Blind Bay.

Groundwater

The nitrate concentrations at Sorrento wells BH-8 and LOC-17(SW) have been stable over time and are similar to or below ambient levels (DMW-1). Blind Bay wells BH-2 and BH-3 are slightly elevated above background and Sorrento locations, yet remain stable with average concentrations at or below 1 mg/l (Figure 4 and Table 7). BH-7 is slightly more variable with an obvious seasonal trend; concentrations during spring sampling elevated above fall sampling (Figure 4). Concentrations at BH-7 have been as high as 6.69 mg/l (May 2011) and as low as <0.01 mg/l (November 2011, 2013, and 2015). Sampling locations BH-4 and LOC-16 (Blind Bay) have average nitrate concentrations slightly above 3 mg/l, which is the highest average concentrations of all other monitored wells at both Blind Bay and Sorrento. In contrast, the average nitrate concentration at background location DMW-1 is 0.023 mg/l. Monitoring well BH-4 is located in a subdivision at the centre of Blind Bay and LOC-16 is located downgradient at a residence near the shoreline of Shuswap Lake. Elevated nitrate concentrations at these locations likely indicate localized anthropogenic impact to groundwater, most likely from PSDS.

Elevated nitrate concentrations at surface water sites LOC-2b (Sorrento), LOC-11, LOC-24 (Blind Bay), foreshore sites MPL-1 (Sorrento) and MPL-5 (Blind Bay) and groundwater sites BH-4, BH-7, and LOC-16 (Blind Bay) are of concern as they are elevated above background concentrations and are likely a result of septic related impact. Nitrate concentrations at BH-7 are typically lower than BH-4 and LOC-16 likely due to its location downgradient of a less developed area of Blind Bay. However, concentrations at all sampling locations appear to be relatively stable with no consistent increases or decreases over the long term, which indicates the level of impact is not increasing over time.

4.2 Chloride, Sodium and Electrical Conductivity

Chloride, sodium, and electrical conductivity are of less direct concern to human health. However, the presence of these water quality indicators above background (ambient) concentrations can indicate the severity of impact on water from operation of PSDS. Chloride is an indicator of anthropogenic impact and it is a conservative ion, meaning it does not sorb to soil or degrade in the environment. We use chloride as a principal indicator of PSDS impact; however, chloride can be present due to other anthropogenic activities such as road salting, industrial processes, agricultural activity, or use of home water softeners.

4.2.1 Chloride

All sampling locations were below provincial aquatic life and drinking water guidelines for chloride (600 mg/l and 250 mg/l, respectively) in 2016. The hyporheic zone sample MPL-6 along the western edge of Sorrento showed elevated chloride at 125 mg/l (Table 8), which is well above background (25.4 mg/l; DMW-1) and all other foreshore locations at the site including exploratory foreshore site HZ-5. Average

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concentrations at surface water LOC-11, LOC-24, and LOC-2b are similar and elevated above background (Tables 7 and 8). SW-1 (Shuswap Lake) and the Culvert Stream have lower average concentrations at 2.8 mg/l and 31.9 mg/l, respectively. Foreshore and monitoring well locations are similar at both Blind Bay and Sorrento with average concentrations between 15.5 mg/l and 48 mg/l, with exception of LOC-17SW which has an average concentration of 6 mg/l. Monitoring well BH-8 and foreshore location MPL-1 at Sorrento and monitoring well BH-7 and foreshore location MPL-2 at Blind Bay are far more variable than concentrations at the other sampled locations, likely due to variation in lake stage, subsurface lithology, and their proximity to the Shuswap Lake shoreline. New background well DMW-1 showed an average chloride concentration of 25.4 mg/l, similar to typical concentrations at previously sampled background well LOC-12.

Surface Water

Historically, concentrations of chloride at the groundwater springs in Blind Bay (LOC-11 and LOC-24) and Sorrento (LOC-2b) have been higher than those at other Blind Bay and Sorrento sampling locations averaging 87 mg/l, 80 mg/l, and 86 mg/l, respectively. Chloride concentrations at LOC-11 have been gradually increasing since 2006, and remain elevated in 2016 at 110 mg/l. Chloride concentration at Sorrento surface water location SW-1 (Shuswap Lake) is much lower than concentrations observed at Blind Bay (average 2.8 mg/l); likely due to the dilution effect of large surface water bodies.

Foreshore

Chloride concentrations at foreshore locations in Blind Bay (MPL-2, MPL-3, and MPL-5) are typically more variable (Table 7). Sorrento location MPL-4 has the lowest concentration of all foreshore locations at an average of 10.7 mg/l while MPL-1 (Sorrento) and MPL-6 have the highest average concentrations at 67 mg/l and 125 mg/l, respectively in 2016. In contrast to MPL-6, exploratory foreshore location HZ-5 (also near the western edge of Sorrento) did not exhibit elevated chloride (8.58 mg/l). Foreshore locations MPL-1 (Sorrento) and MPL-2 (Blind Bay) exhibit the largest variability (ranging over 100 mg/l) and MPL-2 experienced an increase from 2.67 mg/l in May 2016 to 24.4 mg/l in November 2016. Some seasonal variability is observed at MPL-2 and MPL-5 with elevated concentrations during the spring sampling compared to fall.

Groundwater

Average chloride at DMW-1 (ambient) is 25.4 mg/l. Chloride levels have increased over time at some of the monitoring wells installed in the sand and gravel aquifer (Aquifer 232 IIC and Aquifer 222 IIC), including BH-3 (Blind Bay), BH-4 (Blind Bay), and BH-8 (Sorrento). For example, BH-8 has increased from 20.6 mg/l in April 2000 to 61.5 mg/l in October 2016 (Figure 6). Monitored wells BH-3, BH-7, and BH-4 wells show seasonal fluctuations in chloride, with higher concentrations typically in spring at BH-3 and BH-7 and fall at BH-4. The chloride concentrations at BH-7, the only well installed entirely within the bedrock aquifer, and BH-8 appear highly variable over time, varying by more than 60 mg/l and 73 mg/l, respectively. Chloride at LOC-17SW (Sorrento) is the lowest of all sampled groundwater wells and well below ambient (DMW-1) at an average of 6 mg/l, indicating LOC-17SW is highly influenced by surface water with less anthropogenic influence that is observed at DWM-1.

The observed chloride concentrations at hyporheic zone location MPL-6 and MPL-1 along with locations LOC-11, LOC-24, LOC-2b, BH-2, and BH-8 suggest possible PSDS effects or other human-related

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impacts. Chloride at monitoring wells BH-3, BH-4, and BH-7 are similar to the new background well DMW-1, which suggests possible PSDS or other human-related impacts at all of these locations including the new background well.

4.2.2 Sodium

Similar to chloride, all sampling locations were well below drinking water guidelines for sodium (200 mg/l) in 2016. Sodium appears to be slightly more elevated at Blind Bay than at Sorrento, yet concentrations appear to be relatively steady at all sampled locations. It is important to note surface water locations have historically been sampled for both dissolved and total metals during different sampling events. In 2016 both SW-1 and LOC-2b in Sorrento were sampled for total metals (sodium) as has been sampled in the majority of past sampling events. LOC-11 and LOC-24 in Blind Bay were sampled for dissolved metals in 2016, which is consistent with parameters sampled in the past so that results can be compared to other groundwater sample locations. Table 7 and Table 8 display results for both total and dissolved sodium at surface water locations and Figure 8 shows dissolved metals for Blind Bay and Sorrento separately and total metals for surface water locations at the site (SW-1, LOC-2b, LOC-11, and LOC-24).

Surface Water

Surface water (groundwater springs) locations LOC-11 and LOC-24 (Blind Bay) have the highest observed concentrations of sodium, above the other sample locations with average dissolved sodium concentrations at 53 mg/l and 49 mg/l, respectively. At the Sorrento surface water location SW-1, total sodium concentration remained low (<2 mg/l); however, historical levels at LOC-2b (slightly inland of SW-1) were all above 20 mg/l. LOC-2b is located near a road, runoff from which may contribute to elevated concentrations of sodium, chloride, and conductivity. Sodium was not measured at the exploratory Culvert Stream sample in Sorrento.

Foreshore

Foreshore locations MPL-2, MPL-3, and MPL-5 (Blind Bay) and MPL-1, and MPL-4 (Sorrento) were found to have sodium levels elevated above or at background concentrations (16 mg/l). At Blind Bay, foreshore locations MPL-3 and MPL-5 have been stable throughout the recorded history; however, locations MPL-2 (Blind Bay) and those at Sorrento have been variable. For example, concentrations at MPL-2 range from 4.3 mg/l to 83.7 mg/l, at MPL-1 range from 16.3 mg/l to 34.1 mg/l, and at MPL-4 from 5.08 mg/l to 24.9 mg/l. MPL-2 (Blind Bay), MPL-5 (Blind Bay), and MPL-1 (Sorrento) have the highest average concentrations of sodium, which is consistent with elevated values of conductivity and chloride at those locations.

Groundwater

Sodium was not measured at LOC-17SW in 2016 as this location was not sampled in October 2016; however historical concentrations are below background (DMW-1; 16.6 mg/l) at LOC-17SW with an average of 8 mg/l and have remained stable since 2000. Sodium at BH-8 is similar to background concentrations with a slight upward trend since 2004 (Table 7, Table 8 and Figure 8). Sodium concentrations are elevated above background at Blind Bay groundwater locations LOC-16, BH-2, BH-3, BH-4, and BH-7 with average concentrations all above 21 mg/l. However, these locations have remained stable since 2000 with no obvious temporal trends, indicating little change to groundwater quality at this site.

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4.2.3 Electrical Conductivity

There are no guidelines or standards applicable to electrical conductivity, but it is a useful indicator parameter analogous to total dissolved solids and readily measured in the field. Average electrical conductivity at all sampling locations except Sorrento locations SW-1, MPL-4, and LOC-17SW and Blind Bay location MPL-3 are elevated above background levels (DMW-1) at the site. The new background well DMW-1 shows slightly elevated conductivity (908 uS/cm) compared to typical results found at the previous background well LOC-12 at (about 640 uS/cm; Appendix B). The elevated conductivity may be due to naturally high mineral content in the groundwater or anthropogenic impact; regardless of this unknown, based on the location of DMW-1, away from residential development, we will consider DMW-1 to represent ambient groundwater in the area.

Surface Water

Surface water location SW-1 exhibited low electrical conductivity (average 112 uS/cm) with levels decreasing between 2010 and 2014 and remaining stable at about 88 uS/cm since. Blind Bay surface water locations LOC-11 and LOC-24 and Sorrento surface water location LOC-2b have remained elevated with averages of 1467 uS/cm, 1400 uS/cm, and 1063 uS/cm, respectively (Tables 7 and 8). This is expected as these are groundwater springs, which are likely to have higher mineral content compared to Shuswap Lake. Electrical conductivity at the Culvert Stream is below levels at the groundwater springs but higher than Shuswap Lake at 555 uS/cm (Table 6).

Foreshore

Foreshore location MPL-5 (Blind Bay) exhibits significantly higher conductivity than all the other foreshore locations as well as all other locations throughout both communities (average 2129 uS/cm). This is consistent with elevated levels of chloride, sodium, sulphate, and nitrate also found at this location. Conductivity at Sorrento location MPL-1 is also elevated above background at 1064 uS/cm, as is the other foreshore site along the western edge of Sorrento (MPL-6) at an average of 1305 uS/cm. Foreshore MPL-2 and MPL-3 at Blind Bay and exploratory location HZ-5 are slightly lower than background (Tables 6 and 7). MPL-4 (Sorrento), is considerably lower in conductivity, with an average of 424 uS/cm (Table 8). Conductivity has remained relatively stable at all sampled foreshore locations throughout the dataset analyzed.

Groundwater

Monitoring wells LOC-16, BH-2, BH-3, BH-4 and BH-7 at Blind Bay have higher conductivity values than those found at Sorrento. Conductivity at monitoring well locations BH-3 and BH-4 are variable, most specifically at BH-3 with a range of more than 2300 uS/cm. Although there is significant variability at these locations there is no continuous trend upwards or downwards over-time. LOC-16 and BH-7 showed variability between 2003 and 2007, however, levels have remained stable since June 2009 at about 1300 uS/cm (Figure 5). Sorrento well LOC-17SW has remained stable throughout the record at about 600 uS/cm with exception of one result in 2007 (1259 uS/cm). The long-term stability of electrical conductivity indicates little change to water quality input over time at these locations. Similar to sodium, conductivity at BH-8, in Sorrento shows a gradual and variable increase since 2003, from 937 uS/cm in June 2003 to 1025 uS/cm in October 2016. Values at this location are still lower than wells located at Blind Bay.

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4.3 Phosphorus

Potential impact to aquatic life can occur from increased loading of phosphorus present in septic effluent. Phosphorus in septic effluent is a concern because this nutrient can impact surface water quality even at very low concentrations. Phosphorus is an essential plant nutrient and is often the most limiting nutrient to plant growth in fresh water as such, phosphorus is rarely found in significant concentrations in surface waters. Inputs of phosphorus to fresh water systems can cause proliferations of algal growth, and are one of the prime contributing factors to eutrophication in fresh water systems (MoE 1998).

Dissolved phosphorus concentrations exceeded provincial aquatic life guidelines at most foreshore and groundwater locations except foreshore and groundwater locations MPL-2, BH-7, LOC-16 at Blind Bay in 2016. As noted above, provincial aquatic life guidelines apply to surface water bodies. Guidelines were exceeded for phosphorus at the surface water samples LOC-11 and LOC-2b in 2016. Average concentrations at surface water locations at LOC-24 (Blind Bay) and SW-1 (Sorrento) were the same, at 0.01 mg/l. Average concentrations at Blind Bay location LOC-11 are elevated above guidelines and background at 0.02 mg/l. Phosphorus at Sorrento surface water location LOC-2b was double those found at the other surface water locations at 0.04 mg/l.

4.4 Sulphate

Similar to chloride, sodium, and electrical conductivity, sulphate is of less direct concern to human health. However, the presence of these water quality indicators above background (ambient) concentrations can indicate anthropogenic impact on groundwater or surface water from operation of PSDS.

Similar to historical results, sulphate was above GCDWQ AO and BCAWQG AL at both foreshore location MPL-5 and monitoring well BH-3 at Blind Bay in 2016. Furthermore, sulphate was above CSR aquatic life guideline at BH-3. Sulphate was below guidelines at all other locations at both Blind Bay and Sorrento.

Overall, concentrations of sulphate at Blind Bay are elevated above those found at Sorrento. For example, average concentrations at all Sorrento locations, except BH-8 (average 67 mg/l) are lower than background (48.4 mg/l). Average concentrations at sample locations in Blind Bay are all above 90 mg/l. Sulphate has remained relatively stable and low at most sample locations since 2000 (SW-1, MPL-1, BH-7, LOC-16, LOC-11, LOC-24, MPL-2, MPL-3). Concentrations at both BH-3 and MPL-5 are elevated, well above all other locations (Figure 5). Sulphate at BH-3 shows a slight increasing trend, while concentrations at MPL-5, BH-2, BH-8, and to a lesser extent MPL-4 and LOC-2b show a slight decreasing trend. For example, at BH-3 sulphate increased from 672 mg/l in April 2000 to 1120 mg/l in October 2016, and at BH-8 sulphate decreased from 82 mg/l in April 2000 to 61.3 mg/l in October 2016 (Figures 5 and 7). Seasonal variability occurs at BH-2, BH-3, and BH-4 (Blind Bay) with lower concentrations in spring and elevated concentrations in fall. Sulphate at the Culvert Stream and HZ-5 are similar at 10.5 mg/l and 11.1 mg/l, respectively and are similar to average concentrations at Sorrento location LOC-17SW. Compared to Sorrento surface water sites (< 31 mg/l), sulphate is elevated at the groundwater springs in Blind Bay (LOC-11 and LOC-24) at 264 mg/l and 209 mg/l, respectively.

4.5 Pathogenic Bacteria

Foreshore and surface water locations were not sampled for bacteriological parameters in 2016 with exception for Blind Bay groundwater springs LOC-11 and LOC-24 in October 2016. The presence of

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pathogenic bacteria in surface water location LOC-11 may be avian or anthropogenic in origin; therefore, these exceedances do not, in and of themselves, indicate impact from the PSDS. In 2016, groundwater well locations BH-8 (Sorrento), DMW-1, and LOC-16 (Blind Bay) had total coliform concentrations above guidelines. Fecal coliform and *E.coli* were also detected at LOC-16 but below detection limits at other locations sampled. Historically, these affected groundwater locations have had detectable concentrations of pathogenic bacteria in spring and/or fall sampling events. The presence of pathogenic bacteria at BH-8, and LOC-16 suggest that PSDS are affecting the shallow groundwater at Blind Bay and Sorrento. Note that groundwater well BH-8 consistently has flowing artesian conditions (water level above the top of the well casing). The well is equipped with a J-plug, which prevents the surface water runoff from entering the monitoring well and WWAL field staff added a coupling to the top of the well in 2016 so the water level remains below the top of casing.

Table 7: Blind Bay - Statistics for Select Water Quality Parameters (2000 to 2016)

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Count	Number of Exceedances
Alkalinity (total, as CaCO ₃)	LOC-11	mg/L	520	464	598	29	none
	LOC-24	mg/L	543	482	584	29	none
	MPL-2	mg/L	328	91	511	15	none
	MPL-3	mg/L	456	270	1200	18	none
	MPL-5	mg/L	413	355	484	14	none
	DMW-1	mg/L	438	422	446	3	none
	LOC-16	mg/L	398	144	475	28	none
	BH-2	mg/L	389	293	499	32	none
	BH-3	mg/L	404	262	457	29	none
	BH-4	mg/L	379	243	518	22	none
	BH-7	mg/L	446	421	479	29	none
Chloride	LOC-11	mg/L	87	66	114	29	none
	LOC-24	mg/L	80	66.8	99.5	29	none
	MPL-2	mg/L	35	2.67	105	15	none
	MPL-3	mg/L	15.5	0.8	40.7	18	none
	MPL-5	mg/L	30.9	21.4	45.6	14	none
	DMW-1	mg/L	25.4	17.4	29.8	3	none
	LOC-16	mg/L	36.9	5.24	48.9	28	none
	BH-2	mg/L	42.4	33.3	56.7	33	none
	BH-3	mg/L	26	15.7	43	30	none
	BH-4	mg/L	28	7.3	47.2	22	none
	BH-7	mg/L	27	5.93	66.3	29	none
Conductivity	LOC-11	µS/cm	1467	1150	1777	25	none
	LOC-24	µS/cm	1400	147	1830	23	none
	MPL-2	µS/cm	888	197	1184	13	none
	MPL-3	µS/cm	847	460	1170	14	none
	MPL-5	µS/cm	2129	1563	2500	14	none
	DMW-1	µS/cm	908	865	955	3	none
	LOC-16	µS/cm	1231	366	1961	24	none
	BH-2	µS/cm	1290	810	1680	25	none
	BH-3	µS/cm	2030	230	2610	23	none
	BH-4	µS/cm	1081	580	1598	15	none
	BH-7	µS/cm	1348	962	2065	23	none

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Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Count	Number of Exceedances
Nitrate (as N)	LOC-11	mg/L	5	2.51	6.8	29	none
	LOC-24	mg/L	5.6	3.47	8.04	29	none
	MPL-2	mg/L	0.2	<0.005	2.23	6	none
	MPL-3	mg/L	0.2	<0.005	2.64	14	none
	MPL-5	mg/L	8.3	3.05	14.5	14	3
	DMW-1	mg/L	0.023	<0.010	0.035	2	none
	LOC-16	mg/L	3.2	0.269	5.83	28	none
	BH-2	mg/L	0.5	0.006	2.69	26	none
	BH-3	mg/L	1	0.289	5.17	30	none
	BH-4	mg/L	3.9	1.31	9.98	22	none
	BH-7	mg/L	1.8	<0.010	6.69	26	none
Phosphorus (dissolved)	LOC-11	mg/L	0.02	<0.0020	0.04	7	3
	LOC-24	mg/L	0.01	<0.0020	0.04	7	2
	MPL-2	mg/L	0.03	<0.002	0.07	6	4
	MPL-3	mg/L	0.07	0.018	0.172	7	7
	MPL-5	mg/L	0.03	0.006	0.11	7	4
	DMW-1	mg/L	0.014	0.006	0.02	3	2
	LOC-16	mg/L	0.02	0.003	0.04	9	3
	BH-2	mg/L	0.02	<0.0020	0.04	9	5
	BH-3	mg/L	0.02	<0.0020	0.05	8	6
	BH-4	mg/L	0.05	0.01	0.181	9	8
	BH-7	mg/L	0.04	<0.0020	0.15	7	5
Sodium (dissolved/total ¹)	LOC-11	mg/L	53/51 ¹	48/<0.001 ¹	66.9/63.3 ¹	17/12 ¹	none
	LOC-24	mg/L	49/54.2 ¹	43/46.7 ¹	59.6/58.6 ¹	16/8 ¹	none
	MPL-2	mg/L	27	4.3	83.7	12	none
	MPL-3	mg/L	18.2	9.3	29.1	13	none
	MPL-5	mg/L	29.5	21.6	44.9	12	none
	DMW-1	mg/L	16.6	16.6	16.6	1	none
	LOC-16	mg/L	34	9.4	43.8	18	none
	BH-2	mg/L	35	27.3	43.6	24	none
	BH-3	mg/L	42	28	51.2	23	none
	BH-4	mg/L	27	10.2	39	18	none
	BH-7	mg/L	21	10.2	39.1	22	none
Sulphate	LOC-11	mg/L	264	142	414	29	none
	LOC-24	mg/L	209	177	257	29	1
	MPL-2	mg/L	170	26.9	323	15	none
	MPL-3	mg/L	90	25.5	144	18	none
	MPL-5	mg/L	1027	653	1280	14	14
	DMW-1	mg/L	48.4	47.5	49.1	3	none
	LOC-16	mg/L	293	43	409	28	none
	BH-2	mg/L	385	194	550	33	14
	BH-3	mg/L	991	123	1390	30	29
	BH-4	mg/L	96	12.2	298	22	none
	BH-7	mg/L	340	180	544	29	4

Note: ¹ = indicates results for total sodium

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Table 8: Sorrento - Statistics for Select Water Quality Parameters (2000 to 2016)

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Count	Number of Exceedances
Alkalinity (as CaCO ₃)	SWI	mg/L	48	34	81.8	12	none
	Loc-2b	mg/L	452	416	471	11	none
	MPL-1	mg/L	464	270	577	25	none
	MPL-4	mg/L	221	120	416	13	none
	MPL-6	mg/L	550	550	550	1	none
	LOC-17SW	mg/L	333	293	363	30	none
	BH-8	mg/L	437	388	475	33	none
Chloride	SWI	mg/L	2.8	0.5	10.6	13	none
	Loc-2b	mg/L	86	68.6	103	11	none
	MPL-1	mg/L	67	3.6	105	25	none
	MPL-4	mg/L	10.7	1.74	33	13	none
	MPL-6	mg/L	125	125	125	1	none
	LOC-17SW	mg/L	6	2.42	24.7	30	none
	BH-8	mg/L	48.6	6.88	80.2	33	none
Conductivity	SWI	µS/cm	112	9.7	220	12	none
	Loc-2b	µS/cm	1063	930	1171	11	none
	MPL-1	µS/cm	1064	666	1308	20	none
	MPL-4	µS/cm	424	220	700	11	none
	MPL-6	µS/cm	1305	1305	1305	1	none
	LOC-17SW	µS/cm	618	411	1259	23	none
	BH-8	µS/cm	969	551	1200	26	none
Nitrate (as N)	SWI	mg/L	0.16	0.01	0.58	12	none
	Loc-2b	mg/L	3.51	2.84	4.29	11	none
	MPL-1	mg/L	1.9	0.007	5.83	22	none
	MPL-4	mg/L	0.55	<0.010	2.75	12	none
	MPL-6	mg/L	0.732	0.732	0.732	1	none
	LOC-17SW	mg/L	0.1	0.001	1.89	19	none
	BH-8	mg/L	0	<0.005	0.291	4	none
Phosphorus (dissolved)	SWI	mg/L	0.01	0.002	0.03	7	2
	Loc-2b	mg/L	0.04	0.025	0.05	6	6
	MPL-1	mg/L	0.19	0.01	1.2	8	7
	MPL-4	mg/L	0.05	<0.002	0.08	7	6
	MPL-6	mg/L	0.066	0.066	0.066	1	1
	LOC-17SW	mg/L	0.02	0.007	0.05	8	5
	BH-8	mg/L	0.06	<0.0020	0.128	9	8
Sodium (dissolved/total ¹)	SWI	mg/L	4.13/1.7 ¹	3.92/1 ¹	4.34/2.6 ¹	Feb-81	none
	Loc-2b	mg/L	23/24.4 ¹	21.9/21.8 ¹	23.4/27 ¹	Apr-81	none
	MPL-1	mg/L	27.5	16.3	34.1	18	none
	MPL-4	mg/L	14	5.08	24.9	11	none
	MPL-6	mg/L	n/a	n/a	n/a	0	none
	LOC-17SW	mg/L	8	7.4	10.6	21	none
	BH-8	mg/L	16	10.2	21.5	26	none
Sulphate	SWI	mg/L	6.6	4.9	11	12	none
	Loc-2b	mg/L	30.3	27.8	34.2	11	none
	MPL-1	mg/L	40	28.9	74.8	25	none
	MPL-4	mg/L	17.7	3.2	48	13	none
	MPL-6	mg/L	26.1	26.1	26.1	1	none
	LOC-17SW	mg/L	11	2.8	18	30	none
	BH-8	mg/L	67	53	90	33	none

Note: 1 = indicates results for total sodium

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5. CONCLUSIONS

The following conclusions are based on assessment of Blind Bay and Sorrento water quality data from 2000 to 2016:

- C1 Water quality at Sorrento sample locations LOC-17SW and SW-1 appears to show limited to no impact from PSDS operation.
- C2 Water quality at the following locations indicate some input from PSDS based on elevated chloride, sodium, conductivity, sulphate, and nitrate concentrations compared to new background well DMW-1:
 - surface water (groundwater springs) locations LOC-11, LOC-24, and LOC-2b;
 - foreshore locations MPL-1 and MPL-4 (Sorrento) and MPL-2, MPL-3, MPL-5 (Blind Bay); and
 - groundwater locations BH-8 (Sorrento) and BH-2, BH-3, BH-4, BH-7, and LOC-16 (Blind Bay).
- C3 Groundwater locations LOC-16, BH-2, BH-3, and BH-4 and foreshore location MPL-5 appear to show the highest degree of anthropogenic impact at Blind Bay; while BH-8, LOC-2b, and MPL-1 appear to be the most affected locations at Sorrento.
- C4 Hyporheic zone (foreshore) location MPL-6 along the western edge of Sorrento shows a degree of anthropogenic impact based on elevated chloride, conductivity, and nitrate concentrations. Exploratory sample locations HZ-5 and Culvert Stream (sampled October 2016), located near the western edge of Sorrento, showed much lower concentrations of septic indicator parameters compared to MPL-6.
- C5 The variance of indicator parameters has been relatively stable at all sampled locations at Blind Bay between 2000 and 2016. At Sorrento, groundwater location BH-8 shows a slight increase in concentrations of indicator parameters chloride, sodium, and conductivity and decrease in sulphate since 2000.
- C6 Similar to previous years, exceedances in pathogenic bacteria were observed at the site in 2016; however, exceedances were not observed at as many locations in 2016 compared to historical results (Appendix B). Total coliform concentrations exceeded guidelines at Sorrento and Blind Bay groundwater locations BH-8, LOC-16, and background location DMW-1 and fecal coliform and *E.coli* exceeded guidelines at LOC-16.

6. RECOMMENDATIONS

Based on the findings of the 2016 program, we provide the following recommendations moving forward:

- R1 Continue monitoring groundwater quality at Blind Bay and Sorrento in 2017 at surface water locations LOC-2b, LOC-11, LOC-24, and SW-1, foreshore locations MPL-1, MPL-2, MPL-3, MPL-4, MPL-5, and MPL-6, and groundwater wells LOC-17SW, LOC-16, BH-2, BH-3, BH-4, BH-7, and BH-8 twice annually (May/June and October/November).
- R2 Based on the lack of shallow wells upgradient of the site, continue to use DMW-1 as the new background well location and keep LOC-12 as a back-up well if DMW-1 is dry or cannot be

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accessed. Although DMW-1 showed elevated conductivity and other septic indicator parameters (nitrate, chloride, sulphate, etc.) were relatively low.

- R3 Based on low concentrations of septic indicator parameters at exploratory locations Culvert Stream and HZ-5, discontinue sampling at these locations. However, we recommend continuing to sample water quality at MPL-6, along the western edge of Sorrento, based on elevated concentrations of septic associated parameters.

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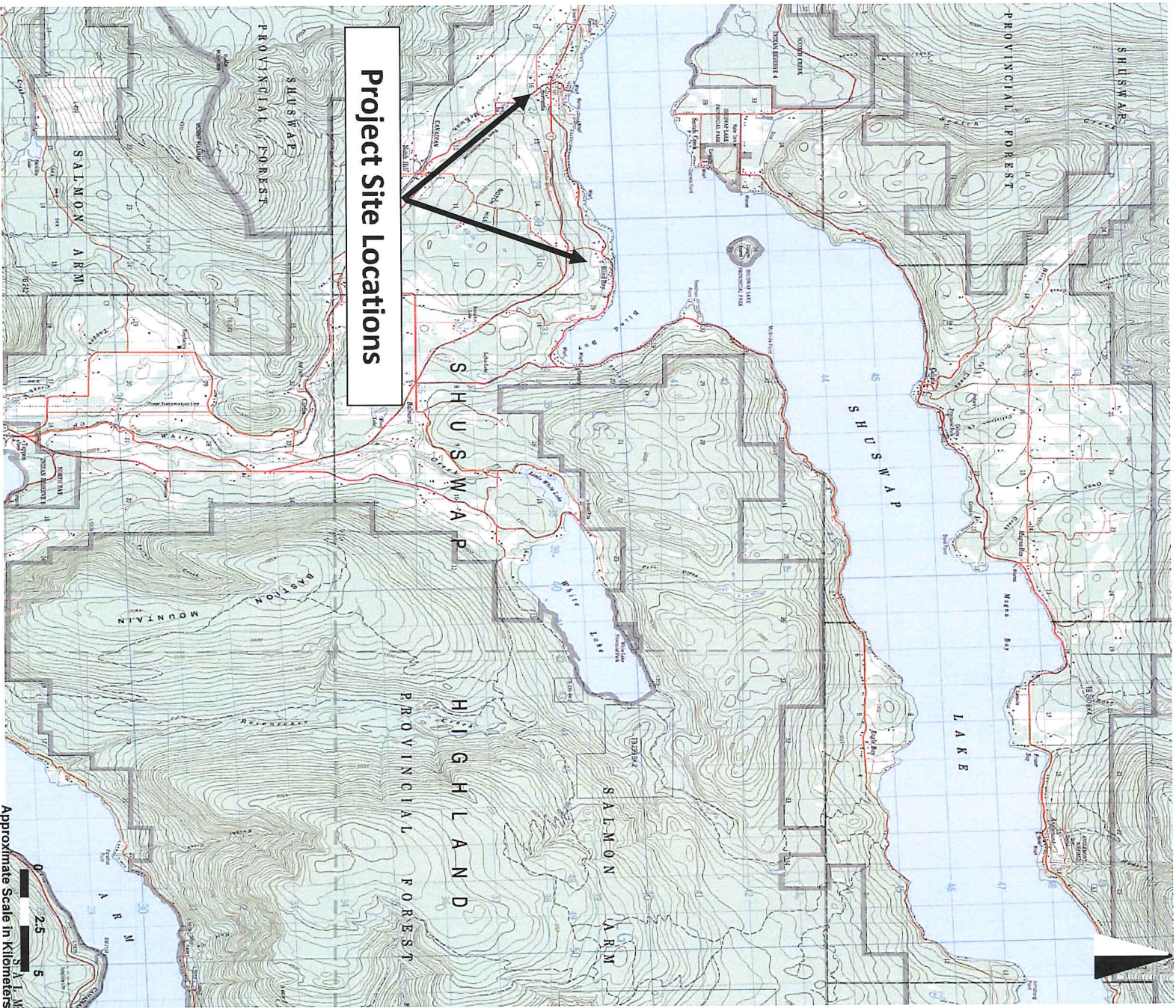
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Figures



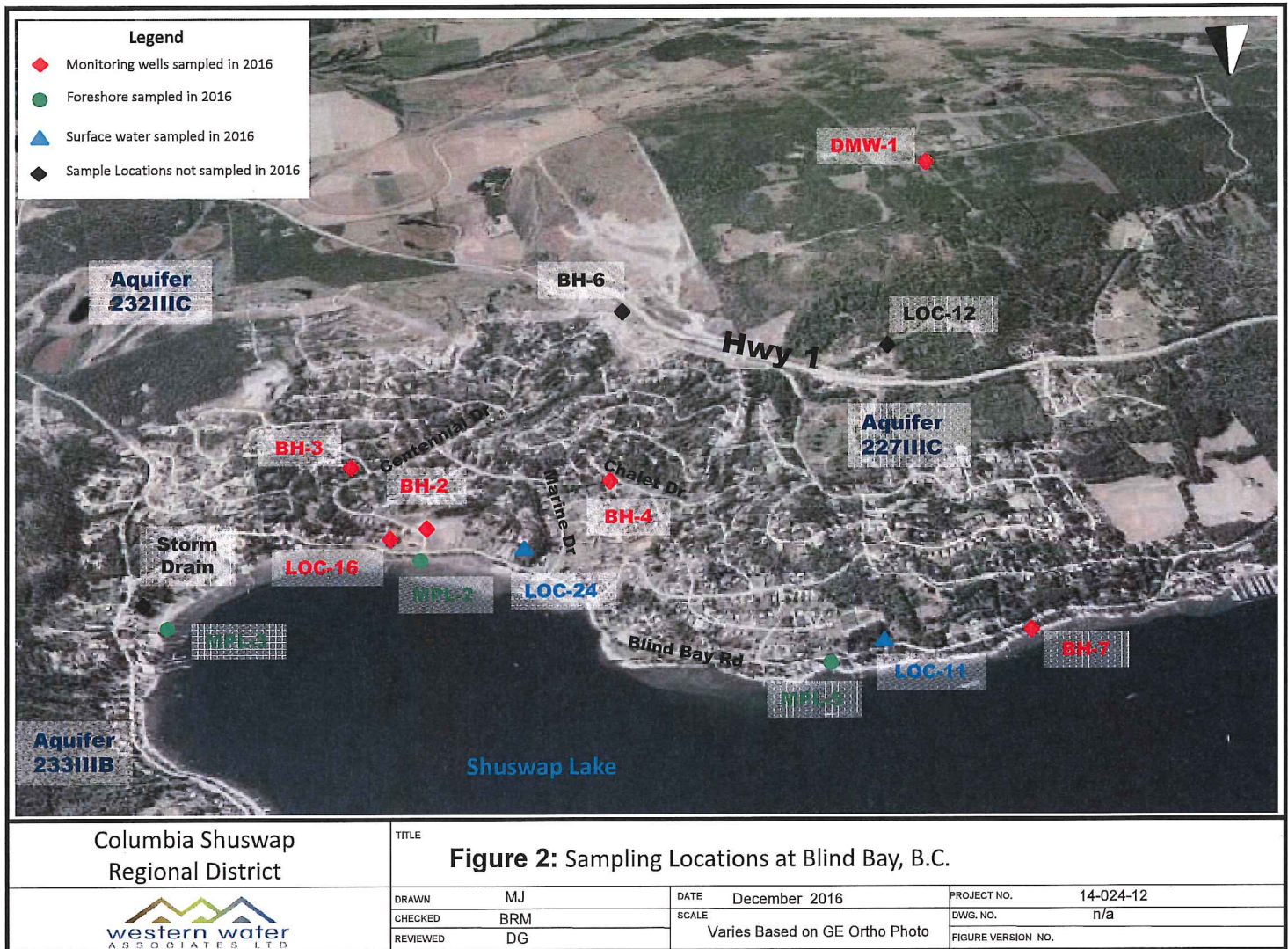


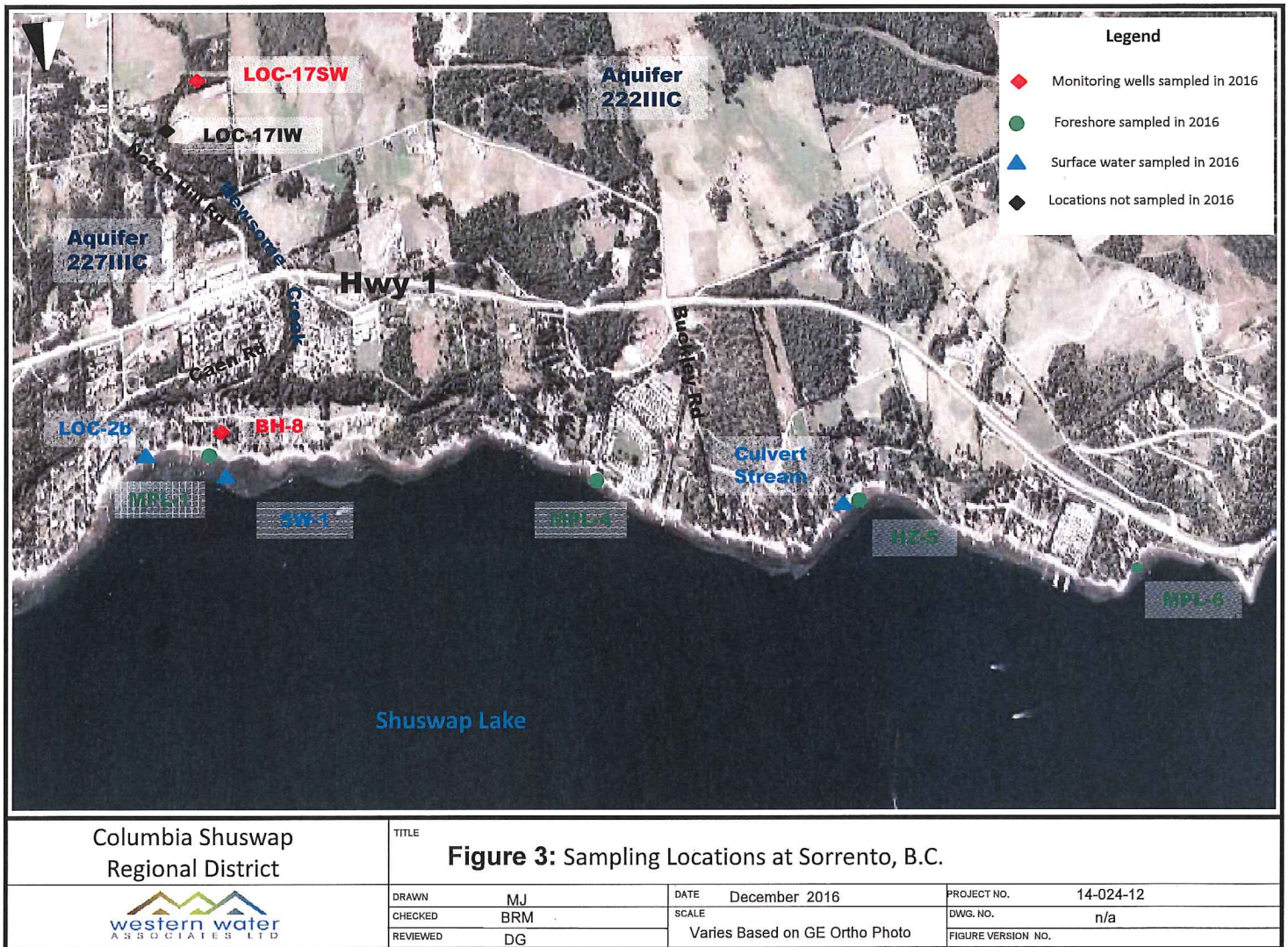
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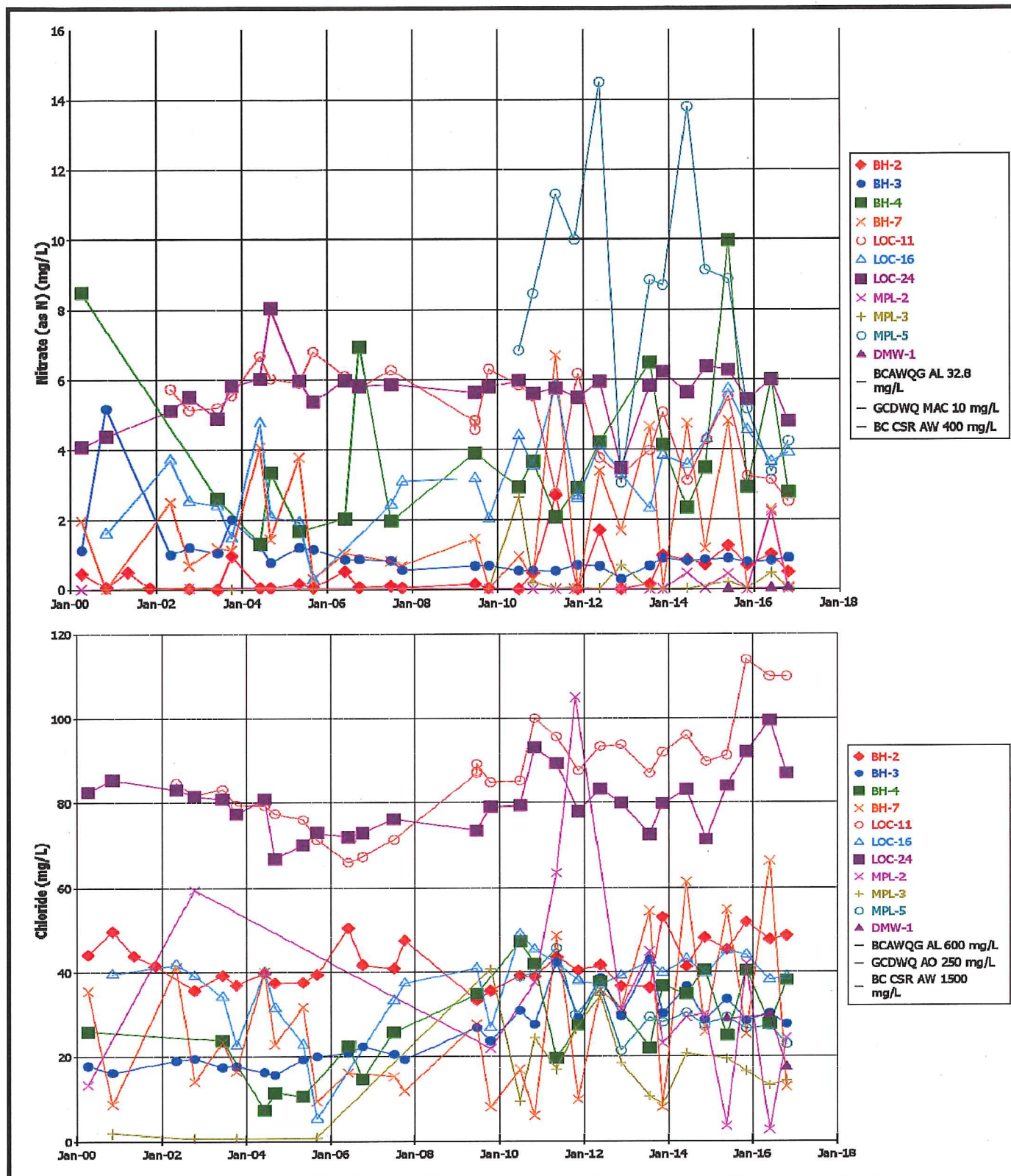
Columbia Shuswap
Regional District

Figure 1: General Project Site Location, Blind Bay and Sorrento, B.C.

DRAWN	MJ	DATE	December 2016	PROJECT NO.	14-024-12
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TITLE

Figure 4: Nitrate (Top) and Chloride (Bottom) Time Series Plots, Blind Bay, B.C.



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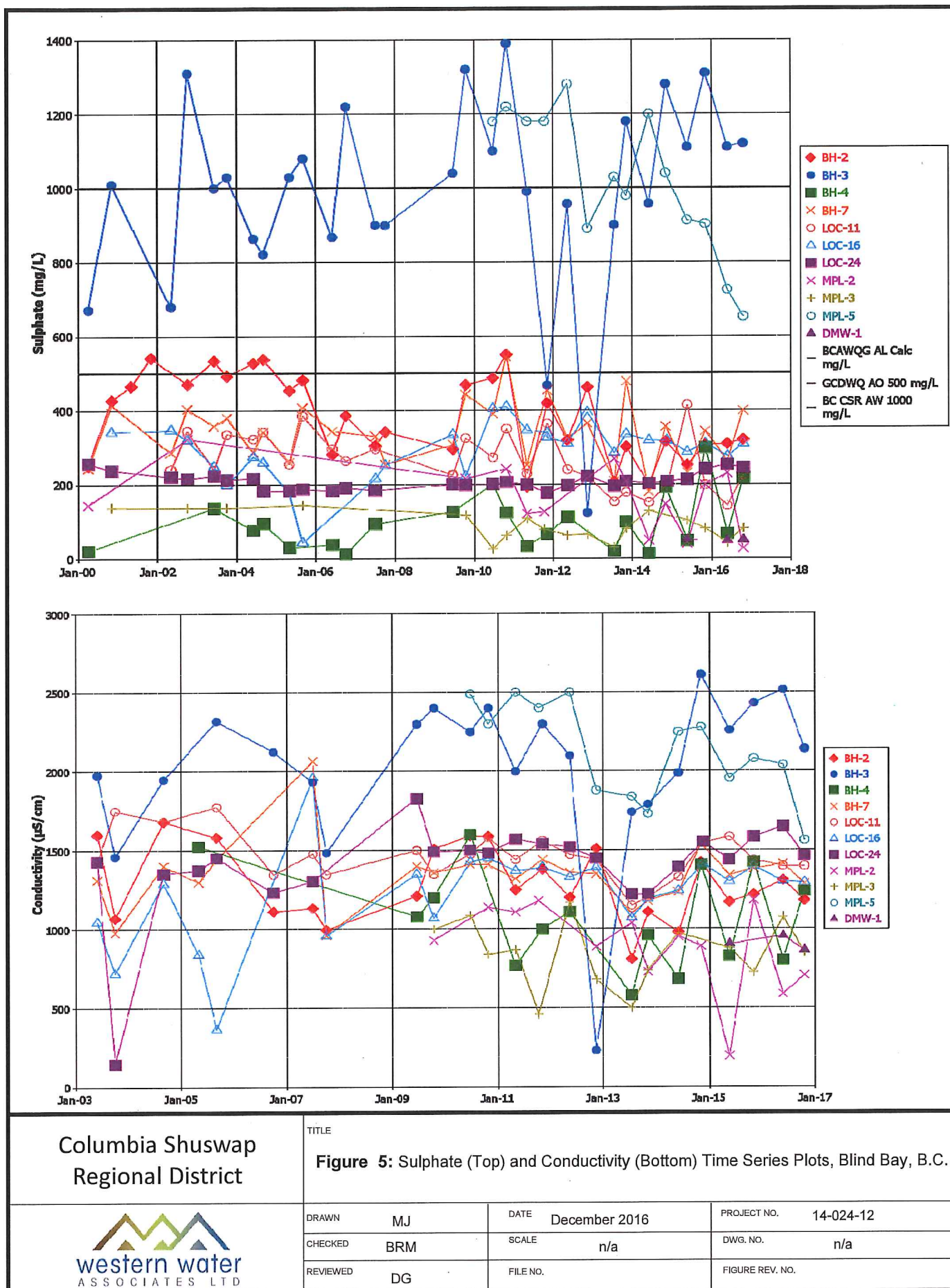
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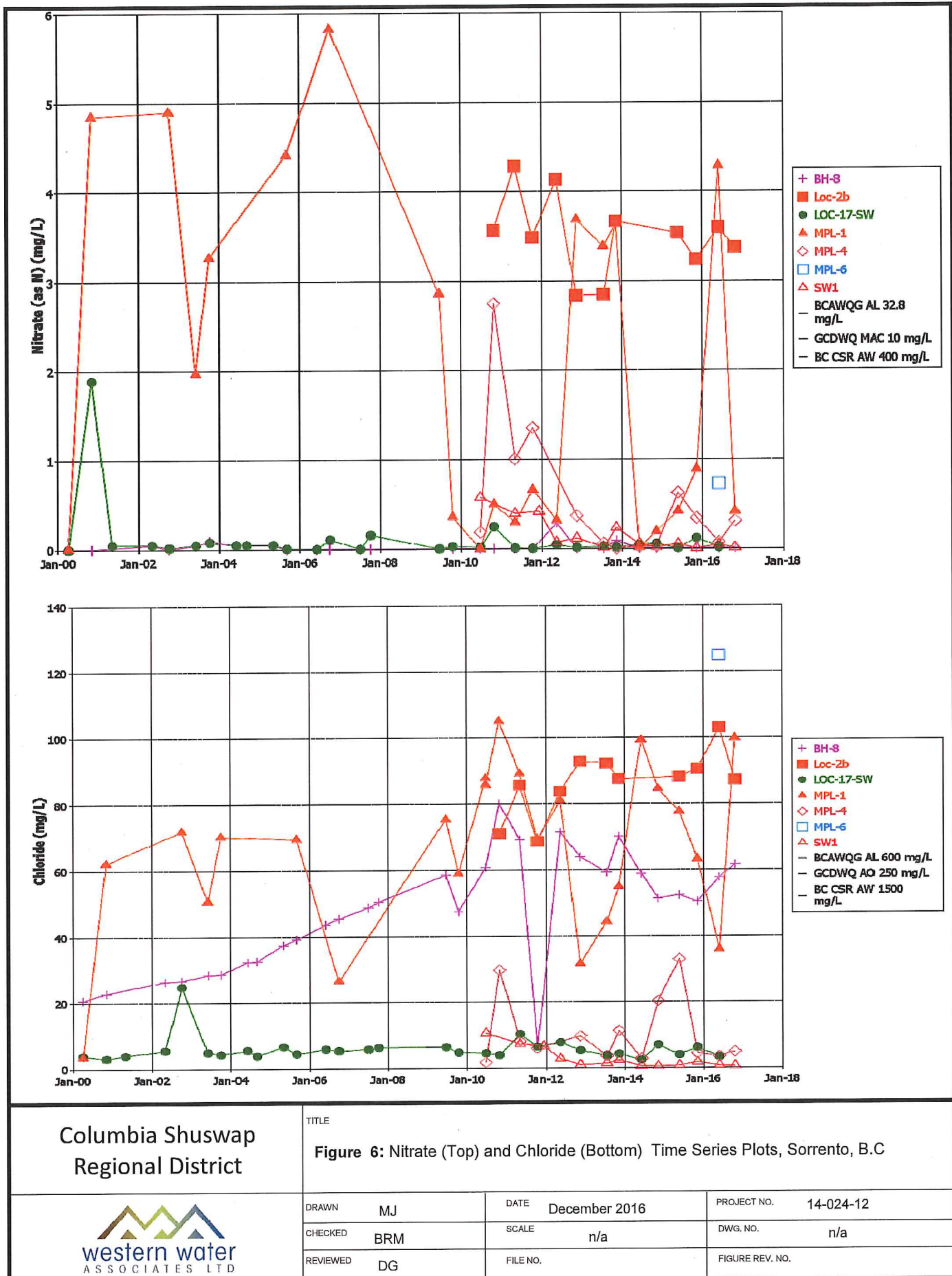
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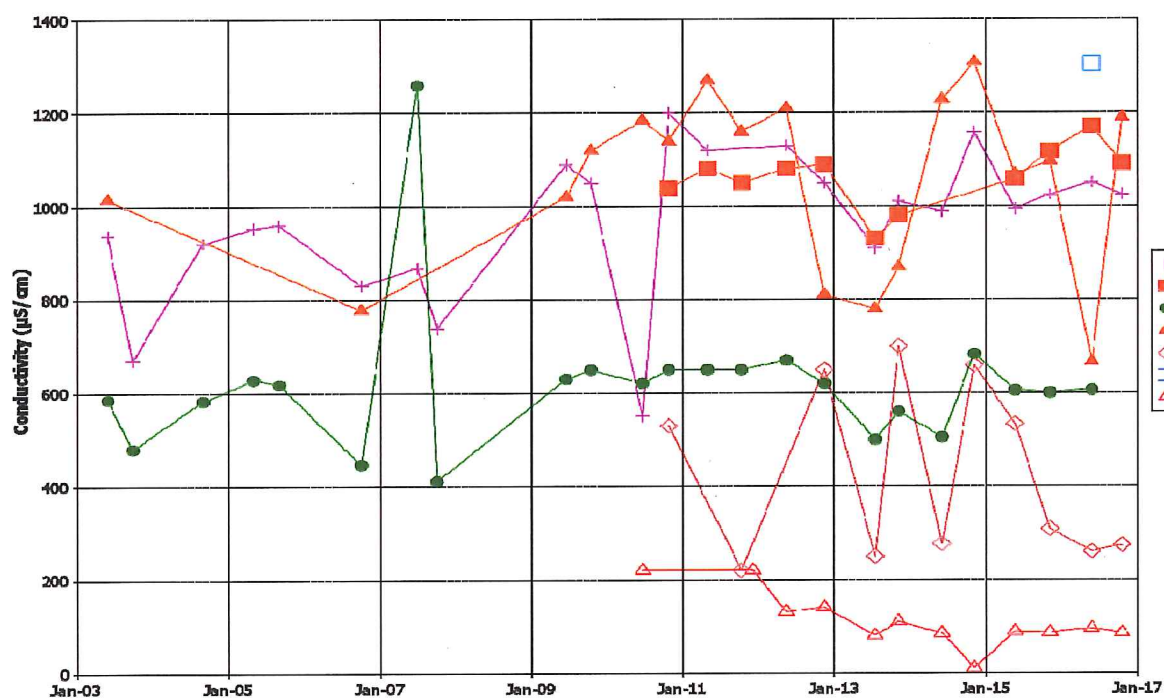
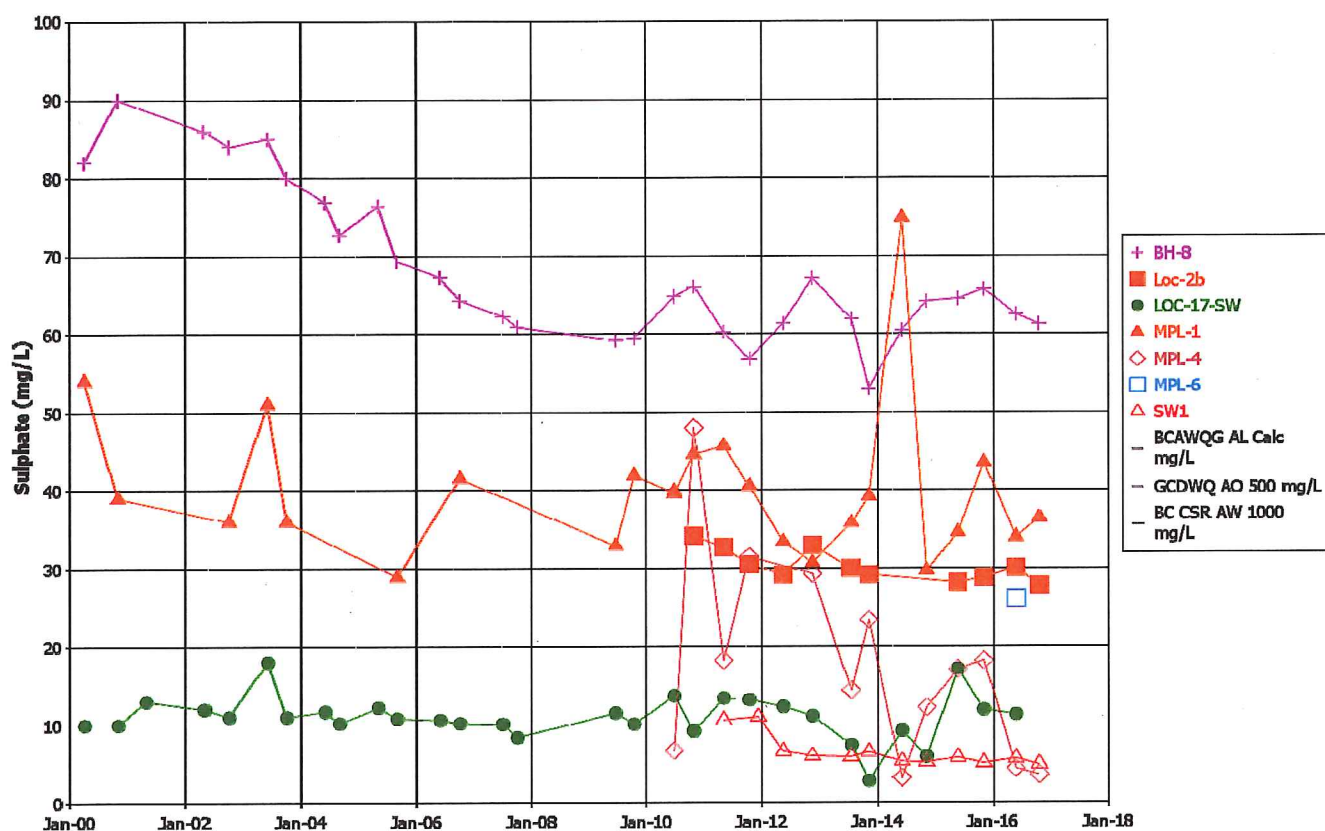
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Figure 7: Sulphate (Top) and Conductivity (Bottom) Time Series Plots, Sorrento, B.C.



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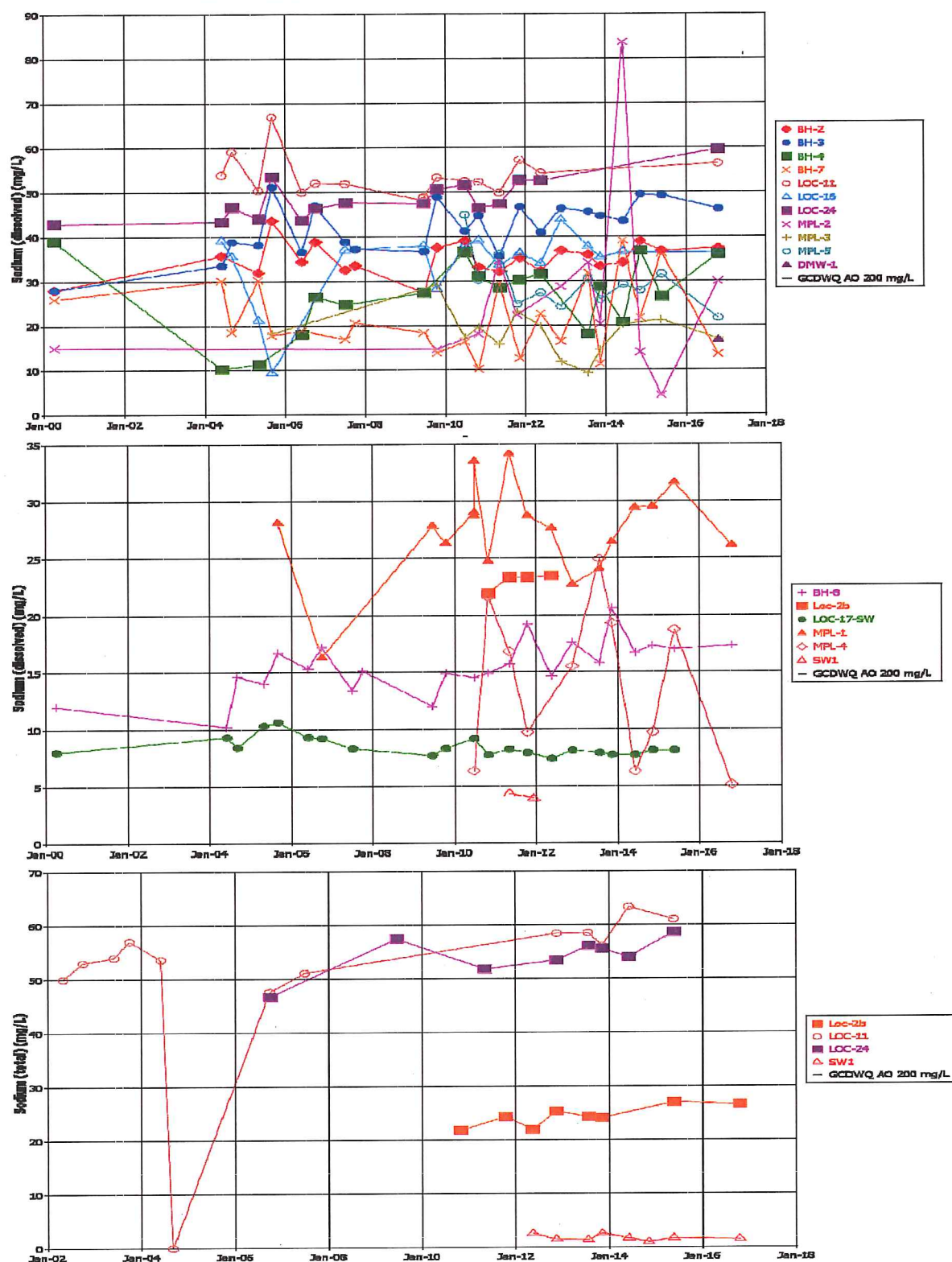
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Figure 8: Dissolved Sodium, Blind Bay (Top) and Sorrento (Middle) and Total Sodium Blind Bay and Sorrento (Bottom) Time Series Plots.



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EXHIBIT 17

Earth Tech / AECOM

***Liquid Waste Management Plan
– Stage 3 Report***





Liquid Waste *Management* Plan **AREA 'C'**

Stage 3 Report

Prepared for:
Columbia Shuswap Regional District
PO Box 978, 781 Marine Park Drive NE
Salmon Arm, BC
V1E 4P1

January, 2009
Project No. 97166

EARTH TECH | AECOM



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EXECUTIVE SUMMARY

During Stage 1, the Advisory Committee, the general public, CSR D staff and the consultant identified a number of options for the management of liquid waste issues in CSR D Electoral Area "C". The brainstorming of ideas was encouraged and no filters were applied to eliminate or reduce the number of options. In Stage 2 the options were expanded to allow the Advisory Committee and the general public to understand the environmental, health, social and cost aspects for each option.

The task of the Advisory Committee in Stage 2 was to review all the detailed options and identify their preferred set of options for the management of liquid wastes throughout the plan area. The preferred options as well as the other options were presented to the public and their feedback and comments solicited. The options preferred by the public and by the Advisory Committee are documented in the Stage 2 report and are summarized in Table ES-2. This set of preferred options was adopted by the CSR D Board.

Based on the results of the Stage 2 Liquid Waste Management Plan, the CSR D should begin implementing the recommendations of the Advisory Committee. Key recommendations from this plan are:

1. For the entire Area 'C', preferred solutions include public education, water quality monitoring and bylaws. These programs serve to minimize the environmental and health impacts of existing septic systems and set the stage for management of new and existing community sewer systems in a way that is consistent with the values of the community.

The objective of the public education component is to reduce health and environmental impacts by developing public education programs which are directed towards:

- Optimal septic tank operation and maintenance (Includes recommended pump-out frequency)
- Water conservation
- Source control

The monitoring program component involves the establishment of a series of monitoring programs to determine the health and environmental impacts from development in the LWMP area. The monitoring program would include sampling programs for lakes, streams and wells and the recording of baseline data for trend determination.

Implementation of bylaws provides an incentive to comply with the public education programs noted above. The bylaws that were suggested are:

- Mandatory septic tank pump-out program
- Mandatory water conservation
- Mandatory source control
- Lake discharge controls



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- Mandatory turn-over of new systems to CSR
 - Mandatory connection when a publicly owned and operated sewer system is available within the identified sewerage area
 - Development Cost Charge Bylaw
 - Borrowing Bylaw
2. Implementing and enforcing some of the recommended bylaws will require developing some level of building inspection. As a result, introduction of a Building Regulation Bylaw for Area 'C' is recommended.
 3. To address potential public health and environmental conflicts surrounding private lake discharge, this LWMP recommends that all private discharges of treated effluent, included treated grey water from nautical vessels, be prohibited from Shuswap Lake and White Lake.
 4. For the Sorrento, Blind Bay and Reedman Point area, development of a new community sewer system and wastewater treatment plant is recommended. Based on the results of preliminary negotiations with Shuswap Lake Estates, the option of developing the Shuswap Lake Estates treatment plant as a regional facility has been dropped as the preferred option. As a result, purchase of land in the Balmoral area for a treatment plant and storage should be investigated. This will entail entering into discussions with the Agricultural Land Commission (ALC) for approval to construct a wastewater treatment plant and storage reservoir on ALR land. There is precedent for approval of this request from the ALC.
 5. A back-up ground infiltration system may be needed for the new effluent irrigation system. Once a new site in the Balmoral area is established for a new wastewater treatment plant and storage reservoir, a hydrological review of the area should be undertaken and an infiltration site identified.
 6. In order to be affordable, the cost of developing the Sorrento, Blind Bay and Reedman Point sewer system will need to be funded by Provincial and Federal grants. The household cost documented in the Stage 2 report and presented to the public assumes that the grants will cover 2/3 of the capital cost of the system. The CSR should apply for the grant at the earliest opportunity once the Area C LWMP is approved by the CSR Board of Directors and the Minister of the Environment.
 7. Distribution of household cost for the remaining 1/3 capital cost should be based on assessed value of improvements.
 8. The homeowner will also be responsible for the on-site costs to tie-in to the new sewer system. This cost is estimated to be on average \$4,305 for a gravity connection and \$4,840 for a pumped connection. The household costs, both for on-site and off-site works, may be communicated to the public through a newsletter, the CSR website, and other means. The CSR should provide a list of qualified and available contractors to the residents of the sewer service area and provide information to assist the residents in selecting a preferred contractor.



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9. Long term effluent supply contracts should be established with farmers for the disposition of the reclaimed water.
10. As part of the preliminary design stage of the Regional treatment plant, a long-range servicing plan should be developed. In the event that a mandatory septic tank pump-out program is contemplated and there is a lack of capacity by the private sector to handle the volumes and work load associated with such a program, this plan should incorporate a plan for developing a septage handling facility to accommodate pumped waste from septic tanks.
11. Due to its relatively small size initially, hiring a contractor to operate the new sewer system and treatment plant will help to minimize costs. However, as the system grows, the CSRD should consider taking over operation and maintenance of the system.
12. As part of the development of the new sewer system and treatment plant, the CSRD should develop an integrated waste management plan that includes agricultural waste (manure) and any waste by-product from the treatment plant.
13. For the Sunnybrae and White Lake area, water quality monitoring should be initiated to assess the impact of existing development on the lake and groundwater. The results of the testing may serve as a trigger for development of a new community sewer system.
14. It is recommended that holding tanks be allowed for homes within a proposed sewerage area to address the failure of an existing on-site system. Installation of the holding tank is intended to assist the homeowner in avoiding a large expenditure for an on-site system upgrade in an area where a community sewer system is planned.

Table ES-1 provides a summary of annual household cost by sub-area, based on the summary conclusions and recommendations made in this report.

The CSRD obtained a legal opinion from its solicitor concerning a public assent process. The opinion states "...if the proposed sewer service and related borrowing are for the purpose of implementing the proposed LWMP, then once that LWMP is approved by the Minister, the Regional District would be able to adopt the service establishment bylaw and borrowing bylaw without the assent of the electors..." Although an assent process is not required, an assent process may be implemented at the call of the Area Director or Board of Directors. From a timing perspective, an assent process should follow approval of the grant application from senior government.

As a final recommendation, the CSRD Board should adopt Stage 3 LWMP Report as a bylaw and submit it to the Minister of Environment for approval.



EXECUTIVE SUMMARY

Table ES-1: Summary of Total Household Costs By Area

Area	Estimated Annual Cost (Based on 20 Year Amortization at 6% Interest)				Comments
	Solution 1 - Public Education, Water Quality Monitoring, and Bylaws	Capital Cost for Development of a Community Sewer System	Annual Operation and Maintenance Cost for Sewer System	Total Estimated Average Annual Cost	
1. Blind Bay, Sorrento and Reedman Point	\$40	\$646	\$110	\$796	<p>1. Estimated cost assumes that a new Regional facility is constructed in the Balmoral area.</p> <p>2. The additional on-site cost to install a service from the home to the property line is estimated to be on average \$4,300 to \$4,840</p> <p>3. O&M costs may be higher if servicing is phased.</p>
2. Sunnybrae	\$40	-	-	\$40	The Sunnybrae area may require a new community sewer if water quality monitoring detects an impact - under this scenario, the total household cost will increase to an estimated \$1,456 per year.
3. White Lake	\$40	-	-	\$40	The White Lake area may require a new community sewer if lake water quality monitoring detects an impact - under this scenario, the household cost will increase.
4. Rural Areas (Balmoral, Notch Hill, Tappen Valley, Carlin, Skimikin, Eagle Bay and Wild Rose Bay)	\$40	-	-	\$40	



Table ES-2: Summary of Design Criteria for Each of the Selected Options

Decision Criteria Category	SELECTED PREFERRED AND POTENTIAL OPTIONS						
	1.) Public Education, Monitoring and Bylaws	2.) Controls for Lake Discharge from Private Sources	3.) All New Sewer Systems Turned Over to the CSRD	4.) Develop Shuswap Lake Estates WWTP as a Regional Facility**	5.) Construct a New Regional Facility in the Balmoral Area (Alternative Option for 4.)	6.) Pump Wastewater from Sunnybrae to the Salmon Arm Sewer System	7.) Pump Wastewater from White Lake to Regional facility
Environmental and Human Health & Safety	<ul style="list-style-type: none"> Protects water quality through adoption of optimal maintenance practices Monitoring will identify emerging problems Facilitates future recycling programs 	<ul style="list-style-type: none"> Minimizes potential health risks to drinking and recreational water users Avoids potential proliferation of lake dischargers 	<ul style="list-style-type: none"> Reduces risk of failed systems 	<ul style="list-style-type: none"> Excellent effluent reuse potential in the area Water quality protected through use of effluent for irrigation 	<ul style="list-style-type: none"> Excellent effluent reuse potential in the area Water quality protected through use of effluent for irrigation 	<ul style="list-style-type: none"> No beneficial reuse of effluent 	<ul style="list-style-type: none"> Excellent effluent reuse potential in the Balmoral area
Financial	<ul style="list-style-type: none"> \$40 /yr/household^{††} Relatively low cost distributed over entire Area 'C' 	<ul style="list-style-type: none"> No capital cost 	<ul style="list-style-type: none"> Reduced operational costs from economies of scale 	<ul style="list-style-type: none"> \$602 /yr/household for system construction^{††} \$110 /yr/household for operation of lagoon system 	<ul style="list-style-type: none"> \$646 /yr/household for system construction^{††} \$110 - \$130 /yr/household for operation of system 	<ul style="list-style-type: none"> \$814 /yr/household for system construction^{††} \$248 /yr/household for operation of system 	<ul style="list-style-type: none"> \$428 /yr/household for pumping to SLE
Technical	<ul style="list-style-type: none"> Data obtained can be used to select objective technical solutions 	<ul style="list-style-type: none"> Eliminates pollution associated with seasonal start-up of treatment processes and unqualified operators 	<ul style="list-style-type: none"> Ensures consistent design and operational standards 	<ul style="list-style-type: none"> Provides excellent treatment reliability Includes backup emergency infiltration system 	<ul style="list-style-type: none"> Provides excellent treatment reliability 	<ul style="list-style-type: none"> Operation of system provided by existing utility Requires a lake forcemain 	<ul style="list-style-type: none"> Provides excellent treatment reliability
Social	<ul style="list-style-type: none"> Allows for proactive protection of the environment 	<ul style="list-style-type: none"> Community has expressed opposition to lake discharge from private sources 	<ul style="list-style-type: none"> There is a higher level of public confidence in local government Greater accountability 	<ul style="list-style-type: none"> Utilizes an existing treatment plant Provides for earliest installation of a sewer system 	<ul style="list-style-type: none"> Requires constructing a new STP on agricultural land Provides for installation of a sewer system 		
Educational	<ul style="list-style-type: none"> Provides for increased public awareness 		<ul style="list-style-type: none"> Increased potential for water conservation initiatives 				
Administrative & Planning	<ul style="list-style-type: none"> Data acquired can be used to make land-use decisions 		<ul style="list-style-type: none"> Promotes community sewer systems, consistent with draft OCP's 	<ul style="list-style-type: none"> Good buffers in-place Compatible with draft OCP Eliminates two parallel systems in the Blind Bay area 	<ul style="list-style-type: none"> Good buffers available Compatible with draft OCP 	<ul style="list-style-type: none"> Compatible with draft OCP 	<ul style="list-style-type: none"> Allows for future servicing if required Compatible with draft OCP

** Based on the results of preliminary negotiations with Shuswap Lake Estates, the option of developing the Shuswap Lake Estates WWTP as a regional facility is not recommended.

†† Based on an average annual household cost



1.0 PROCESS

During Stage 1, the Advisory Committee, the general public, CSR D staff and the consultant identified a number of options for the management of liquid waste issues in CSR D Electoral Area "C". The brainstorming of ideas was encouraged and no filters were applied to eliminate or reduce the number of options. In Stage 2 the options were expanded to allow the Advisory Committee and the general public to understand the environmental, health, social and cost aspects for each option.

The task of the Advisory Committee in Stage 2 was to review all the detailed options and identify their preferred set of options for the management of liquid wastes throughout the plan area. The preferred options as well as the other options were presented to the public and their feedback and comments solicited. The options preferred by the public and by the Advisory Committee are documented in the Stage 2 report. This set of preferred options was adopted by the CSR D Board.

The Advisory Committee adopted the following series of principles as part of the Stage 1 to guide the process.

1. The communities within Area 'C' and the Shuswap watershed rely on Shuswap Lake for drinking water and recreation and place a high value on its aesthetics. Preserving the environmental quality of the lake is of paramount importance in the context of a liquid management plan. Therefore, the committee believes the plan needs to emphasize minimizing environmental impacts of wastewater effluent.
2. Foreshore water quality testing in Shuswap Lake has detected an impact from human activities and a "do nothing" approach is no longer acceptable.
3. The Advisory Committee favours options that emphasize re-using effluent for irrigation and habitat enhancement, followed by ground disposal. The Advisory Committee does not support lake discharge of effluent.
4. The committee supports establishment of appropriate bylaws and public education programs to achieve the LWMP objectives.

LWMPs are encouraged by the Ministries of Environment and Health, especially for rural areas dependent upon on-site treatment and disposal systems, to investigate existing circumstances, research viable alternatives and improvements and with public input recommend the most financially, socially, and environmentally acceptable solutions.



2.0 PREFERRED AND FUTURE POTENTIAL SOLUTIONS

A summary of all the preferred and future potential solutions is provided in this section. Additional information available after the completion of the Stage 2 report was added as necessary. Options that were considered but not selected for implementation can be referenced in the Stage 2 report.

Table 1 provides a summary of costs associated with the preferred solutions.

Table 1: Average Household Costs for Preferred Solutions

Preferred Solutions	Contributing Area	Total Net Cost with 2/3 Grant Funding If Eligible (\$ Million)	Cost Distributed By Parcel		Cost Distributed By Assessed Value of Improvements			
			Average Net Parcel Cost	Average Annual Household Cost	Total Assessed Value in Contributing Area	Cost per \$100,000 Assessed Value	Annual Cost per \$100,000 Assessed Value	Average Annual Household Cost
			(\$)	(\$)	(\$ Million)	(\$)	(\$)	(\$)
1. Public education, Water Quality Monitoring, and Liquid Waste Management Bylaws	Area 'C'	\$0.240	\$52	\$52	\$946.2	\$25	\$25	\$40
2. Controls for Lake Discharge from Private Sources	Area 'C'	-	-	-	-	-	-	-
3. All New Sewer Systems Turned Over to the CSR D	Area 'C'	-	-	-	-	-	-	-
4. Shuswap Lake Estates as a Regional facility	Sorrento/Blind Bay/Reedman Point	\$18.7	\$8,000	\$658	\$436	\$4,293	\$353	\$602
5. Develop a New Regional Facility in the Balmoral Area (<i>Only If Solution 4 Does Not Proceed</i>)	Sorrento/Blind Bay/Reedman Point	\$20.1	\$8,600	\$707	\$436	\$4,613	\$379	\$646

2.1 AREA-WIDE PREFERRED SOLUTIONS

Area wide preferred solutions appear here in an abbreviated form.

The option of doing nothing, while not appearing in the Stage 1 report was presented to the public as “*Option 0*”, at both of the Public Information Meetings. The option is not a realistic approach for dealing with the existing and potential liquid waste issues identified in Area ‘C’. However, there are some areas where the current approach of on-site septic systems is adequate. For example, large lots greater than 1 hectare located in rural



areas and in good soil conditions could continue to be serviced by on-site systems with minimal impacts.

Under a *status quo* scenario, everyone currently served by septic tanks, dry wells or collection and treatment systems would continue to be served in the same manner. Any new lots relying on on-site treatment systems would need to be sufficiently large to satisfy the Ministry of Health design standards (*Sewerage System Standard Practice Manual*). Furthermore, under the Ministry of Community Services standards, any lots that utilize a well for drinking water and an on-site septic system would be required to have a minimum size of 1 hectare.

As an area-wide solution, the “Do Nothing” options cannot address problems in areas where nutrient and bacteria associated with septic systems is being measured in the Lake and groundwater. Nor can this option identify or prevent emerging contamination issues like those in Sunnybrae.

As a result, the option of doing nothing is not an approach that can be considered on its own. For this reason, additional options for dealing with liquid waste management issues are required.

PUBLIC EDUCATION, MONITORING AND BYLAWS

This option requires a combination of public education, water quality monitoring and bylaws to manage the impacts of liquid waste in the environment. Each of these components is considered below.

PART 1: EDUCATION

The objective of this component is to reduce health and environmental impacts by developing public education programs which are directed towards:

- Optimal septic tank operation and maintenance (Includes recommended pump-out frequency)
- Water conservation
- Source control

Under this option, annual information mail-outs, incentive rewards, and website updating could be provided. Staff and consultant time would be required to undertake these tasks.

As part of this option, the database on septic systems begun in 2004 should also be further developed and include tracking of septic tank pump-outs to confirm the efficacy of the educational programs. Subsequent to the 2002 LWMP, summer students were hired to conduct a survey of the septic systems in the existing Shuswap OCP area including Cruikshank Point, Sorrento, Notch Hill/Balmoral areas, Blind Bay, Eagle Bay and Reedman Point. This survey identified that a large number of dry wells were being used in the place of disposal fields. The parcels missed in the first survey could be re-contacted. In addition, the survey should be extended to the White Lake and Sunnybrae areas.



Additional information on maintenance and pump out frequency of septic systems gained by the survey would be valuable for future planning and decision making. In particular, if the survey showed the educational program was not resulting in better care and maintenance of on-site septic systems, a pump-out bylaw could be implemented.

An allowance of \$70,000 for the first year is suggested for an educational program which includes a one-time septic system survey component. The annual cost in subsequent years should decrease. If the \$70,000 annual cost is distributed over the entire plan area of 4,621 homes (*Obtained from BC Stats 2006 Census*) the annual cost per household is approximately \$15 for the first year. This cost would apply to all parcels in Area 'C' as everyone would benefit. The development of educational programs could be initiated shortly after the LWMP is approved and so may be considered a "Short Term" option.

This option is relatively inexpensive, simple to implement and should result in extended on-site system life. The estimated cost of replacing a septic system to meet current standard is \$10,000 to \$25,000. In relative terms, the education program could have significant value to the homeowner by avoiding a potentially unnecessary failure.

This option would likely provide protection for public health and the environment as long as the public in the area recognize that it is in their best interest to follow the recommendations of the educational programs. If the follow-up survey suggests that the education programs are ineffective and can show risks to public health and the environment, a mandatory pump-out program may be required.

PART 2: MONITORING

This program component involves the establishment of a series of monitoring programs to determine the health and environmental impacts from development in the LWMP area. The monitoring program would include sampling programs for lakes, streams and wells and the recording of baseline data for trend determination.

Currently, the CSRD partners with MOE on a lake monitoring program. The program is paid for by a levy. Of the maximum \$25 levy that the Board authorized for education, septic tank survey, and monitoring, currently approximately \$5 to \$7 is spent on monitoring. The current lake and groundwater monitoring program would be continued or expanded as one component of the overall program. The specific monitoring programs would need to be developed in consultation with environmental specialists from MOE. Also, consideration should be given to continuing sediment core sampling in the Salmon Arm area. MOE has indicated that the data obtained from the sediment core sampling could shed light on the water quality changes being detected in the Salmon Arm portion of Shuswap Lake.

A levy similar to the existing amount of \$25 should remain in-place to address monitoring requirements. The levy amounts to an annual budget of \$115,000, assuming a total of 4,621 homes in the CSRD Area 'C' (*BC Stats 2006 Census*). Development of new monitoring programs could begin shortly after plan approval and may be considered a "Short Term" option. In particular, the water quality



monitoring should continued in the North Arms of Shuswap Lake and be initiated in the Salmon Arm and in White Lake.

It is recommended that all water quality monitoring be undertaken in conjunction with Shuswap Lake Integrated Planning Process (SLIPP), as well as any other related government agencies. To maximize resources, water quality monitoring by SLIPP, Ministry of Environment, Interior Health and CSRD should be coordinated to avoid duplication. An annual meeting could be convened to review sampling programs by the various stakeholders and ensure consistent standards and protocols are met.

The implementation of this option for each area is relatively inexpensive and it would provide trends and current status of the environment in each area. The establishment of a trigger would provide an indication of when selected remedial measures noted in the LWMP should be implemented, such as installation of a sewer system at Sunnybrae and White Lake.

PART 3: BYLAWS

Under this program component, health and environmental impacts would be reduced by developing, implementing and enforcing bylaws. This option provides an incentive to comply with the public education programs noted above. The bylaws that were suggested are:

- Mandatory septic tank pump-out program
- Mandatory water conservation
- Mandatory source control
- Lake discharge controls
- Mandatory turn-over of new systems to CSRD
- Mandatory connection when a publicly owned and operated sewer system is available within the identified sewerage area
- Development Cost Charge Bylaw
- Borrowing Bylaw

Under a Bylaw program, enhanced septic tank pump-out tracking will track the frequency of septic tank pump-out, either paid directly by the homeowner or taxed by the Regional District. A bylaw enforcement approach to managing on-site septic systems should only be implemented if the educational programs are not producing satisfactory results. In addition, sufficient data on the on-site septic systems should have been acquired under the education program to support the bylaw option. In the absence of a good database on where the least effective septic systems are located, a bylaw enforcement program could be inefficient.

The estimated cost to implement this option is \$120,000 a year, which when spread over the entire plan area of 4621 homes (*Obtained from BC Stats 2006 Census*) represents an annual cost of \$26 per household. The cost estimate includes provision for legal consultation, administration, inspection services and bylaw enforcement. This cost would apply to everyone in the LWMP area as everyone would benefit. Bylaws require enforcement personnel in order to be effective. The development and implementation of the three bylaws would likely take some time and may be considered as "Long Term" options.



2.2 LAKE DISCHARGE CONTROLS FROM PRIVATE SOURCES

The *Municipal Sewage Regulation* (MSR) provides criteria for discharge of effluent to the lake from private sources to occur. The MSR allows for the discharge of effluent to the lake within Area 'C', only if specific quality criteria are met. However, the installation or planned installation of lake outfalls for discharge of treatment plant effluent has resulted in considerable concern within the community.

There are concerns that some sewage treatment plants used to service private developments may not be able to maintain an acceptable effluent quality due to operational challenges with seasonal fluctuations in flows, and unqualified personnel operating the systems. With the proliferation of lake outfalls, the effluent could represent a significant health risk to the many residents that use the lake as a source of potable water. This option is intended to address the risks associated with private outfalls by imposing restrictions on lake discharge of effluent.

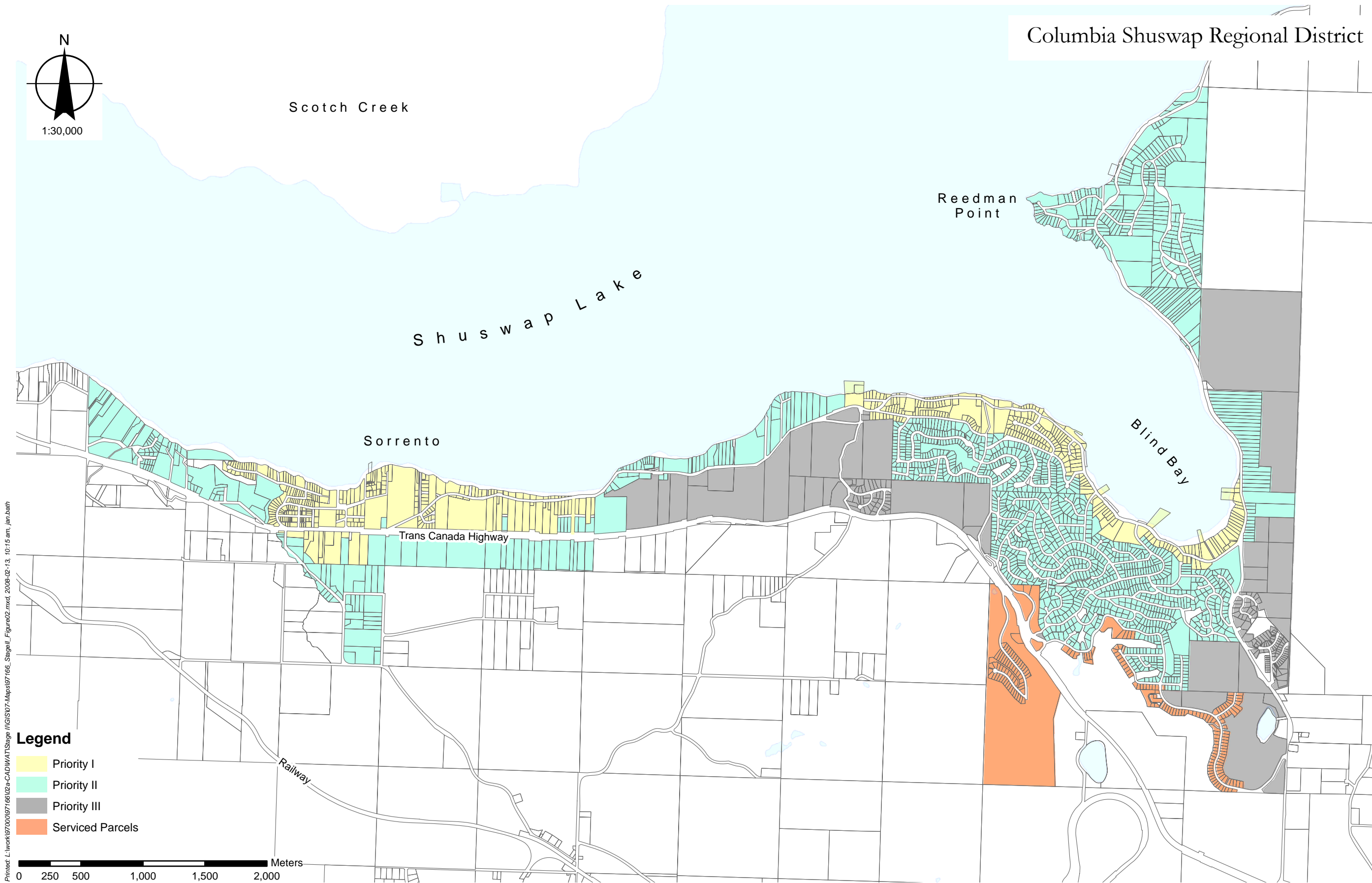
Treatment plants in the Okanagan that discharge effluent to the lake system are required to be owned and operated by a local government. This regulation recognizes that local governments have a long-term interest in maintaining a sewage treatment plant. In addition, local governments have the ability through grant funding and taxation authority to adequately operate and when appropriate upgrade these facilities. Residents of small subdivisions often do not have the funding or resources to adequately maintain sewage collection and complex treatment systems.

In addition, the Ministry of Environment has received interest from nautical vessel operators to implement standards for grey water treatment systems. Under this scenario, grey water would be treated on-board the vessel rather than be pumped out at a regulated marina and treated at a Regional facility. Effluent from the on-board treatment system would be discharged directly to the lake. The Advisory Committee is opposed to the approach of on-board treatment of grey water treatment because it constitutes a potential health risk to residents using the lake as a drinking water source.

To address potential public health and environmental conflicts surrounding private lake discharge, this LWMP recommends that all private discharges of treated effluent, included treated grey water from nautical vessels, be prohibited from Shuswap Lake and White Lake.

Once this LWMP is approved by the MOE and a Bylaw has been adopted by Board, the Ministry will no longer grant registrations for the disposal of effluent to the lake from private sources.

Liquid Waste Management Plan - Stage III

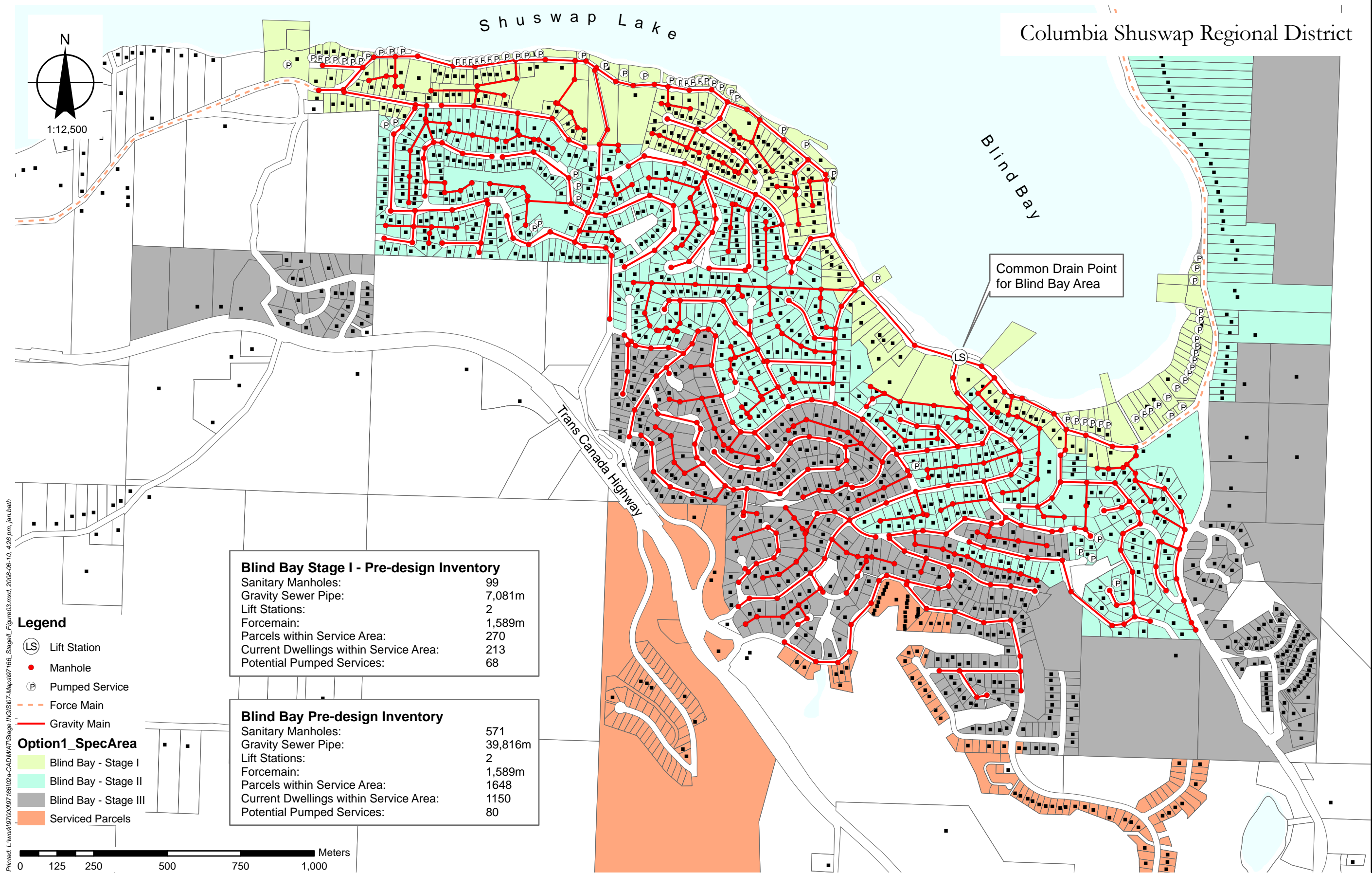


Servicing Plan Overview
Sorrento, Blind Bay, and Reedman Point

Figure

01

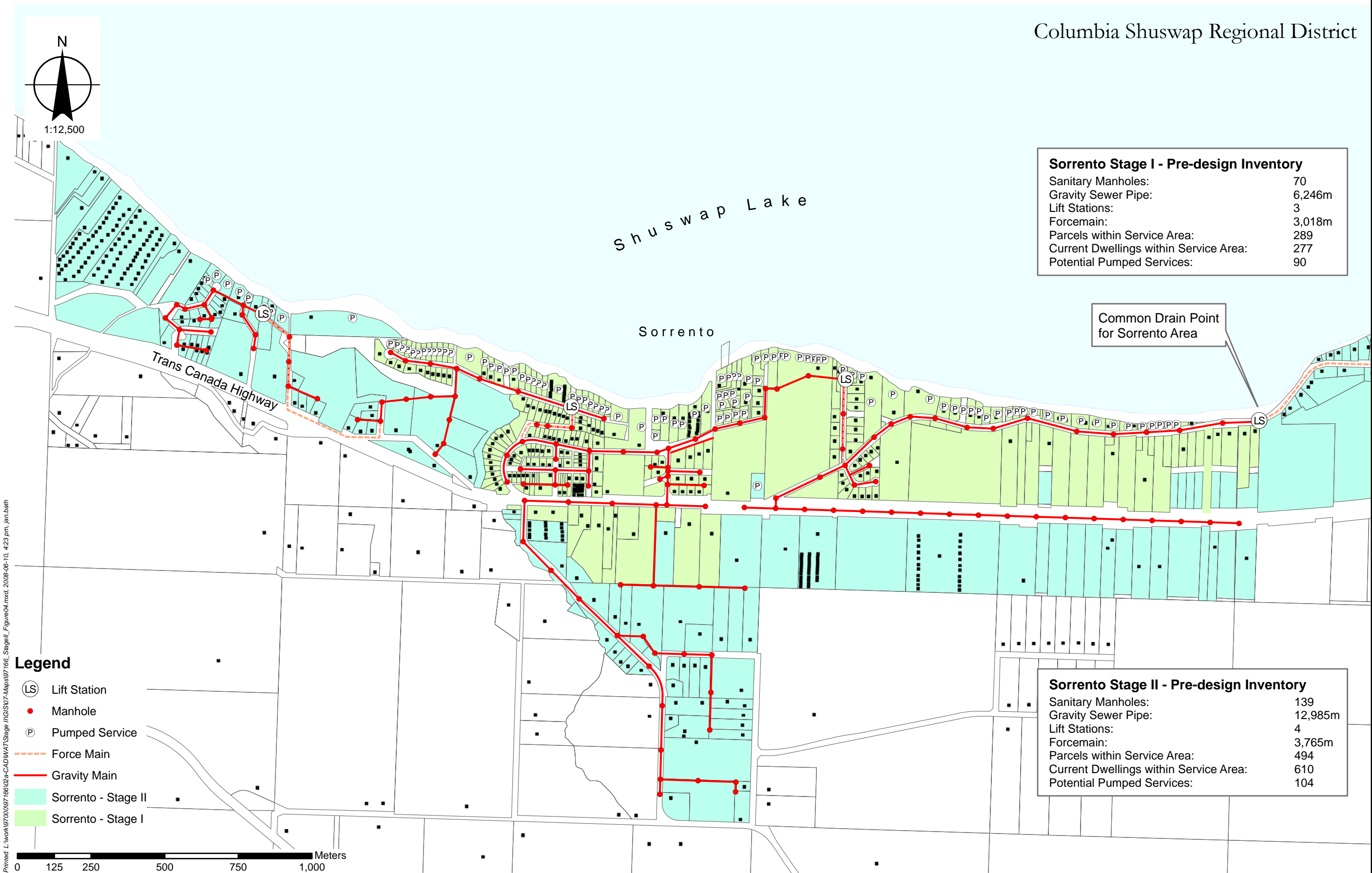
Liquid Waste Management Plan - Stage III



Blind Bay Area Servicing Plan

Figure 02

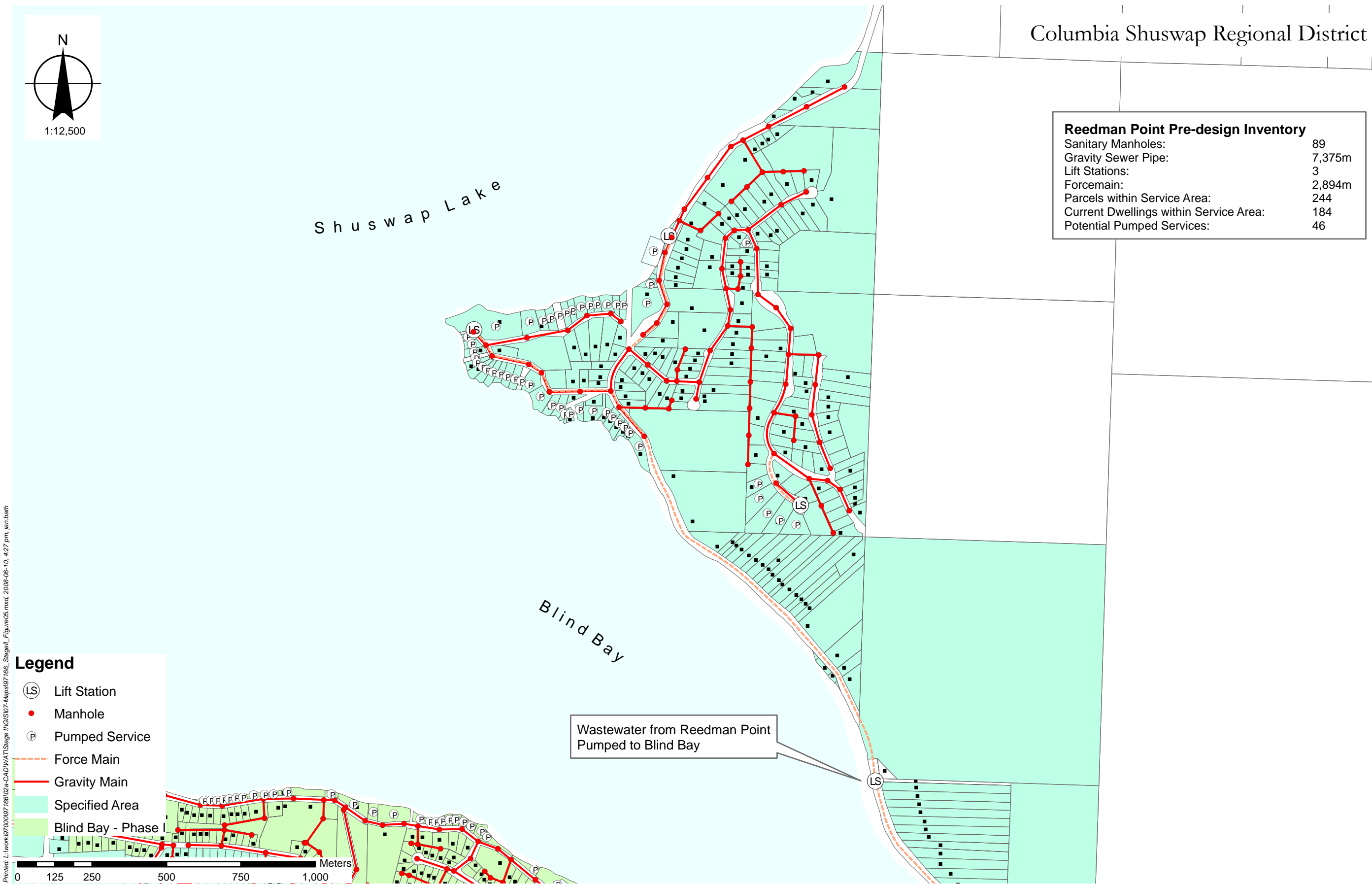
Liquid Waste Management Plan - Stage III



Sorrento Area Servicing Plan

Figure

03

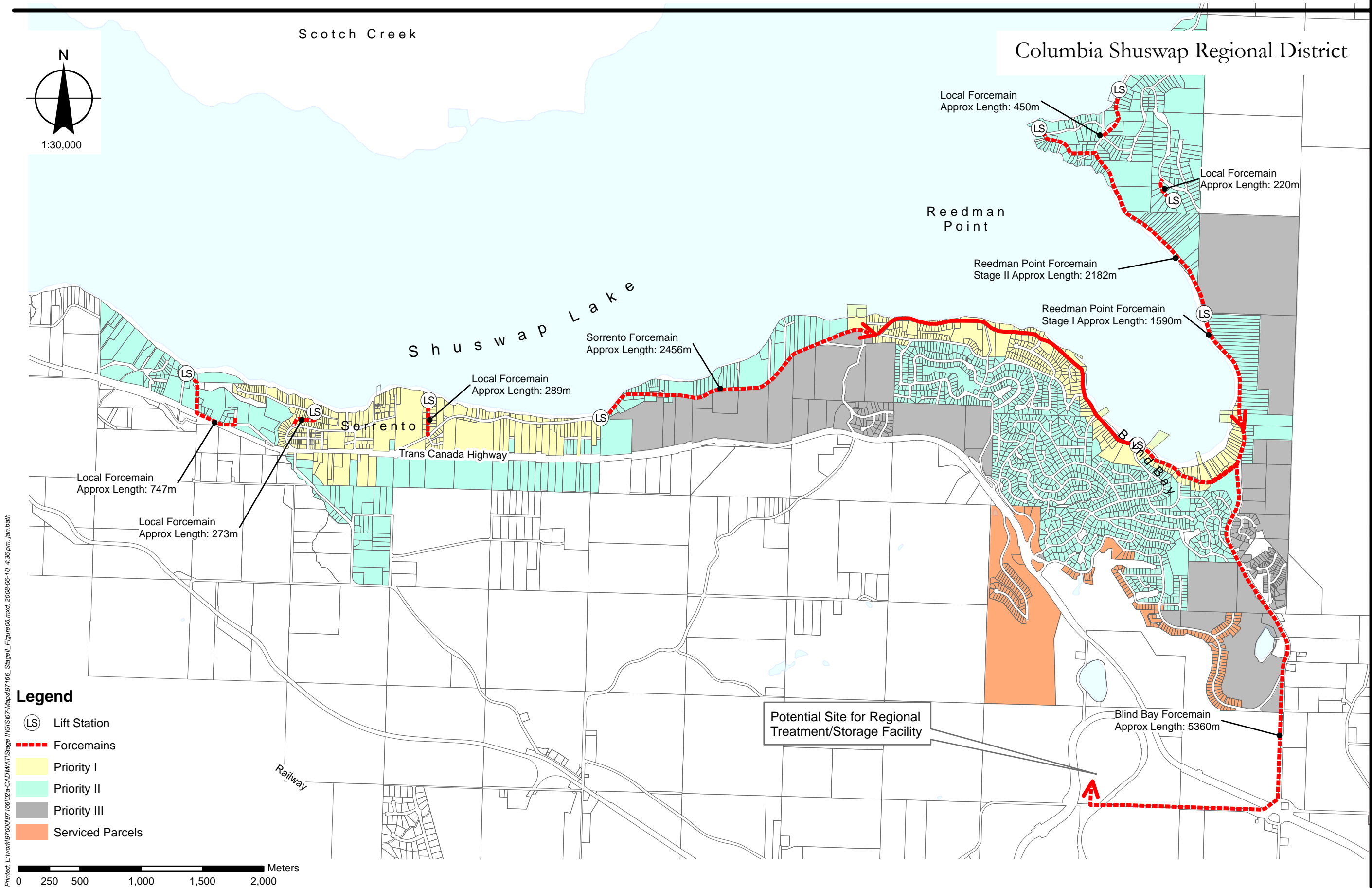


Reedman Point Area Servicing Plan

Figure

04

Liquid Waste Management Plan - Stage III



Servicing Schematic for a Regional Facility in the Balmoral Area
Sorrento, Blind Bay, and Reedman Point



2.3 ALL NEW SEWER SYSTEMS TURNED OVER TO THE CSR D

Under this option, new treatment plants and community sewer systems constructed to service private developments in Area 'C' would be required to be transferred to the CSR D once operational. In effect, the private sewer system becomes publicly owned through the transfer. A developer would construct each of the systems to CSR D criteria, using standard pumps, pipe and fittings to reduce CSR D inventory requirements and facilitate replacement of worn out or defective parts and equipment. The transfer would be at no cost to the CSR D. After the transfer is complete, the CSR D would own and operate the systems, either directly or through a contractual arrangement with an established utility company. Sewer fees would be collected from residents to pay the operational and replacement costs.

Some additional administrative costs might be incurred by the CSR D by a transfer which would need to be passed on to the homeowners within the sewerage area. This cost would vary depending on the size and location of the system.

2.4 PREFERRED SOLUTION FOR THE SORRENTO, BLIND BAY AND REEDMAN POINT AREAS

Under this preferred plan, the Shuswap Lake Estates (SLE) wastewater treatment plant is developed as a "Regional Facility" using reclaimed water irrigation for the dispersal of the effluent. This solution is contingent upon a successful purchase agreement by CSR D for the SLE wastewater treatment plant.[‡] If an agreement cannot be concluded, the alternative solution for the Sorrento, Blind Bay and Reedman Point area (see Section 2.5) would become the preferred option. Under both solutions, wastewater collected from the Sorrento, Blind Bay and Reedman Point area is treated and made available for irrigation water for the SLE golf course and local farmers.

The total cost for purchasing and upgrading the SLE plant would be spread out among all the residents who will be serviced by this treatment facility. These areas include Blind Bay, Sorrento and Reedman Point which contain an estimated 2,339 parcels.

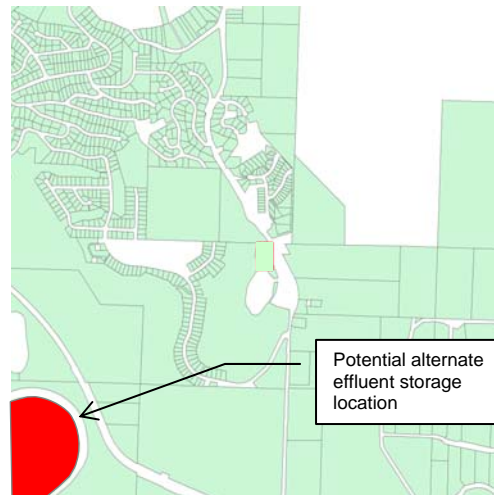
The current value of the Shuswap Lake Estates Lagoon treatment plant infrastructure has been calculated to be about \$1.7 million. Similarly, the current land value of the SLE treatment plant is estimated to be \$1.3 million. The total purchase price for SLE based on these current appraisals would then be about \$3.0 million.

[‡] Note that concurrent with the Stage 3 process, negotiations with Shuswap Lake Estates was undertaken and a final draft Memorandum of Understanding (MOU) was presented at the December 8, 2008 Advisory Committee meeting. However, the Advisory Committee was unanimously opposed to the terms of the MOU and did not support continued negotiations. As a result, the option of developing a new Regional wastewater treatment facility in the Balmoral area will be pursued. A copy of the December 8, 2008 meeting minutes is provided as Appendix A.



Preferred and Future Potential Solutions

As the wastewater flowrate into the SLE treatment plant approaches its maximum capacity, additional treatment works and reclaimed water storage will be required. Currently, the SLE wastewater treatment plant is estimated to have treatment capacity to service approximately 400 homes. However, with upgrades to the aeration equipment and other required infrastructure there is sufficient storage and lagoon capacity to service approximately 1,000 homes. Once the capacity is reached, an upgrade to the existing treatment plant and expansion of the storage facility is required. An area of farmland south of the Trans Canada Highway in the Balmoral area could potentially be purchased for construction of an effluent storage reservoir. The reservoir site is sufficiently large to accommodate a storage reservoir which would service the remaining future build-out of the sewerage area. Furthermore, this site could serve as an alternate site for construction of new treatment plant in the future or in the event the CSR does not acquire the treatment plant at Shuswap Lake Estates.



Effluent from the treatment plant would be used primarily for irrigation of farmland in the Balmoral area and the Shuswap Lake Estates Golf Course.

Given the strong interest shown by members of the agricultural community in the vicinity of the SLE treatment plant and the limited water supply, there appears to be significant demand for effluent for irrigation. Excess demand ensures that the effluent demand, even under a wet year, is greater than the available supply.

A backup dispersal system may be required to address a situation where there is excessive rainfall during the irrigation season and abnormally low application of reclaimed water takes place. During these infrequent and unusual wet years the reservoir could contain too much stored effluent at the end of the irrigation season. Under this scenario there may be insufficient reservoir capacity available through the winter to store effluent at time when irrigation water is not being applied. To address the risk of exceeding the design storage volume, costing for this option also includes provision for an infiltration basin to serve as an emergency backup system.

Single Phase Approach to Developing the System

If construction of the sewer system and purchase of the treatment plant were developed as a single phase, the total capital cost is estimated to be \$56.2 million (Table 2). Each parcel's contribution to the capital cost amounts to \$8,003 with 2/3 grant funding. Assuming a 20 year loan and 6% financing, the annual cost would be \$658.

Multiple Phasing of the System

Under a phased approach, sewage from the foreshore area would be collected first and pumped to the SLE treatment plant through a forcemain.



For Phase 2 servicing, the relatively dense Blind Bay area, Reedman Point, as well as the upper Sorrento area were identified as requiring servicing next. The Phase 3 area includes the larger parcels of land in the Blind Bay and Sorrento area or parcels located at the edge of the sewerage area.

Under this phased approach, the SLE treatment plant would need to be purchased by the Regional District as part the first phase of sewer service construction. An upgrade to the SLE treatment plant would be required to accommodate the first and subsequent phases.

Table 2 provides a summary of the costs for Option 1. The total cost to sewer Phase 1 of Blind Bay and Sorrento is estimated to be \$14.4 million. The total number of units serviced under Phase 1 is 548.

Phase 2 would involve servicing the bulk of the Blind Bay, Sorrento and Reedman Point area. The cost to complete Phase 2 is estimated to be \$41.7 million and will connect an additional 1,791 parcels.

The cost associated with upgrading the SLE Regional Facility was estimated based on an expansion in capacity to 2.4 ML/d from approximately 1.0 ML/d. The cost to install the RBC units would be about \$3.0 million. An alternative for expansion of the SLE facility is to install an additional aeration lagoon. The cost of the additional lagoon, including liner and aeration equipment, will be similar to the RBC option.

During Stage 2 of the Regional Facility upgrade, a new storage area is also required as the existing reservoir adjacent to the plant would be at capacity. An agricultural parcel south of the Trans Canada Highway in the Balmoral area bounded by the Canadian Pacific railway could serve as site for new effluent storage lagoons. This piece of land would easily contain a reservoir and would be ideally situated near the farms where the effluent would be used for irrigation. The costs of the reservoir land purchase and construction should be spread over the 2,339 parcels that would eventually be connected to the sewer carrying wastewater to the SLE Regional Facility

Parcels associated with Phase 3 would tie-in to the system as demand or the opportunity arises.

The estimated cost of the SLE Regional Facility includes provision for an emergency infiltration basin.

Table 2 provides a summary of costing for each of the assumed phases. The costing assumes that those properties currently connected to the SLE facility would not contribute to the purchase cost since these homeowners have already contributed to the cost of the existing system.

**Table 2: Estimated Capital Costs for SLE Regional Facility**

Sewer Sub-Area	Number of Parcels	Capital Cost Estimate (\$ Million)			Cost per Parcel		
		Pipes and Pumps	Treatment Plant, Reservoir & Backup Infiltration	Total	Net Cost	Net Cost with 2/3 Grant Funding	Annual Cost Assuming 20 Year Loan
Phase 1	548	\$11.4	\$3.0	\$14.45			
Phase 2 & 3	1,791	\$33.4	\$8.3	\$41.71			
<i>Sub-Total</i>	<i>2,339</i>	<i>\$44.82</i>	<i>\$11.33</i>	<i>\$56.2</i>	<i>\$24,008</i>	<i>\$8,003</i>	<i>\$658</i>

Financing and Staging Considerations

Due to the large capital cost required to undertake the sewer servicing in a single phase, various mechanisms could be considered for financing this option in order to make it affordable. In order for this option to proceed, it is assumed that 2/3 Provincial grant will be required. Development Cost Charges (DCC's) are another mechanism for funding upgrades to the treatment plant or expansion of the sewer system.

The system could be implemented in multiple phases, if the full grant amount were not made available. Under this scenario, an annual sewer levy should be considered for those parcels that may not be initially connected to the sewer but who will benefit in the future. For example, a large portion of the Phase 1 servicing plan includes installation of a mainstem interceptor collection and pumping system that will be used to service Phase 2 parcels.

A levy paid by all the non-serviced parcels in this ultimate sewerage area will assist in paying for a portion of the infrastructures up-front costs. The levy accounts for future deferred benefits and increases the level of affordability for everyone. The levy will depend on the level of Provincial and Federal funding and would be established when the first grant is received. However, if only the Phase 1 area sewer were constructed the levy required for Phase 2 and 3 parcels would be approximately \$60 per year. This levy would be designed to limit payment of Phase 1 homeowners to the average value of \$658 per year.

Each homeowner serviced will be required to pay a portion of the cost to operate and maintain the sewer system and treatment plant. The operational cost of the treatment plant and sewer system at build-out including labour, power, chemicals, equipment replacement, lab testing and insurance is estimated to be \$275,000 per year. This cost would be distributed over the 2,339 parcels serviced under a full build-out scenario plus the 150 existing parcels currently serviced by Shuswap Lake Estates WWTP. On this basis, each parcel's contribution to the annual operation and maintenance cost is estimated to be \$110.

Since most of the costs associated with operating a sewer system are fixed costs (ie, labour, insurance, etc.), the operation and maintenance costs under a phased scenario



will not change significantly. Power and chemical usage will vary directly with the wastewater flow. As a result, under a phased sewer development the household operation and maintenance costs could approach \$250 - \$325 per year for the dwellings connected to the system in Phase I.

To minimize the operational costs of the sewer system under a phased scenario, the CSR D hire a private contractor to carry out the operational and maintenance activities. Hiring a private maintenance contractor will be cost-effective when the work is not necessarily full-time. Initially, when the sewer system is small and the required operational and maintenance activities are intermittent hiring a private contractor will be less expensive than hiring full-time staff.

NORTH SHUSWAP (AREA 'F') SERVICING

Consideration could be given to servicing the Area 'F'. If the North Shuswap LWMP supports the concept of the Scotch Creek becoming integrated with the South Shuswap sewerage area, and the South Shuswap agrees to accept it, wastewater could be pumped through a submerged pipeline in the lake to the SLE Regional Facility. The concept of pumping wastewater through a submerged pipeline is used in the Okanagan to optimize wastewater treatment capacity. For example, the District of Peachland is connected to the Westbank wastewater treatment plant by a 6 kilometer forcemain under Okanagan Lake.

Scotch Creek is the primary area of growth in North Shuswap and the area proposed for connection to Area 'C'. However, the Lee Creek and Celista areas are also possible areas that could be integrated into the Sorrento – Blind Bay sewerage area. Based on the current draft Stage 2 Area 'F' LWMP population projections, the wastewater flow from the potential North Shuswap sewerage area could approach 5,440 m³/d

Table 3: Potential Population Wastewater Flow Projection for North Shuswap Area

Area	Projected Future Population	Design Wastewater Flow (m ³ /d)
Scotch Creek	7,200	3,200
Lee Creek	2,300	920
Celista	3,300	1,320
Combined Potential North Shore Sewerage Area	12,800	5,440

If the North Shuswap is connected to the South Shuswap, Area 'F' residents serviced by this new system would pay for the cost of constructing the lake forcemain and pumpstation and contribute to the cost of developing and operating the wastewater treatment plant. The economies of scale would result in a cost saving, since one treatment plant is more economical to construct and operate than two smaller ones. As a result, both the North Shuswap and Shuswap could benefit. Furthermore, given the



larger scale and potential environmental benefit consolidation of the North and South Shuswap sewerage areas will increase the likelihood of grant funding.

To accommodate the North Shore area, design of the conveyance pumps and pipes will need to include the additional capacity. Once the pipes are installed and commissioned, the ability to increase capacity becomes complex and expensive. Selection of pipe alignments and pumpstation sites will be influenced by tie-in to the North Shore lake forcemain. Decisions around treatment process upgrades of the SLE facility will also need to account for ultimate wastewater flows. Therefore, the decision on whether to combine sewerage areas should be made prior to completion of the preliminary design of the first stage of the South Shuswap sewer system.

The Area 'C' Advisory Committee has not discounted the option of servicing the North Shore area. Integrating the North and South Shuswap into a common sewerage area has potential overall benefits. Wastewater treated on the south shore would be reused in a beneficial way, thereby minimizing any potential lake or groundwater contamination.

2.5 ALTERNATIVE PREFERRED SOLUTIONS FOR THE SORRENTO, BLIND BAY AND REEDMAN POINT AREAS

A Regional Treatment Facility could be constructed on property acquired in the Balmoral area (Figure 5). Under this option, effluent would be used for reclaimed water irrigation. This option is independent of SLE and would store reclaimed water in a new reservoir also located in the Balmoral area.

The land purchase cost and construction of the reservoir for storing effluent for reuse is estimated to be \$7.2 million.

The costs for constructing the Regional Facility under this option would be spread out among all the residents who will ultimately be serviced by this treatment plant. These areas include Blind Bay, Sorrento and Reedman Point with the estimated total number of parcels to be 2,339.

Single Phase Approach to Developing the System

Table 4 provides a summary of the total capital costs for this option. If undertaken as a single stage each parcel's contribution to the capital cost is estimated to be \$8,600 with 2/3 grant funding. The annual debt associated with cost of this option would be \$707 per parcel. However, the required grant of \$60 million to complete the system in one phase is unlikely. As a result, there is a need to plan for a phased approach.

Multiple Phasing of the System

A staged expansion of the sewage collection system would occur as grant funding becomes available. Under this scenario, a similar, staged approach to servicing could be undertaken as in Option 1. In Phase 1, the foreshore would be serviced first to mitigate the impact of septic systems on the lake. The Phase 1 sewer system would also be designed to provide a mainstem collection and conveyance system to facilitate future connection of the remaining sewerage area and allow for development of marina pump-out facilities.



Preferred and Future Potential Solutions

The cost for land purchase and construction of a secondary treatment plant, such as an RBC or aerated lagoon, was estimated to be around \$5.4 million for the capacity of 1.0 ML/d. The total number of parcels to be serviced by this plant initially is 548 parcels. To accommodate the build-out population, an additional treatment plant expansion would be required. An upgrade to 2.4 ML/d capacity could entail the addition of more RBC units or aeration lagoons at the cost of about \$3.7 million.

A backup disposition system is required to address a situation where the land base for utilizing the reclaimed water is insufficient to handle the volume produced. A rapid infiltration system could serve as a back-up. As a result, provision for an emergency infiltration basin has been included in the cost estimate.

Table 4: Cost Breakdown for Regional Facility in the Balmoral Area

Sewer Sub-Area	Number of Parcels	Capital Cost Estimate (\$ Million)			Cost per Parcel		
		Pipes and Pumps	Treatment Plant, Reservoir and Backup Infiltration	Total	Net Cost	Net Cost with 2/3 Grant Funding	Annual Cost Assuming 20 Year Loan
Phase 1	548	\$16.3	\$11.1	\$27.5			
Phase 2 & 3	1,791	\$29.2	\$3.7	\$32.9			
<i>Total</i>	2,339	\$45.5	\$14.8	\$60.3	\$25,796	\$8,599	\$707

Financing and Operational Considerations

Operation and maintenance costs are expected to be similar to the Option 1 at build-out. On a parcel basis, the operational and maintenance costs are estimated to be \$110, if a lagoon treatment system is selected. The operating cost would be higher if an RBC system is required. Similar to the SLE scenario, the operating and maintenance costs will be higher for the dwellings connected to the system in Phase I until the other phases are connected.

2.6 POTENTIAL FUTURE SOLUTION FOR THE SUNNYBRAE AREA

Based on an assessment of options identified as part this LWMP, servicing the Sunnybrae area by a sewer connection to the Salmon Arm system was proposed. An underwater pipeline could be constructed to convey the collected wastewater from Sunnybrae to the sewage collection system that connects to the Salmon Arm tertiary sewage treatment plant (Figure 6). Sunnybrae residents would be serviced only when and if the monitoring program indicates that an environmental or health issue is actually occurring or is developing.

Implementation of this option will require future public consultation with area residents as the Sunnybrae residents were evenly split in support for or opposition to this option.



Preferred and Future Potential Solutions

Furthermore, the option of pumping wastewater to the Salmon Arm system should be re-assessed in the future using an up-to-date OCP to account for a growth scenario.

The estimated cost of constructing the sewer collection system for Sunnybrae and lake forcemain is estimated to be about \$5.0 million or \$10,700 per parcel with grant funding. The total cost of \$10,700 per parcel does not include the cost for expansion of the Salmon Arm treatment plant due to the flow increase or any disposal fees charged by Salmon Arm for the wastewater. To assess the cost of treatment, it is assumed that the City of Salmon Arm would charge residents the current sewer component of the development cost charge of \$2,890 per single family parcel to connect to their system. This cost amounts to an additional \$0.49 million.

Based on these assumptions the total system cost is estimated to be \$5.5 million or \$10,700 per parcel after two thirds grant funding. The annual cost to service this debt is estimated to be \$880 per year for each parcel.

Table 5 provides a summary of the total capital and parcel costs.

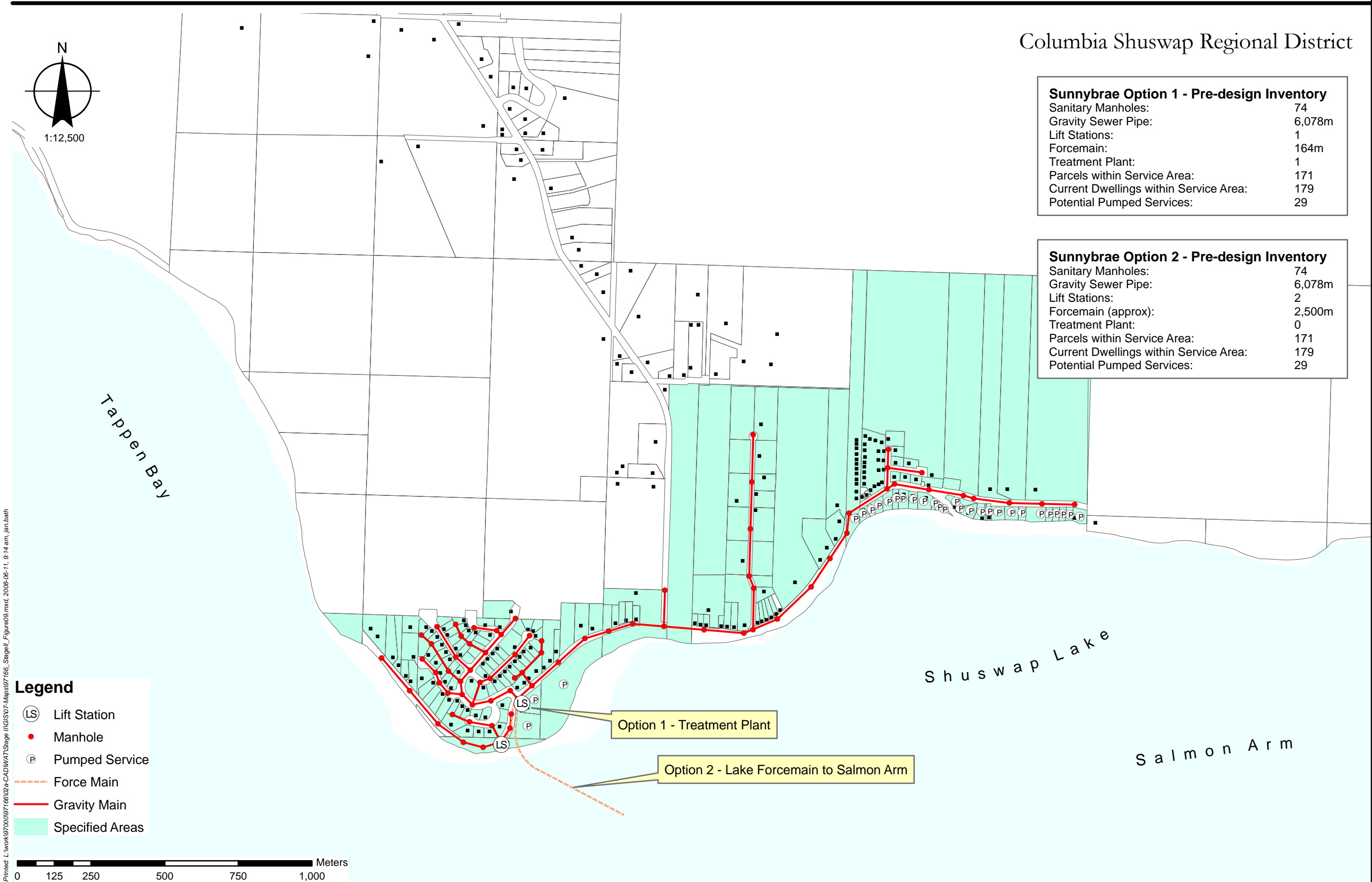
Table 5: Cost Breakdown for Sunnybrae Collection and Forcemain to Salmon Arm

Sewer Sub-Area	Number of Parcels	Capital Cost Estimate (\$ Million)			Cost per Parcel		
		Pipes and Pumps	Treatment Plant	Total	Net Cost	Net Cost with 2/3 Grant Funding	Annual Cost Assuming 20 Year Loan
Phase 1	171	\$5.0	\$0.49	\$5.5			
Phase 2 & 3	-	-	-	-			
<i>Total</i>	171	\$5.0	\$0.5	\$5.5	\$32,106	\$10,702	\$880

It is assumed that if this option is implemented, Sunnybrae would become part of the City's sewerage area and residents charged the same annual sewer levy paid by all homeowners in Salmon Arm. Currently, the annual sewer charge is \$248.

This option requires pumping wastewater from Sunnybrae to the tertiary treatment facility at Salmon Arm with the treated effluent discharged to the lake via an existing outfall. Currently no portion of the effluent is utilized directly as reclaimed water for irrigation, although the water is returned to the lake system from where it may be extracted further downstream in the watershed for irrigation or other purposes.

Liquid Waste Management Plan - Stage III



Sunnybrae Servicing Options

Figure

06



2.7 POTENTIAL FUTURE SOLUTIONS FOR THE WHITE LAKE AREA

There are no known environmental issues or concerns in the White Lake area and any remedial measures would only be undertaken if the monitoring program noted in the Area 'C' wide recommended water quality monitoring program showed that an environmental problem existed or was developing. Two options were identified for the White Lake area. The first option involves developing a new treatment plant at White Lake while the second option would convey wastewater to a Regional facility, at Shuswap Lake Estates or the Balmoral area.

The first alternative, a treatment plant at White Lake would include effluent dispersal works. The plant would be relatively small and construction and operating costs would be higher on a per capita basis than if the sewage were directed to a larger regional facility due to economy of scale. It is unlikely that it would be economically feasible to utilize the effluent for beneficial reuse. Effluent dispersal is likely to use an infiltration system if appropriate soils could be found in the White Lake area.

The second alternative would have the collected sewage directed to the Regional facility at either Shuswap Lake Estates or the Balmoral area.

While the capital cost of developing a pumped system to convey wastewater to SLE is higher than developing a treatment plant, the operational cost of a satellite treatment plant would be higher. Furthermore, connecting to a Regional facility will provide greater flexibility for establishing a sewer system and minimizes the risk of negatively impacting the groundwater quality. Treating small wastewater flow rates or variable flow rates and maintaining a high effluent quality is more challenging with small satellite systems. As a result, a pumped connection to a Regional facility represents the best technical solution for servicing the White Lake area. The Advisory Committee selected the option of pumping wastewater to a Regional facility. This option would need to be revisited when or if the monitoring program shows that there are environmental issues developing in the White Lake area due to on-site septic systems.

2.8 CLOSED LOOP INTEGRATED WASTE MANAGEMENT

As the population of the Shuswap Lake watershed increases and impacts associated with global warming unfold, adopting sustainable design practices becomes imperative. Under this option, some opportunities for sustainable design are considered and include optimized energy use and recovery.

There were a number of options that were considered under this option including: Effluent reuse, energy management, Leadership in Energy and Environmental Design (LEED), effluent energy recovery, optimized biogas production and utilization, and biodiesel production. Most of these concepts require that the sewage treatment facility be developed and in operation as they are essentially an addition. The exception is the LEED design approach which can and should be incorporated throughout the design and construction of each of the recommended solutions.

In principle, the committee supported the option of a closed loop integrated waste management system. However, given the relatively high costs of this system this option



Preferred and Future Potential Solutions

should be pursued as a long-term strategy, implementing components as grants are made available. In particular, as the effluent reuse system is expanded demand for an integrated waste management system could serve as a nucleus for change. For example, secondary effluent contains nutrients which will reduce substantially the need to apply waste manure as a fertilizer source. For those farms that generate significant manure, use of effluent for irrigation may necessitate a method for manure disposal. The resulting surplus manure is a resource which through digestion could be used to produce methane gas and utilized as a fuel source or to generate electricity. Furthermore, once digested the stabilized manure sludge will have low odour and pathogen potential and could be sold as a soil amendment.



3.0 PUBLIC CONSULTATION

The following report outlines tactics, deliverables, and timelines used for the communications plan associated with Stages 1 & 2 of the CSR's Liquid Waste Management Plan for Area 'C'.

The communications plan was built on a strong foundation of proven 'risk communication' principles.

Risk communication is defined by the US Environmental Protection Agency as "any purposeful exchange of information and interaction between interested parties regarding health, safety, or environmental risks." It is an interactive process involving a 'sender' and a 'receiver'. 'Risk information' is provided by the sender to the receiver, who responds with 'risk feedback'. Both are equally important in the process. As shown at right, a successful exchange occurs when information and feedback are received and appropriately responded to.



3.1 OVERALL COMMUNICATION PLAN OBJECTIVES

The following objectives were established at the initiation of the LWMP:

- Provide multiple opportunities for public education and feedback on the draft document and proposed options for managing liquid wastes
- Increase support for liquid waste planning and programs
- Leverage media coverage to increase target audience reach
- Coordinate and facilitate consistent messaging throughout the process
- Educate residents about their contribution to effective liquid waste management (e.g., maintaining their septic systems).

It is the opinion of the project team that all of the above objectives were met.

3.2 TARGET AUDIENCES & ASSOCIATED OBJECTIVES:

The campaign was designed to meet the communication needs of internal and external stakeholders.

Internal stakeholders were defined as primary and secondary. Primary stakeholders included the project team, while secondary stakeholders included CSR staff and Single Advisory Committee members.



The objectives of internal communications were to:

- inform all internal stakeholders of project parameters and processes, meeting dates and times, and contact people and information;
- provide information and respond to requests about meeting outcomes, draft reports, survey information, media responses, etc.; and
- verify particular people's responsibilities throughout the project.

The following tactics, deliverables, tasks, and timelines guided the campaign for internal communications (Table 6). It is the opinion of the project team that the objectives for internal communications were met.

Table 6: Internal Communication Tactics and Deliverables

Tactics	Deliverables	Tasks	Timeline
To provide all internal stakeholders with timely and pertinent project information	Broadcast emails	<ul style="list-style-type: none"> ▪ Prepare and maintain list 	Ongoing
	Phone list	<ul style="list-style-type: none"> ▪ Prepare and maintain list 	Ongoing
	Regular meetings or conference calls to ensure full understanding and support for strategies, tactics, and deliverables	<ul style="list-style-type: none"> ▪ Arrange regular project meetings and prepare follow-up information 	Ongoing
	Project Updates	<ul style="list-style-type: none"> ▪ Prepare updates and distribute to internal stakeholders via email 	As needed
	Closed working meetings		February 26th, 2007 April 12th, 2007 September 6th, 2007 January 31st, 2008 February 26th, 2008 March 4th, 2008 June 17th, 2008 October 27th, 2008 November 10th, 2008 December 8th, 2008

External stakeholders included residents, community associations, businesses and business associations, the agricultural community, environmental groups, and the media. The objectives of external communications were to:

- provide CSR D Area C residents with ongoing information about the LWMP process;
- enable and encourage residents' participation in the LWMP process (e.g. via meetings, open houses, surveys, faxes, e-mails, website responses, letters);
- encourage public participation in selecting the preferred wastewater treatment and disposal option(s).



The following tactics, deliverables, tasks, and timelines guided the campaign for external communications (Table 7). It is the opinion of the project team that the objectives for external communications were met.

Table 7: External Communication Tactics and Deliverables

Tactics	Deliverables	Tasks	Timeline
To update residents about the process who have shown an interest via meeting and/or open house attendance	Project Updates	<ul style="list-style-type: none"> Prepare Project Updates with input from project team Get final approval from Deputy Manager Works Services before printing Prepare and distribute Project Updates to residents who have shared email or mailing addresses 	December 2006 February 2007 March 2007 March 2008
To provide local media with information to share with external stakeholders about the project and associated opportunities for public input	News releases and advertisements	<ul style="list-style-type: none"> Prepare releases and ads with input from internal stakeholders Get final approval from Deputy Manager Works Services before distribution Distribute to all media outlets within CSRD jurisdiction 	<p>News releases sent:</p> <ul style="list-style-type: none"> October 31, 2006 November 8th, 2006 January 16th, 2007 January 29th, 2007 February 20th, 2007 March 7th, 2007 March 20th, 2007 April 3rd, 2007 April 16th, 2007 April 7th, 2008 <p>Ads published:</p> <ul style="list-style-type: none"> November 3rd, 2006 January 19th, 2007 February 23rd, 2007 March 23rd, 2007 April 6th, 2007 April 16th, 2008
To utilize the CSRD's website to help educate and involve residents in the LWMP process	Website updates and email comments	<ul style="list-style-type: none"> Prepare update material with input from internal stakeholders Link with EarthTech website where appropriate Post meeting agendas, minutes, reports, etc. Get final approval from Deputy Manager Works Services before information is uploaded 	Before and after each public meeting and throughout the project as required



Public Consultation

Tactics	Deliverables	Tasks	Timeline
To educate external stakeholders about the options included in the Stage 2 and 3 Reports (and possibly new options) and to consult with external stakeholders about their support for the recommended option(s)	Newsletters	<ul style="list-style-type: none"> Produce newsletter (including mail-in survey) with input from internal stakeholders Get final approval from Deputy Manager Works Services before printing and distribution Distribute to all homes within Area C boundaries via addressed mail Compile and analyze survey results Present survey results to AC Upload survey results to website 	Newsletter #1: January 2007 Newsletter #2: April 2007 Newsletter #3 & mail-in survey: April 2008
To educate the advisory committee members and the public about the process, the issues, and options.	Public Meetings	<ul style="list-style-type: none"> Arrange facility rental Prepare and distribute news releases Facilitate meetings Document meeting minutes Upload minutes to website 	Meeting #1: Nov 6, 2006 Meeting #2: Jan 23, 2007 Meeting #3: Feb 27, 2007 Meeting #4: Mar 26, 2007
To educate external stakeholders about the options included in the Stage 2 and 3 Reports (and possibly new options) and to consult with external stakeholders about their support for the recommended option(s)	Open Houses	<ul style="list-style-type: none"> Prepare presentation materials for open house Get final approval from Deputy Manager Works Services before printing Prepare news releases and advertisements for distribution to local media Prepare handouts 	Open House #1: April 10 th & 11 th , 2007 Open Houses #2: April 21 st & 22 nd , 2008
To determine residents opinions about the process and proposed options	Surveys		Open House Exit Survey Stage 1 Mail-in Survey Stage 2
To inform the regional board of the AC's recommendations	Board presentations		July 19 th , 2007 July 17 th , 2008



4.0 BYLAW IMPLEMENTATION

There are a number of bylaws that will need to be developed as a result of the implementation of this LWMP. A description of each of the required bylaws is provided below.

4.1 MANDATORY SEPTIC TANK PUMP-OUT BYLAW

A mandatory septic tank pump-out bylaw will involve regulating a minimum pump-out frequency for septic systems. A pump-out program will benefit the homeowner by maximizing the life of the septic disposal field. In addition, by reducing the propensity for organics carry-over, the treatment efficiency of the septic system will be maximized.

Septage is the slurry pumped from septic tanks and contains a high level of suspended solids and nutrients, in addition to coarse inorganics (rocks, plastic, etc.). Currently, one private septage dewatering facility operates within Area 'C' under a Ministry of Environment permit.

There are three basic approaches for implementing a septic tank pump-out program. The options require a varying level of capital and operating costs

1. *CSR D Owns and Operates Equipment to Provide Pump-out Service*: the CSR D could purchase a specialized pumper truck and hires staff to conduct the septic tank pump-outs. The cost to operate the equipment and manage the program would be funded by an annual tax on homes serviced by a septic field. The bylaw would provide for a pump-out of every septic tank at a regular interval.

This option has relatively high start-up costs as a result of having to buy a pumper truck and constructing a septage receiving station at a Regional wastewater treatment plant. A septage facility provides pre-treatment prior to being discharged into the treatment plant. Pre-treatment is required to remove the coarse inorganics (rocks, plastics, etc.) and as much of the suspended solids as possible. In addition, in order to avoid over-loading the treatment plant, a septage system must provide for attenuation of the liquid fraction prior to being discharged into the treatment system.

The cost of supplying a septage pumper trunk is estimated to be \$300,000. Furthermore, the CSR D would need to hire one or two additional staff to operate the pumper truck and supervise the program.

2. *CSR D Hires a Septic Pump Service to Deliver Service*: this option is similar to the previous option except that a licensed, private contractor is used to provide for the regular pump-out. The septage would be disposed of at a regulated facility. An annual tax collected from the homeowner would be used to finance the septage pump service. The CSR D could include record keeping, scheduling, promotion, and communication with property owners in the contract specifications or additional CSR D administrative resources will be required.



3. *CSR D Requires Confirmation of Pump-out:* under this option, the CSR D would issue a notice reminding the homeowner of the scheduled pump-out. The homeowner would then be required to submit proof by way of an invoice of a pump-out or face a potential fine. This option requires a higher level of bylaw enforcement effort and will entail at least one-half of a full-time equivalent officer.

Based on a general consideration of the principle factors, option 2 is the preferred alternative.

All the options considered entail having access to one or more regulated septage receiving facility(s) to accommodate the increased volume from the area. At the present time, there is one septage facility under permit with the MoE that is located in the Balmoral area. In the event that education programs are not producing satisfactory results and a mandatory septic tank pump-out program is being considered, the CSR D Economic Development team could play a role in generating interest in the private sector to invest in the construction of a septage receiving facility to handle the significant increase in work load and volumes.

In the event that private industry cannot meet the demand for the septage volumes generated from Area 'C', the CSR D could supplement private industry and develop its own septage receiving facility. Based on recent construction costs of a septage facility in Penticton, the cost of a new septage receiving facility could approach \$1,500,000, assuming sufficient treatment capacity is available. Although the cost is relatively high, all of it could be recovered through user fees.

A plan for managing septage wastes needs to be integrated with the servicing plan for wastewater treatment plant and solid waste management plan. Therefore, once Shuswap Lake Estates treatment plant has been taken over or another facility established in the Balmoral area, a treatment plant servicing plan should be undertaken to determine how to implement a septage receiving facility to accommodate pumped septic tank wastes.

4.2 MANDATORY WATER CONSERVATION

A water conservation bylaw has two positive impacts.

First, as a demand side management tool, water conservation can reduce the impacts on the water source and minimize the amount of water treated and pumped to the home. Both irrigation and household water consumption components are addressed as part of any demand side water conservation measures.

Second, a water conservation program can reduce the wastewater generation rates from homes, thereby reducing the cost of pumping and treatment. Only the household water consumption component is addressed as part of wastewater reduction program.

From a liquid waste management perspective reducing the wastewater generation rates is most relevant. However, both features should be considered in designing a water conservation bylaw.



Reducing the irrigation demand component typically involves education and regulating the timing of lawn sprinkling. In addition, local governments have used sliding scale water rates for managing irrigation consumption. This involves charging a premium for water beyond an allotment for domestic consumption. Water meters are required to implement variable water rates. The Cedar Heights CSRD water system should have water meters installed and water rates charged on a user pay basis, and non-CSRD water systems located in the proposed Blind Bay/Sorrento sewer service area should be encouraged to have water meters installed.

Reducing the household demand will involve specifying low-flow fixtures for new construction or renovations. Currently, the CSRD does not have a building inspection service to regulate installation of these fixtures. As a result, a Building Regulation Bylaw should be implemented for Area C.

4.3 MANDATORY SOURCE CONTROL

A source control bylaw is an important feature of any community sewer system. The Source control bylaw provides limits on the type of wastewater and constituents that can be discharged to the sewer system.

The source control bylaw protects the treatment process from being overloaded by a high strength wastewater. In addition, the bylaw restricts products or chemicals that could end up in the effluent which is destined for agricultural reuse (ie, heavy metals or chemicals).

The source control bylaw could be developed by staff in consultation with a wastewater consultant. In addition, nearby municipalities with reuse systems could be contacted and their experiences used as a check. The source control bylaw should be in place before the community sewer system has been commissioned.

4.4 LAKE DISCHARGE CONTROLS

To address potential public health and environmental conflicts, this LWMP recommends that all private discharges of treated effluent be prohibited from Shuswap Lake and White Lake. All proposed private systems regulated by the Municipal Sewage Regulation, including discharges from nautical vessels, are affected by this prohibition.

Although a lake discharge control would be covered off by amendments to the Municipal Sewage Regulation through the recommendation of this LWMP, developing a lake discharge bylaw is required to support the Municipal Sewage Regulation. The criteria should be developed by staff with the final wording refined by legal counsel to ensure consistency with the Municipal Sewage Regulation. The development of this bylaw should proceed immediately after the LWMP has been approved.

4.5 MANDATORY TURN-OVER OF NEW SYSTEMS TO CSRD

The intent of this bylaw is to provide the CSRD the authority to take-over operation of all new treatment plants serving new residential subdivisions, resorts and commercial developments. Under this scenario, the CSRD would manage all new community sewer systems regardless of whether the effluent is discharged to ground or re-used.



Developers would be required to construct each new system to CSRD criteria, using standard pumps, pipe and fittings to reduce CSRD inventory requirements and facilitate replacement of worn out or defective parts and equipment. These sewage systems would then be turned over to the CSRD provided all criteria have been met.

The drafting of this bylaw should proceed immediately after the LWMP has been approved. A definition of what comprises a community sewer system eligible for CSRD control would need to be provided as part of the bylaw.

4.6 MANDATORY CONNECTION TO A PUBLICLY OWNED SEWER SYSTEM

A bylaw which gives the CSRD authority to require existing developments to connect to a publicly owned and operated sewer system is required. The bylaw will minimize the number of satellite treatment plants within the Area.

The basis for takeover will need to be defined as part of the bylaw. However, as a minimum, mandatory connection should only occur if a publicly owned sewer system were available and at the property line. Furthermore, the bylaw should give the Manager of Works Services the discretion to develop terms and timelines for any mandatory connection. Providing for this discretion to negotiate terms of a connection allows the Manager to address an instance where mandatory connection of a particular system may not be in the best interest of the community.

The drafting of this bylaw should be in-place once the Shuswap Lake Estates treatment plant has been taken over by the CSRD or a new treatment plant established in the Balmoral area.

4.7 DEVELOPMENT COST CHARGE BYLAW

Costing for the sewer system is based on a servicing existing development. However, in reality there will be some growth within the sewerage area, as dictated by the Official Community Plan (OCP). As a result, additional capacity will need to be provided in the wastewater conveyance and treatment system to accommodate this growth. The cost to oversize pipes or provide for a higher treatment capacity will be offset by Development cost charges (DCCs).

Development cost charges are monies that municipalities and regional districts collect from land developers to offset costs incurred to provide services to their development. Under the Community Charter, development of a DCC bylaw will be required in order to recoup the developer's portion of capital costs for developing the sewer system. The DCC bylaw could be initiated once the OCP is complete for Area 'C' and a growth scenario can be developed.

4.8 BORROWING BYLAW

Borrowing bylaws may be required for the implementation of some of the recommended solutions. The loans would be required to fund a portion of the capital sewer projects not covered by grant funding. The CSRD could borrow money from the Municipal Finance Authority on a short-term basis to cover the deficit. Once the works are complete and



Bylaw Implementation

homeowners have connected, repayment of the loan would be made through a lump sum or annual tax. The authority and restrictions for borrowing by the CSR is contained in the Community Charter.

The Regional District Treasurer and the treasurer's department already have considerable familiarity with developing borrowing bylaws and it is recommended that they be the lead agency in the development of the necessary bylaws.

5.0 ADDITIONAL IMPLEMENTATION CONSIDERATIONS

The previous sections provide a summary of the preferred options and implementation requirements. Additional planning considerations which would improve implementation of the plan include:

- communicating the on-site sewer service requirements and costs;
- utilizing latecomer agreements and other capital projects;
- using Provincial tax deferment options to improve affordability; and
- providing an interim on-site treatment option in the event a septic system failure.

5.1 ON-SITE SEWER TO THE PROPERTY LINE

The various servicing options were based on costing of facilities for conveying wastewater from the property line of a parcel to the wastewater treatment plant. Assessment of the on-site works was not included in this assessment. On-site works include the piping and pumping located on private property and are required to convey wastewater from the home to the property line. Facilities located on private property are not eligible for Provincial or Federal grant funding. As a result, the full cost of installing these services is the responsibility of the homeowner.

Figure 7: Schematic of On-Site Works for a Gravity Connection to a Sewer Main

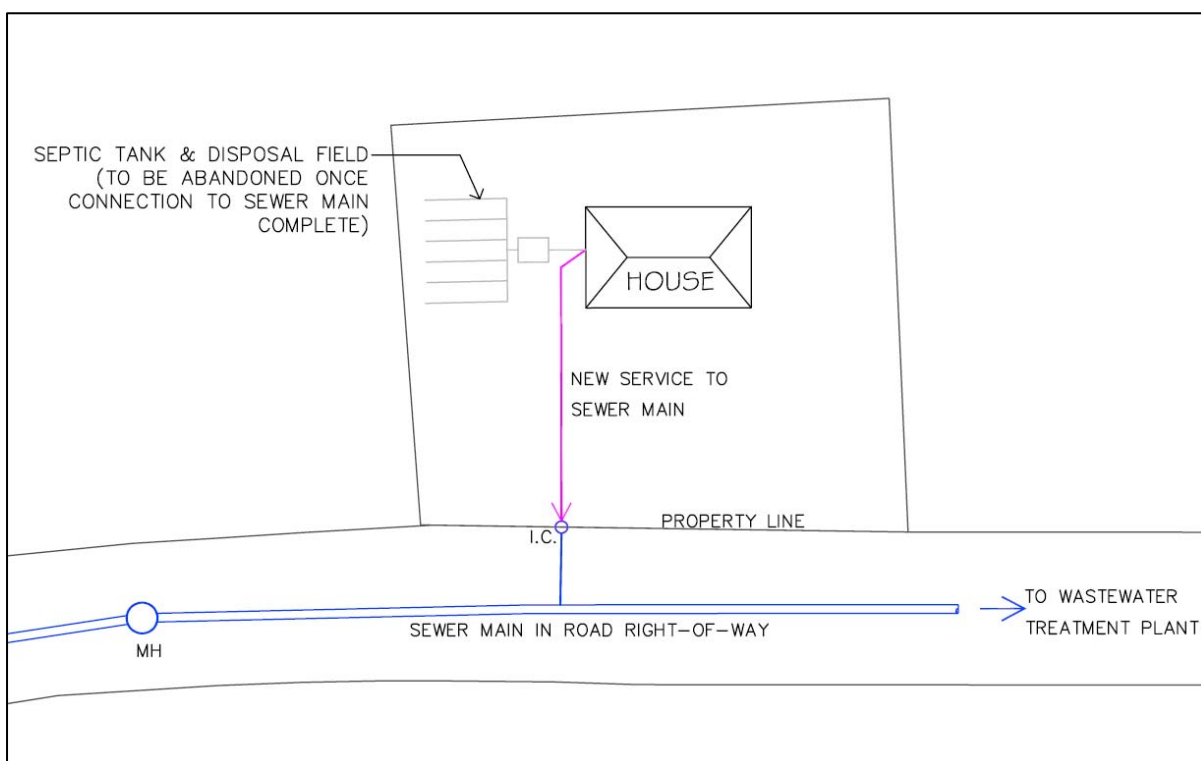




Figure 7 provides a schematic showing the on-site requirements for a gravity connection to a sewer main. In the event that the property is lower than the sewer main, a small pump is installed near the home and is used to convey the wastewater.

Typical On-Site Works and Estimated Costs

Table 8 provides a cost estimate for installation of a gravity service to connect a home to the sewer trunk located on the street or right-of-way. The estimate is based on a typical 33 metre (100 ft) service. It should be noted that the distance from the home to the property varies. In some cases the distance between the home and trunk sewer is longer which will result in a higher cost. Conversely, there may situations where the household cost will be considerably less.

Table 8: Typical Household Costs for a Residential Gravity Connection

Item	Unit	Quantity	Cost/Unit	Total Cost
1.) 100mm diameter gravity pipe from home to I.C. at property line (includes provision for utility locates and average 1.5m trench depth)	Lineal metres	33	\$42	\$1,383
2.) Fittings	Allowance	1	\$200	\$200
3.) Trench excavation	m ³	43	\$14	\$595
4.) Bedding sand (import and compaction)	m ³	5.2	\$40	\$209
5.) Trench backfill and compaction (native soil)	m ³	37	\$9	\$336
6.) Landscape restoration (grass sod)	m ²	37	\$6	\$224
7.) Off-site disposal	m ³	5.2	\$20	\$104
8.) 100mm clean-out	each	1	\$250	\$250
9.) 100mm flap gate for back flow prevention	each	1	\$250	\$300
10.) Disconnect and pump-out existing septic tank and back-fill with sand for decommissioning	each	1	\$500	\$500
Sub-Total				\$4,100
GST & PST Taxes (5%)				\$205
Total (Rounded)				\$4,300

Where the home is lower than the sewer trunk, a small pump must be installed. The pump transfers wastewater from the home to the trunk and requires an electrical connection. A cost estimate for installation of a pumped connection is provided in Table 9.

**Table 9: Typical Household Costs for a Residential Pumped Connection**

Item	Unit	Quantity	Cost/Unit	Total Cost
1.) Grinder pump kit (incl. supply & installation)	LS	1	\$1,500	\$1,800
2.) 50mm diameter forcemain from home to I.C. at property line (includes insurance, minor landscape restoration, utility locates and clean-outs)	Lineal metres	33	\$70	\$2,310
3) Disconnect and pump-out existing septic tank and back-fill with sand for decommissioning	ea	1	\$500	\$500
Sub-Total				\$4,610
Taxes (5%)				\$231
Total (Rounded)				\$4,840

Potential Options for Improving Affordability of On-Site Works

Various concepts were considered to minimize on-site connection costs for homeowners. The options were discussed with engineering representatives of several local governments in the Okanagan Valley and are summarized below.

- a) **Local government retains contractor:** The CSR D could retain a contractor to install the connections to the home and decommission the septic tank. This approach has the potential for providing the lowest possible cost to the homeowner. However, this option has a high risk of exposing the CSR D to liability risk. If a homeowner was not satisfied with the way that the sprinkler system, the driveway or shrubbery was restored they may look to the CSR D to resolve the deficiency. Furthermore, if the line should fail at some future date the CSR D could also potentially be held liable. As a result of the liability issues, this option is not recommended.
- b) **Local government obtains fixed rate installation quotes from contractors:** The CSR D could ask several contractors for a fixed rate for the installation of the sewer connection. Unfortunately, all lots are not created equal and some will have longer lines than others, site conditions will be different, rock, gravel sand silt etc and this could create a situation where some homeowners are perceived as subsidizing other homeowners. This could create controversy and problems between homeowners and the CSR D. If the contractor did not perform up to expectations or if there were deficiencies with the restoration or pipe work the CSR D could be liable. This option was not recommended.
- c) **Local government identifies licensed installers:** The CSR D posts a list of names of contractors on it's website that have business licenses in the municipality. In this case the posting of information bears no responsibility or liability for the CSR D. The CSR D would post a recommendation that the homeowner obtain three quotes, asks for references and then check out the references. Due diligence on the part of the homeowner through obtaining quotes



and checking references is very important. This was the approach supported by the majority of those municipalities canvassed.

- d) **Local government provides inspection services to protect the homeowner:** Building inspection is provided by local government to ensure that Building Code standards are followed by the contractor. This service serves to protect the homeowner. A similar service could be provided for homeowners for the duration of the sewer installation project to ensure that sewer services are installed properly. Under this scenario, the CSRD would hire staff or contract a firm to provide inspection services. The contractor would be obliged to have the sewer service inspected at various stages through the installation process to ensure it meets requirements of the BC Building Code. Full payment of the installation would be contingent on successful inspection. While this approach would serve to protect the homeowner, it would not reduce the installation cost.
- e) **Municipality retains contractor for small number of homes that require pumps:** The CSRD could retain a contractor in the case where sewage lift pumping is required to ensure that all the pumps were standard and repairs and replacement was simplified. Two of the local governments canvassed suggested that this approach worked for them in small pockets of homes where the lot conditions were similar, the lines were similar in length and everyone needed a grinder pump to convey their sewage to the city system. This approach could work in certain circumstances but careful review of technical specifications would be needed to minimize liability issues.

In all instances, minimizing liability was a principle decision making consideration for the engineering staff. As representatives of the public, local government staff must take into consideration the element of risk that may expose the corporation to liability. The Risk Manager from the Municipal Insurance Association recommends the CSRD proceed with Option C. On this basis, the CSRD should proceed with option C which involves education and providing the property owners a list of a number of qualified contractors.

5.2 TAKING ADVANTAGE OF OTHER CAPITAL PROJECTS TO REDUCE COSTS

The process for implementing a sewer system involves first making application under various Federal and Provincial grant programs for funding. While the contribution provided under these grant programs increases affordability, the timing is uncertain. The availability of funding programs and their priorities changes from year-to-year. Making application does not guarantee any or all the funds. As a result, the CSRD should be prepared to take advantage of other options which will allow for affordable development of parts of the sewer system. Taking advantage of utility or road installations or upgrades by private developers and other government agencies could provide a means to improve affordability.

Development of properties within the Area may require upgrades or extensions to roads or water systems. Where this occurs, and if appropriate, the CSRD could make provision for installation of a section of sewer. A large portion of the cost of installing a sewer is the result of digging the trench and restoring the roadway. As a result, the premium to install a sewer pipe as part of a roads or water project is only a portion of the



total cost of sanitary sewer installation. Provided that the section of pipe installed could be tied to the rest of the sewer system, this approach would reduce the overall cost.

Furthermore, the CSRD could require in the future that sewer service for a new development to connect to an existing publicly-owned sewer system. Under these instances, the CSRD could also require that the sewage works be designed with enough capacity to service properties that are situated near the service. These works are termed 'excess' or 'extended' services. The CSRD could pay up-front for the premium to construct the excess service. Alternatively, the CSRD could require the developer to pay the costs under a Latecomer Agreement.

Under a Latecomer Agreement, the developer pays for the excess sewer service and is entitled to recover a portion of the costs from the owners of the serviced properties when they connect. Under this scenario, the CSRD would collect a pre-determined Latecomer tax or fee. The Latecomer fee is payable at the time a homeowner connects to the service or the use begins. Under the Community Charter, the Latecomer Agreement cannot exceed a period of 10 years which can be extended by the CSRD to 15 years. Any homeowner that connects to the sewer within the latecomer agreement period is obliged to pay the latecomer fee. After the agreement expires, there is no cost to connect.

The ability to piggy-back construction of a community sewer on other utility projects or new development requires a pre-designed sewer network, and close inter-department and inter-agency communication. A pre-designed sewer network will allow servicing refinements or new options to be investigated.

5.3 USING TAX DEFERMENT PROGRAMS TO IMPROVE AFFORDABILITY

The British Columbia Property Tax Deferment Program is a loan program that allows homeowners to defer their annual property taxes provided certain eligibility criteria are met. This program could be used to defer payment of the sewer capital cost by those homeowners on limited incomes.

The program is available to Canadian citizens and permanent residents who have lived in British Columbia for at least one year prior to applying for the program. You must occupy the home as your principal residence. Second residences, such as summer cottages or rental properties, do not qualify for tax deferment.

After deducting the Home Owner Grant, all or part of the unpaid balance of residential property taxes for the current year can be deferred. All penalties, interest, previous years' property taxes, and utility user fees cannot be deferred.

Taxes can be deferred as long as the taxpayer owns and lives in the home and continues to qualify for the program. The deferred taxes must be fully repaid, with interest:

- before the home can be legally transferred to a new owner, other than directly to a surviving spouse; and
- upon the death of the agreement holder(s).



Simple interest is charged on deferment accounts at a rate not greater than 2% below the prime rate of the Province's principal banker. The interest rate is set every six months by the Minister of Small Business and Revenue.

If the home is refinanced, the mortgage holder may require full repayment of the deferred taxes upon refinancing. All or part of the deferred taxes, fees and interest can be paid at any time without penalty.

5.4 ADDRESSING FAILURES OF EXISTING ON-SITE SYSTEMS

On-site septic systems have a finite life, and the risk of a failure increases as their age increases. Carry-over of solids from the septic tank causing plugging of the drain field is the primary cause of failures and can be accelerated if the septic tanks are not pumped out frequently or if the field is undersized. Re-building failed systems to current standards can be costly and disruptive. This is especially true in the Blind Bay and Sorrento area where some lot sizes are insufficient to support a conventional drain field. In these instances, a higher level of treatment must be achieved, thereby, increasing the upgrade cost. Within the proposed sewer area, a septic system failure can have a relatively large financial consequence. In addition to the cost of a septic system failure, the homeowner is faced with financial implications of paying for and connecting to a new community sewer system. As a result, in order to minimize the financial consequence of a septic system failure, provision for a holding tank should be provided.

A holding tank is a large tank installed in the yard which would capture and hold the wastewater from the home. When the tank nears its full capacity, a septic pump service would empty the contents and transport the wastewater to the treatment plant. Pumping of the tank would need to be undertaken by a licensed contractor and the wastewater disposed of at an approved wastewater treatment plant.

Interior Health has in the past allowed for a holding tank for houses that are in areas to be sewered. The conditions for such a system include provision for an alarm if the water level exceeds a pre-determined level and holding a contract with a septic pump-out service. These systems have only been allowed for areas that are expected to have a community sewer installed. For the Area 'C' plan, this would include the proposed areas designated for a community sewer.

Installing a holding tank should be considered carefully by the homeowner. While the cost to install the tank would be significantly less than installing a new septic system that meets current design standards, the operational costs are higher. The tank would need to be pumped out relatively frequently. A 10 cubic metre holding tank could take 10 to 30 days to fill by a single family home, depending on the number of residents and number of water conservation measures employed. Assuming the cost of a pump-out is similar to that of a septic tank (approximately \$300) the annual operational cost could be in the range of \$3,700 to \$11,000.

Allowing for a holding tank as an interim measure for failed systems or new homes in areas where a new sewer system is planned will provide the homeowner an opportunity to avoid a large expenditure for an on-site system upgrade while still having a positive environmental impact. However, the operational cost is large enough that it must be weighed carefully against the option of installing a new on-site system.



5.5 TYPICAL ENGINEERING PROJECT SEQUENCE

The process of implementing a wastewater collection and treatment system will involve various distinct stages.

The LWMP can be considered part of the Conceptual Design stage. During this process, high level decisions have been made which provide direction for subsequent stages. Of particular significance has been the decision to develop a wastewater collection and treatment system for the Sorrento, Blind Bay and Reedman Point areas and to utilize effluent irrigation as a principle means of dispersal. Application for grant funding can be supported by the approved LWMP. Once the CSR Board of Directors and the Minister of the Environment have approved the LWMP, the first step will be for the CSR to apply for grant funding from senior government at the first opportunity.

As part of the Conceptual Design stage, the CSR may also give consideration to undertaking an assent process. However, based on a legal opinion from its solicitor, the CSR is not obligated to undertake a public assent process. The opinion states "...if the proposed sewer service and related borrowing are for the purpose of implementing the proposed LWMP, then once that LWMP is approved by the Minister, the Regional District would be able to adopt the service establishment bylaw and borrowing bylaw without the assent of the electors..." Although an assent process is not required, an assent process may be implemented at the call of the Area Director or Board of Directors. If implemented, an assent process should be presented to the public once approval is received on a minimum two thirds grant funding from senior government.

In the next Preliminary Design stage, the collection and treatments systems developed in the Conceptual Design stage will be advanced. Of particular importance is selection of a site and process for the treatment plant and refinement of the conveyance infrastructure. Major decisions, key plans and data that will need to be developed in advance or as part of the Preliminary Design will include:

- Decision on the ultimate sewerage area (ie, whether to integrate portions of Area 'C' and Area 'F');
- Final Official Community Plan and associated growth projections;
- Hydraulic and wastewater loading associated with any proposed vessel pump-out facilities;
- Estimates of septage volumes; and
- Updated topography (1 metre contours) and associated digital aerial mapping.

Prior to finalizing the Preliminary Design stage, the CSR should consider conducting a public information meeting to communicate household costs, system plans and schedules. Long term effluent supply contracts with area farmers to utilize the reclaimed water should be entered into prior to this stage.



In the Pre-Design and Detailed Design phases, the elements developed as part of the Preliminary Design will be developed further. This will include sizing of pumps and pipes; development of vertical and horizontal alignment of pipes; securing easements; and arrangement of new buildings and treatment processes.

5.6 DELIVERY OF SERVICE MODELS FOR SEWER SYSTEMS

There are two service delivery models that could be considered for the new wastewater treatment plant and collection system.

With the first conventional approach the CSR D operates the system utilizing qualified staff it hires. The CSR D is responsible for ensuring the treatment plant is producing effluent that meets regulatory requirements.

Under the second model, the CSR D would contract out operational services for the treatment plant and collection system to a firm. The staff hired to undertake the operational services would all be qualified staff. The contract would stipulate a term, the minimum staffing levels, maximum treatment flow rates and equipment maintenance schedules. This approach provides a low risk approach to managing wastewater systems with predictable costs. The firm typically has significant experience it can draw from to resolve operational issues.

Under the Phase 1 servicing scenario, the sewer system proposed for either the Sorrento – Blind Bay area or Sunnybrae area can be categorized as a small system. Private contracting of small wastewater treatment systems has advantages. Due to its small size, a full-time operator may not always be necessary. Under this instance, the CSR D would need to find additional work in other areas in order to fully utilize the employee. Furthermore, reliance on a single person to operate the wastewater system can create problems if the staff member decides to leave.

Supervising operators of water or wastewater conveyance and treatment systems must be certified at a level equivalent to the complexity of the system by the Environmental Operators Certificate Program (EOCP). A secondary treatment plant which is being proposed for the Area 'C' would require either a Level 2 or 3 operator, depending on the complexity and size of the plant. In order to maintain this status, a minimum level of on-going education is required. The EOCP establishes a standard of skill and proficiency for plant operators that requires on-going investment by the employer in training and learning. As result, with each staff change-over there is a risk that the effluent quality will be negatively impacted due to this gap in learning.

Due to the relatively small size of the proposed wastewater systems for the Sorrento – Blind Bay and Sunnybrae areas, and the limited available CSR D resources, the recommendation of this LWMP is to consider contracting out operations. However, this recommendation should be reviewed every 5 years or if the treatment plant is upgraded for additional complementary services like septage receiving, composting, etc. As the system grows and staffing levels increase, there will a greater advantage to having in-house wastewater operations expertise for long-term maintenance planning.



6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the Stage 2 Liquid Waste Management Plan, the CSRD should begin implementing the recommendations of the Advisory Committee. Key recommendations from this plan are:

1. For the entire Area 'C', preferred solutions include public education, water quality monitoring and bylaws. These programs serve to minimize the environmental and health impacts of existing septic systems and set the stage for management of new and existing community sewer systems in a way that is consistent with the values of the community.
2. Implementing and enforcing some of the recommended bylaws will require developing some level of building inspection. As a result, introduction of a Building Regulation Bylaw for Area 'C' is recommended.
3. To address potential public health and environmental conflicts surrounding private lake discharge, this LWMP recommends that all private discharges of treated effluent, included treated grey water from nautical vessels, be prohibited from Shuswap Lake and White Lake.
4. For the Sorrento, Blind Bay and Reedman Point area, development of a new community sewer system and wastewater treatment plant is recommended. Based on the results of preliminary negotiations with Shuswap Lake Estates, the option of developing the Shuswap Lake Estates treatment plant as a regional facility has been dropped as the preferred option. As a result, purchase of land in the Balmoral area for a treatment plant and storage should be investigated. This will entail entering into discussions with the Agricultural Land Commission (ALC) for approval to construct a wastewater treatment plant and storage reservoir on ALR land. There is precedent for approval of this request from the ALC.
5. A back-up ground infiltration system may be needed for the new effluent irrigation system. Once a new site in the Balmoral area is established for a new wastewater treatment plant and storage reservoir, a hydrological review of the area should be undertaken and an infiltration site identified.
6. In order to be affordable, the cost of developing the Sorrento, Blind Bay and Reedman Point sewer system will need to be funded by Provincial and Federal grants. The household cost documented in the Stage 2 report and presented to the public assumes that the grants will cover 2/3 of the capital cost of the system. The CSRD should apply for the grant at the earliest opportunity once the Area C LWMP is approved by the CSRD Board of Directors and the Minister of the Environment.
7. Distribution of household cost for the remaining 1/3 capital cost should be based on assessed value of improvements.



Conclusions and Recommendations

8. The homeowner will also be responsible for the on-site costs to tie-in to the new sewer system. This cost is estimated to be on average \$4,305 for a gravity connection and \$4,840 for a pumped connection. The household costs, both for on-site and off-site works, may be communicated to the public through a newsletter, the CSRD website, and other means. The CSRD should provide a list of qualified and available contractors to the residents of the sewer service area and provide information to assist the residents in selecting a preferred contractor.
9. Long term effluent supply contracts should be established with farmers for the disposition of the reclaimed water.
10. As part of the preliminary design stage of the Regional treatment plant, a long-range servicing plan should be developed. In the event that a mandatory septic tank pump-out program is contemplated and there is a lack of capacity by the private sector to handle the volumes and work load associated with such a program, this plan should incorporate a plan for developing a septage handling facility to accommodate pumped waste from septic tanks.
11. Due to its relatively small size initially, hiring a contractor to operate the new sewer system and treatment plant will help to minimize costs. However, as the system grows, the CSRD should consider taking over operation and maintenance of the system.
12. As part of the development of the new sewer system and treatment plant, the CSRD should develop an integrated waste management plan that includes agricultural waste (manure) and any waste by-product from the treatment plant.
13. For the Sunnybrae and White Lake area, water quality monitoring should be initiated to assess the impact of existing development on the lake and groundwater. The results of the testing may serve as a trigger for development of a new community sewer system.
14. It is recommended that holding tanks be allowed for homes within a proposed sewerage area to address the failure of an existing on-site system. Installation of the holding tank is intended to assist the homeowner is avoiding a large expenditure for an on-site system upgrade in an area where a community sewer system is planned.

Table 10 provides a summary of annual household cost by sub-area, based on the summary conclusions and recommendations made in this report.

**Table 10: Summary of Total Household Costs By Area**

Area	Estimated Annual Cost (Based on 20 Year Amortization at 6% Interest)				Comments
	Solution 1 - Public Education, Water Quality Monitoring, and Bylaws	Capital Cost for Development of a Community Sewer System	Annual Operation and Maintenance Cost for Sewer System	Total Estimated Average Annual Cost	
1. Blind Bay, Sorrento and Reedman Point	\$40	\$646	\$110	\$796	<p>1. Estimated cost assumes that a new Regional facility is constructed in the Balmoral area.</p> <p>2. The additional on-site cost to install a service from the home to the property line is estimated to be on average \$4,300 to \$4,840</p> <p>3. O&M costs may be higher if servicing is phased.</p>
2. Sunnybrae	\$40	-	-	\$40	The Sunnybrae area may require a new community sewer if water quality monitoring detects an impact - under this scenario, the total household cost will increase to an estimated \$1,456 per year.
3. White Lake	\$40	-	-	\$40	The White Lake area may require a new community sewer if lake water quality monitoring detects an impact - under this scenario, the household cost will increase.
4. Rural Areas (Balmoral, Notch Hill, Tappen Valley, Carlin, Skimikin, Eagle Bay and Wild Rose Bay)	\$40	-	-	\$40	

The CSR D obtained a legal opinion from its solicitor concerning a public assent process. The opinion states "...if the proposed sewer service and related borrowing are for the purpose of implementing the proposed LWMP, then once that LWMP is approved by the Minister, the Regional District would be able to adopt the service establishment bylaw and borrowing bylaw



Conclusions and Recommendations

without the assent of the electors...” Although an assent process is not required, an assent process may be implemented at the call of the Area Director or Board of Directors. From a timing perspective, an assent process should follow approval of the grant application from senior government.

As a final recommendation, the CSR D Board should adopt Stage 3 LWMP Report as a bylaw and submit it to the Minister of Environment for approval.



Appendix A

Advisory Committee Meeting Minutes



Columbia Shuswap Regional District, Area 'C'**Liquid Waste Management Plan****Meeting Minutes**

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PURPOSE: **CSR, Area 'C' LWMP Committee Meeting**
MEETING DATE/TIME: **October 27, 2008, 5:30pm**
MEETING LOCATION: **Steamers**
FACILITATOR: **Joanne de Vries, Alliance Communications**

Minutes

1. SLE Dam Inspection

- MOE staff has undertaken an inspection of the SLE dam.
- Consequences of failure is low - a dam failure would be contained by Loftus Lake.
- The inspection did not uncover anything that would suggest the dam is unstable.
- While the inspection has not identified any major issue, there is still a need to conduct engineering investigations as a condition of any purchase.
- The issue of whether the dam toe relative to Loftus Lake constitutes an encroachment needs to be resolved.

2. SLE Negotiations

- Negotiations are proceeding.
- Gary will consider any comments provided by AC.
- Ultimately, if the terms of the M.O.U. is not in the best interest of the community development of a new facility in the Balmoral (i.e. the back-up option should be pursued.)

3. Meeting with Area Farmers

- Gary summarized results of an expression of interest for effluent supply and a meeting held with area farmers. The results of the expression of interest are encouraging. Farmers from Armstrong attended the meeting and discussed their experiences using effluent.

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PARTICIPANTS

Name	Name
Advisory Committee	
Bob Mor Carol Ferguson Chris Addison (absent) Dennis Roberts	Gary Kennedy Melany Dyer Mike Johnstone Stephen Jackson Vic Morandini
Columbia Shuswap Regional District	
Darcy Mooney Gary Holte	Jay Simons Ted Bacigalupo Marcin Pachcinski
Agencies and Other Stakeholders	
Carol Danyluk - Ministry of Environment Tanya Mrowietz - Interior Health Joe Rowlett – Interior Health	Jean Ferry - Environment Canada (absent) Larry Gardner – Ministry of Environment (absent) Robert Niewenhuizen – City of Salmon Arm
Consultants	
Joanne de Vries (Alliance Professional Services) Tim Forty (Earth Tech) Piero Galvagno (AECOM)	



Columbia Shuswap Regional District, Area 'C'

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PURPOSE: **CSR, Area 'C' LWMP Committee Meeting
Stage 3 Report Review**

MEETING DATE/TIME: **November 10, 2008, 5:30pm**

MEETING LOCATION: **Toby's Restaurant**

FACILITATOR: **Joanne de Vries, Alliance Communications**

Minutes

1. Carol

- Septic benchmark- Pumping has doubled in recent yrs.
- Licensed hauler- need to be to a regulated facility

2. Gary Kennedy

- M.O.U Process- Comments to be forwarded to consultant- final M.O.U to be vetted by CSR executive staff and Board, Legal Counsel
- The issue of whether sufficient capacity will be available to providing for a sewer system in the Sorrento – Blind Bay area needs to be addressed.
(Dennis R.)

3. Vic. M.

- The issue of Scotch Creek needs to be decided before proceeding.
- Septage capacity needs to exist.
- Clean-up reference to BNR – should be tertiary treatment
- Is an amendment to the Permit required? If the SLE facility is taken over by CSR the existing permit would be cancelled and the LWMP would govern
(Carol D.)

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4. Melany

- P. 10 - Add "Effective enforcement"
- P.11 - Define community sewer vs publicly owned
- It may be worth the extra cost to go to Balmoral site first
- What about old systems takeover? An existing policy exists which provides for voluntary takeover (Gary H.).
- The MOU will be a public document at some point. (Gary H.)
- Agricultural users will have to invest in infrastructure to use the effluent, as a result, it doesn't make sense to try to make a profit (Gary H.)

5. Steve J.

- Main concern is that capacity may not exist in the existing SLE facility to solve the problem.
- The lack of OCP is a concern and needs to be brought into the picture.
- Public acceptance of the M.O.U. is a concern- it appears that the benefit currently is to the SLE. If not accepted by the public, the Plan could fail.

6. Joe R.

- M.O.U. is a parallel process. The process will take time.
- Additional terms may be included in M.O.U. to address concerns of A.C.
- Tying in North shore is promising and will be a benefit to the entire shuswap.
- Incorporating the SLE facility into the process is a good thing.
- The public has shown support for the decisions made.
- From a public health perspective, the process is going well.

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7. Carol D.

- Incorporating North Shuswap will be advantageous from a Grant perspective.
- The anxiety with the M.O.U. is understandable and it would be beneficial for the CSRD to include wording to address the issues.
- MOE has been approached by a commercial vessel company to utilize an onboard Grey Water Treatment System. However, MOE is requesting feedback from the Advisory Committee.
- In effect, this goes contrary to the spirit of this LWMP which was to remove private systems. (Ted B.)
- Treated greywater is difficult to treat and will put drinking water at risk. (Melany D.)

8. Tanya

- Section 6- P.42, 3rd paragraph - Build inspection needs to be highlighted as beneficial for other reasons.

9. Ted B.

- The tone of the process has changed. It appears the AC is hesitant to move forward without seeing the final M.O.U. Consideration should be made to develop the Balmoral site. Under the circumstances, it is difficult to see how the process could proceed.
- Until the OCP is completed it's difficult to know what treatment capacity is required. Growth needs to be considered.

10. Jay.

- For each of the development stages, the SLE must apply to the CSRD. There is no guarantee that SLE will get approval even with the capacity guarantees of the MOU.

11. Dennis. R.

- P. 19 – The recommendation that those lots already serviced would not pay again needs to be highlighted.
- P. 22 – The solution is not preferred, given the survey response.
- P. 34 – Mandatory connection and taxes. On-site costs should be more detailed.

Solution #1

Tanya M. - Building Inspection needs to be incorporated into an Area-wide position – it should also be on a basin wide recommendation.

Gary H. - Survey and cost of education should drop over time.

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Melany D. - Strongly support building inspection

Dennis R. - assessed value should include property value.

Solution #2

Carol D. - Include discussion regarding proposal to provide on-board grey water treatment.

All - include statement which does not support grey water treatment (ie, prohibition of on-board grey water treatment of private sources).

Solution #3

Gary K. - hand-over should be voluntary

Gary H. - definition and community sewer system needs to be linked

Ted B. - can a development permit deal with this option.

- this option was supported by public and should not be re-considered
 (Joe R., Carol D.)

Jay S. - development permit area does not effectively deal with issue well.

Melany D. - There were many benefits to this option.

Carol D. - will this option deal with a shared interest development? Zoning will be developed to eliminate shared interest development. (Jay S.)

Solution #6

Carol F. - concern exists in the community due to costs.

Gary H. - there is going to be a long monitoring period and the option should be revisited.

- there are many unanswered questions that need to be answered prior to making any decisions to proceed. (Carol D.)

Melany D. - indicate or reiterate the A.C.'s position that lake discharge is not supported.

Carol F. - would like to see all lake discharge prohibited.

- my support for connection to the Sunnybrae system was contingent on Salmon Arm upgrading to provide for effluent reuse.

Solution #4/#5

- The AC supports a community sewer system for the Blind Bay – Sorrento area.
- The AC is uncomfortable with the MOU. As a result, the CSRD will bring a final MOU back to AC for consideration. If takeover is not in the best interest of the public then the Balmoral option will be advanced (Gary H.)

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- The main concern of the MOU is that capacity is being reserved for SLE at potentially the detriment of the community. (Carol D.)
- The concern is that private enterprise is being subsidized by taxpayer money. (Ted B.)

Joe R. - MOU is usually a broad, high level scheme with details included in a separate document.

Gary H. - Assessment of the facility will be by an engineering consultant and the price taken off the final sale price.

Carol D. - Grant funding may be compromised by a leasing arrangement.

Gary H. - ALC has indicated that the agricultural land proposed for development by SLE will only be allowed to be removed from the ALR if the CSRD owns the SLE sewer system and utilizes the effluent to the enhancement of agriculture. The land proposed for the Balmoral STP site is ALR land but would not be removed from the ALR.

Ted B. - There will be both winners and losers on takeover of the SLE system. However, we need to move forward.

The AC endorses distribution of costs based on assessed value of improvements.

Ted B. - with respect to inspection, setting up a building inspection will cost \$250-350,000. Can building inspection costs be incorporated in the LWMP for sewer connection in the growth area?

This is probably not possible from a legislative perspective. The cost would be nominal at start-up and would be user-pay after that. (Jay S.)

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PARTICIPANTS

Name	Name
Advisory Committee	
Bob Mor Carol Ferguson Chris Addison (absent) Dennis Roberts	Gary Kennedy Melany Dyer Mike Johnstone Stephen Jackson Vic Morandini
Columbia Shuswap Regional District	
Darcy Mooney Gary Holte	Jay Simons Ted Bacigalupo Marcin Pachcinski
Agencies and Other Stakeholders	
Carol Danyluk - Ministry of Environment Tanya Mrowietz - Interior Health Joe Rowlett – Interior Health	Jean Ferry - Environment Canada (absent) Larry Gardner – Ministry of Environment (absent) Robert Niewenhuizen – City of Salmon Arm
Consultants	
Joanne de Vries (Alliance Professional Services) Tim Forty (Earth Tech) Piero Galvagno (AECOM)	



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PURPOSE: CSR, Area 'C' LWMP Committee Meeting
Stage 3 Report Review

MEETING DATE/TIME: December 8, 2008, 7:00pm

MEETING LOCATION: Carlin Hall

FACILITATOR: Joanne de Vries, Alliance Communications

Agenda

1. Introduction

- o Process started in Fall 2006
- o Gary Holte
 - Mandate was to provide a LWMP for Area 'C'.
 - Single Advisory Committee was selected combining public & technical committees.
 - Education a large component of the process.
 - AC is assertive, bold & challenging, dedicated, inquisitive, resourceful.
 - Adopting the concept of interest based negotiations was done in Stage 1 and was suggested by Dennis Roberts.
- o Joanne De Vries
 - The AC was committed to completing the LWMP.
 - A communication plan was presented and adopted by the Advisory Committee
- o Tim Forty
 - A Large number of presentations were prepared to review technology, present potential options and develop solutions.

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2. Presentation by Kathy & Larry Pilcher

- o Three areas of concern were presented:
 1. Dam Safety - There is a concern based on photos and observations that the dam is not constructed properly or may be leaking.
 2. Capacity - There is concern that the existing capacity cannot meet future growth, as well as, servicing plans for the Sorrento, Blind Bay & Reedman Point area.
 3. FOI Request – Request that questionnaire is filled out by advisory committee members.

3. Status of Memorandum of Understanding (Dave Morris)

- o Dave Morris was tasked with facilitating discussions and developing a Memorandum of Understanding (MOU), if appropriate.
- o Developing the Shuswap Lake Estates (SLE) treatment plant as a regional facility allows for quicker servicing and addresses water quality problems associated the lake quicker.
- o In addition, there are some potential cost savings over other options and taking over the plant eliminates duplication of services.
- o A MOU is a legal intent and is not binding. It sets out principles that would lead to an agreement.
- o SLE has capacity for approx. 426 homes, assuming 1,000 L/house/day design.
- o There are approximately 414 units planned for SLE and an additional 540 homes are proposed for Phase 1.
- o Total required servicing from CSRD (Phase 1, 2, 3) is 2,339 homes.
- o Current SLE sees approximately 440 L/home/day of wastewater in the treatment plant – if this is projected there may be extra capacity in the near future.
- o MOU has been modified following a meeting in November which Melany attended.
- o Conditions for final agreement include:
 - (i.) Payment & money.
 - (ii.) Assessment by a competent geotechnical engineer.
 - (iii.) Commitment by SLE to upgrade systems to 1,000 m³/d or approximately 1,000 homes, including a holdback.
 - (iv.) If CSRD receives funding, the CSRD could design and construct the upgrade.
 - (v.) If there is no grant money, there is no agreement.
 - (vi.) Commitment to reuse effluent in a beneficial way.

Columbia Shuswap Regional District, Area 'C'

Liquid Waste Management Plan

Meeting Agenda

Page 3

- It appears that SLE gets its future capacity for free (Dennis R.)
- The final value of the SLE facility will depend on negotiations. However, the intention of SLE is to get reimbursed for upgrades and not get charged for future connections (Gary H., Dave M.)
- The fact that SLE appears to get its future capacity for free is a major problem with the agreement. Deferral of DCC's for up to 446 homes (ie, the existing plant capacity) is reasonable. However, DCC's should be charged for everything above this (Melany D.)
- By doing nothing, SLE has 10 years capacity (Ted B.)
- Rational for paying for upgrades appears to have been to buy future capacity (Ted B.)
- Does it make sense to pay around \$3M for 5 years capacity or to go directly to Balmoral? (Ted B.)
- The decision to purchase SLE or go to Balmoral is really up to Ted & CSRD (Vic M.)
- If we didn't comment on the MOU concerns of residents will not be expressed (Melany D.)
 - The AC has considerable influence on the ground rules (Bob M.)
 - One of the key considerations is to have the treatment plant in public hands and has been forgotten (Joe R.)
 - It has become apparent that the existing SLE needs to be substantially upgraded. The option of developing the Balmoral site appears more sustainable (Steve J.)
 - The option of developing the Balmoral site is becoming more attractive (Carol F.)
- 10 voting members of AC
 - Do you support MOU #11 as it stands? No Hands (0 of 10). Given that 2/3 majority is required, MOU is not supported by AC.
 - Do you support MOU #11 with changes? 6 of 10. Since 2/3 majority is required, MOU #11 will not be advanced.

5. Acceptance of Stage 3 Report

- Color-code on-site & off-site costs
 - Add to comments column
- P. 14 – reference to number of bylaws differs
- P. 15 & 38 – regarding nautical vessel – add to P. 15
- P. 14 – monitoring should be continued in all arms of Shuswap Lake

Columbia Shuswap Regional District, Area 'C'
Liquid Waste Management Plan
Meeting Agenda

Page 4

- o Add bylaw recommending no private discharges (Carol D.)
- o Septic pump-outs – in the case where there is only one person living in the residence, consideration should be given to reducing the pump out frequency
- o P. 32 –should indicate that report was uploaded to CSRD website
- o Need to highlight the fact that distance from home to property line varies
- o Add "The AC does not support lake discharge of effluent" to principles adopted by committee.
- o Do you support the Stage 3 Report contingent on changes discussed here? 10/10
Based on this vote, the Stage 3 will finalized and presented to the Board for approval.

Columbia Shuswap Regional District, Area 'C'
Liquid Waste Management Plan
Meeting Agenda

Page 5

PARTICIPANTS

Name	Name
Advisory Committee	
Bob Mor Carol Ferguson Chris Addison (absent) Dennis Roberts	Gary Kennedy Melany Dyer Mike Johnstone Stephen Jackson Vic Morandini
Columbia Shuswap Regional District	
Darcy Mooney Gary Holte	Jay Simons Ted Bacigalupo Marcin Pachcinski
Agencies and Other Stakeholders	
Carol Danyluk - Ministry of Environment Tanya Mrowietz - Interior Health Joe Rowlett – Interior Health	Jean Ferry - Environment Canada (absent) Larry Gardner – Ministry of Environment (absent) Robert Niewenhuizen – City of Salmon Arm
Consultants	
Joanne de Vries (Alliance Professional Services) Tim Forty (Earth Tech) Piero Galvagno (AECOM)	



Marianne Mertens

From: Trish <team_friesen@yahoo.ca>
Sent: Thursday, September 21, 2017 4:51 PM
To: Planning Public Email address
Subject: Thank you!

I appreciate the opportunity to say I do NOT support the removal of "NW Corner of Trans-Canada Highway and Balmoral Road" owned by the Barker Family, from the ALR designation. I like the small town feel and I know with less ALR there will be less wildlife and more people. No thanks!

Trish Friesen
2423 Eagle Bay Rd
Blind Bay BC
VOE1H1

Sent from my iPad

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Marianne Mertens

From: Miles Friesen <km.scruff@gmail.com>
Sent: Thursday, September 21, 2017 4:55 PM
To: Planning Public Email address

I am requesting that the CSRD DENY the removal of the property for the NW Corner of Balmoral Rd and TCH intersection owned by Mr. Barker from ALR. Keep it ALR zoned please. Thank you.

Miles Friesen
 2423 Eagle Bay Rd
 Blind Bay BC
 V0E1H1

Sent from my iPad

<input type="checkbox"/> CAO <input type="checkbox"/> Works <input type="checkbox"/> DS <input type="checkbox"/> Fin/Adm	<input type="checkbox"/> Agenda <input type="checkbox"/> Reg Board <input type="checkbox"/> In Camera <input type="checkbox"/> Other Mtg	Ownership: File #
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C-Pending

EC 2545

(Pending)

Property

CV: 004-612-710.m²

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September 16, 2017

Columbia Shuswap Regional District

555 Harbourfront Drive NE

Box 978 Salmon Arm, B.C.

V1E 4P1

Attn: Terry Langlois

Dear Terry;

My Wife Linda and I recently attended the CSRD office and spoke to Jennifer, who was very informative regard the proposed development of a piece property near our home in Shuswap Lake Estates.

This correspondence is to voice our opposition to the proposal of removing the property of the SOUTH WEST 1/4 SECTION 8 TOWNSHIP 22 RANGE 10 WEST OF THE 6TH MERIDIAN KDYD from the ALR. We do not want to sound like NIMBYs, and realize "progress" necessitates the need for infrastructure improvements, however, our concerns are three-fold, and are outlined as follows:

When we moved to this area in January 2006, this was a location where we wanted to spend our retirement years. At that time we explored various issues relating to amenities, infrastructure and primarily property density. The developer had a prospectus in place which was to our liking, hence we built our home at 2726 Sunnydale Drive, Blind Bay, and have since lived here on a permanent basis. Over time we have seen the prospectus ignored or altered and the the most recent change has come in the form of a new higher density development across the street from us. I am very concerned about the effect this will have on our life-style, primarily relating to traffic flow, and the lack of upgrades on our local roads. It should be noted, this is of concern simply because we walk a great deal on these roads and there have been numerous close calls simply because of poor sight lines, lack of sidewalks, and the age and ability of some of the drivers. That said the developer indicated he was going to provide walking trails on the proposed property, however

this has not come to pass and the property has simply been logged off. If the ALR property is removed from this reserve, this will only have the effect of ultimately adding more vehicles to this area, and unless road improvements are made it will become more of a challenge to get our daily exercise.

The second concern is the removal of more and more land from the ALR. We realize the ratio of land in the ALR is over-seen of a provincial level, however this is a semi rural area, and this is the primary reason we moved out of the urban sprawl where we spent our working years.

The last point I would like to make is the hostage issue of the land involved. As we understand the scenario being proposed, the CSRD wants/needs a portion of this property to develop a sewage treatment facility. In order for the CSRD to obtain this land, the developer wants this entire parcel removed from the ALR, or the CSRD will not be afforded the opportunity to obtain the parcel required to develop the sewage facility. This in our opinion sets a very bad precedent, and essentially is leaving the CSRD subject to the demands of the developer, who purchased this property with the knowledge of the fact it was in the ALR. We suspect the cost of the land involved was also reflected in the fact it was ALR land.

Sincerely yours,



Howie and Linda Rowse

hrowse55@gmail.com

(250) 463-2074

Copy

Agent of Columbia Shuswap Regional District
Salmon Arm BC

September 21, 2017

Re: Agricultural Land Commission Application for Exclusion –
SW ¼, Section 8, TWP 22, R10, W6M, KDYD, except Plans 36962, H425, H944,
KAP58710 and KAP67184

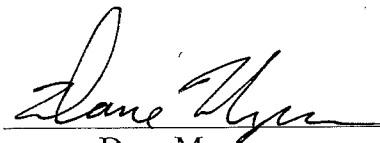
In reply to your letter dated September 5, 2017

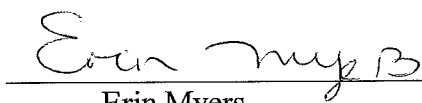
We, the landowners, have 2 properties (2825 Trans Canada Hwy, Lot A and B) adjacent to the above property which is applying to be excluded from the ALR, we have some concerns.

While we have no issues with further residential development and the creation of a Balmoral Village Centre, our concerns are for the 13.5 hectare portion that would be used by the CSRD for an effluent storage pond.

This 13.5 hectare portion is directly against the back of our properties. We have a 450 ft well which is our only water source that is about ½ way between the Trans Canada Hwy and the proposed effluent storage area. Without any mention of a criteria for the building and maintenance of the effluent pond our concerns are the potential of contamination of our fresh water supply. Without assurances that this could be mitigated, we are opposed to this proposal.

If we were to be supplied with water through the communal system that is in place, this would no longer be an issue.


Dave Myers


Erin Myers

JS

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<input type="checkbox"/> Other		

Box 147
Salmon Arm BC
V1E 4N2

250-804-9636 - Dave
250-804-9635 - Erin

CV: Property
004-612-710 - m2

LC 2545
New file.

September 20th, 2017

Re: Agricultural Land Commission Application for Exclusion -

SW 1/4, Section 8, TWP 22, R10, W6M, KDYD, except Plans 36962, H425, H944,

KAP58710 and KAP67184

We are the neighbouring property located at 2881 Trans Canada Hwy, Sorrento, B.C. V0E 2W0. We are not necessarily opposed to this property being removed from the ALR, however we do have a few concerns regarding this transaction.

You state in your letter, which we received by registered mail, that the CSRD would like to expand the capacity of the existing sewage facility, service a greater area of the community and reduce the amount of effluent entering Shuswap Lake. We have a concern with the "wastewater effluent lagoon" affecting the quality of our water on our property. We are on a well water system and this is our only source of water here. We cannot afford to have our water system compromised. If we are to understand correctly, you will be putting in a complete water system for the area to which will be expanded from being removed out of the ALR, we would also like to be included in the "city" water system. As far as sewage goes, and you state, that you will be "expanding the capacity of the existing sewage system", we would also like to be included on that system. We are currently on septic and having your sewage system adjacent to our property I would expect that we would have access to that as well.

We have also spoken to our neighbours at 2825 Trans Canada Hwy. and know that they too would also be interested in this as well. (Sewage and Water).

As stated above, we anticipate that we would gain access to these services and look forward to hearing from you in regards to this matter.

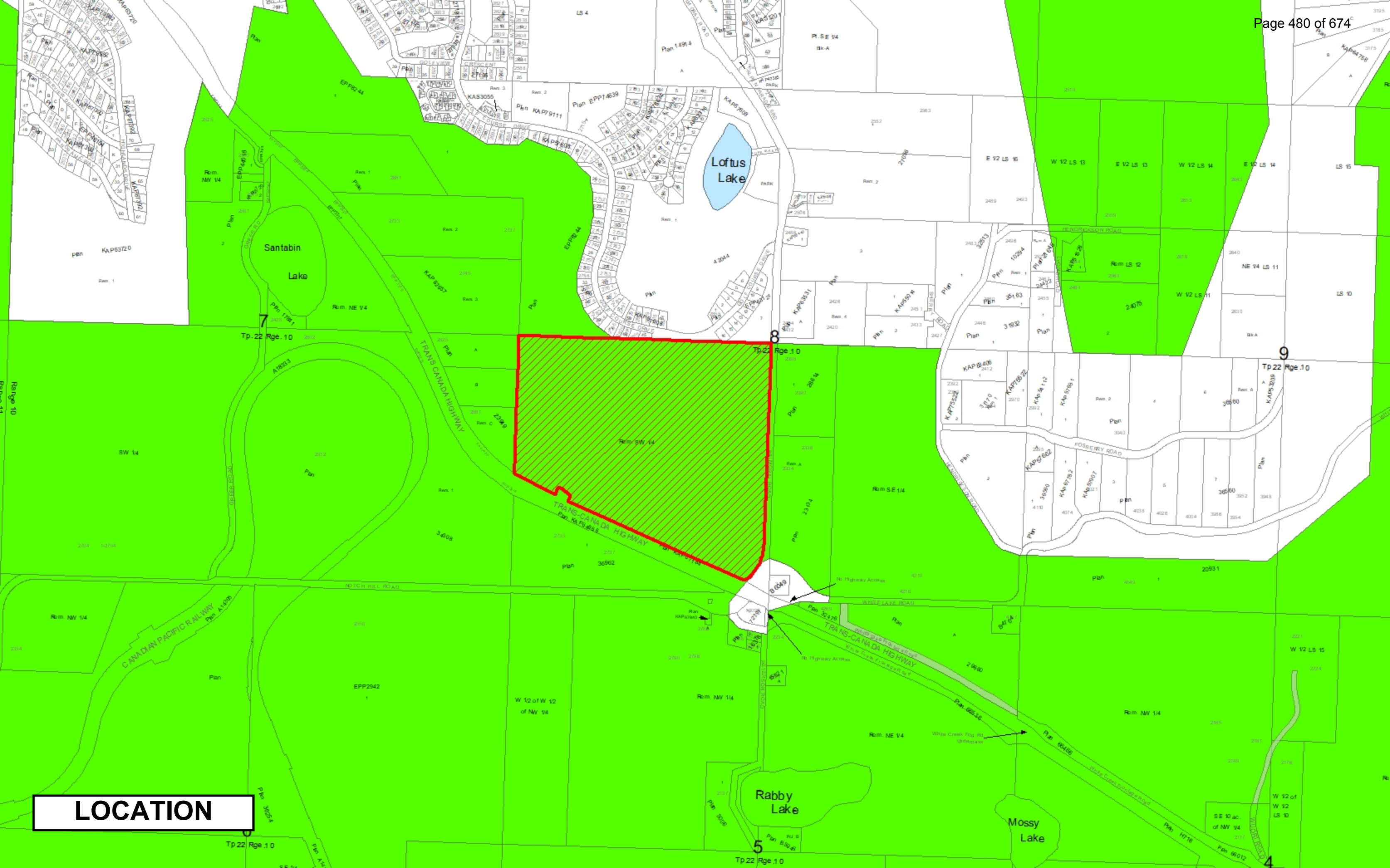
Sincerely,



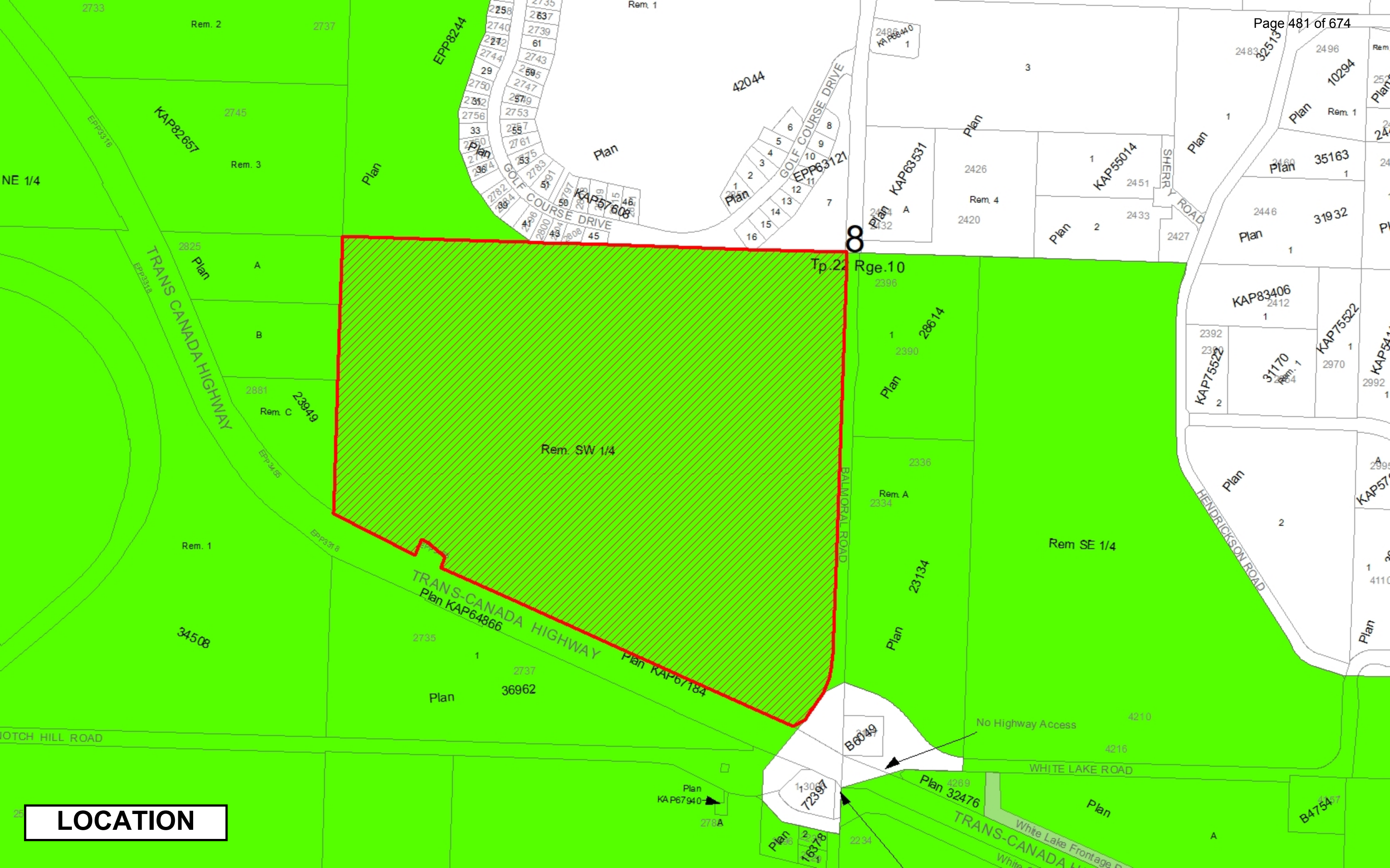
Toni Walton

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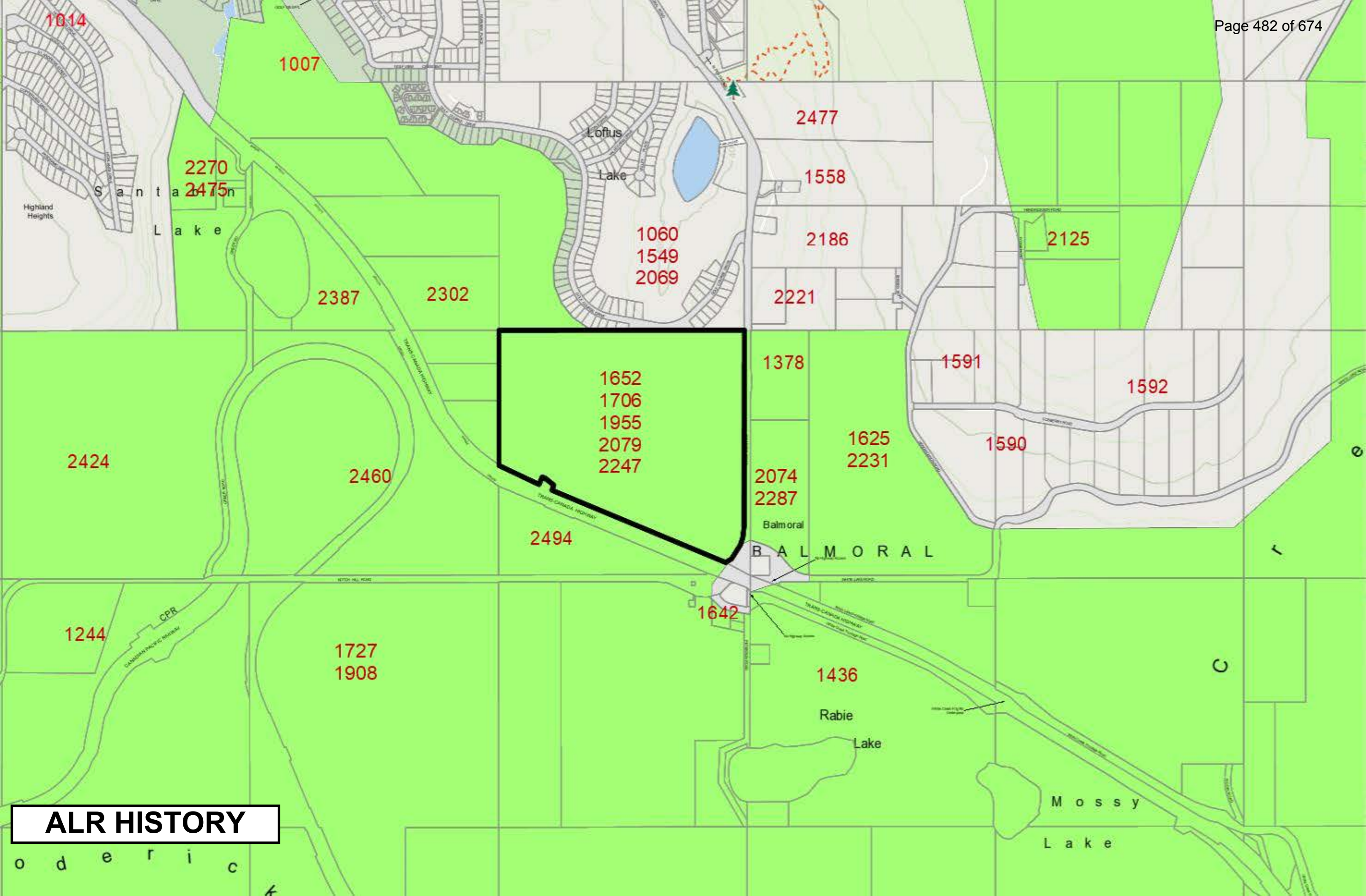
Cv Property



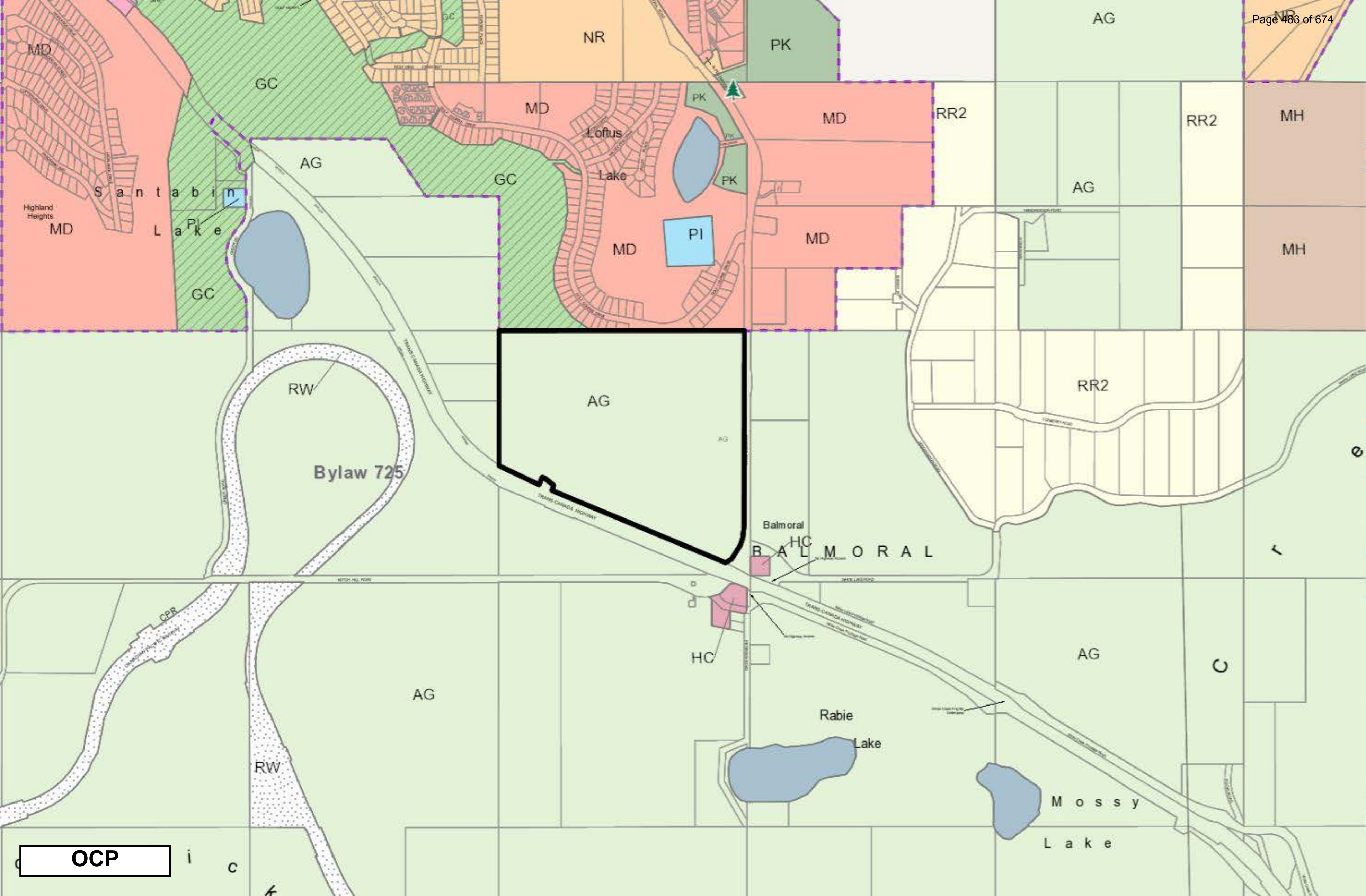
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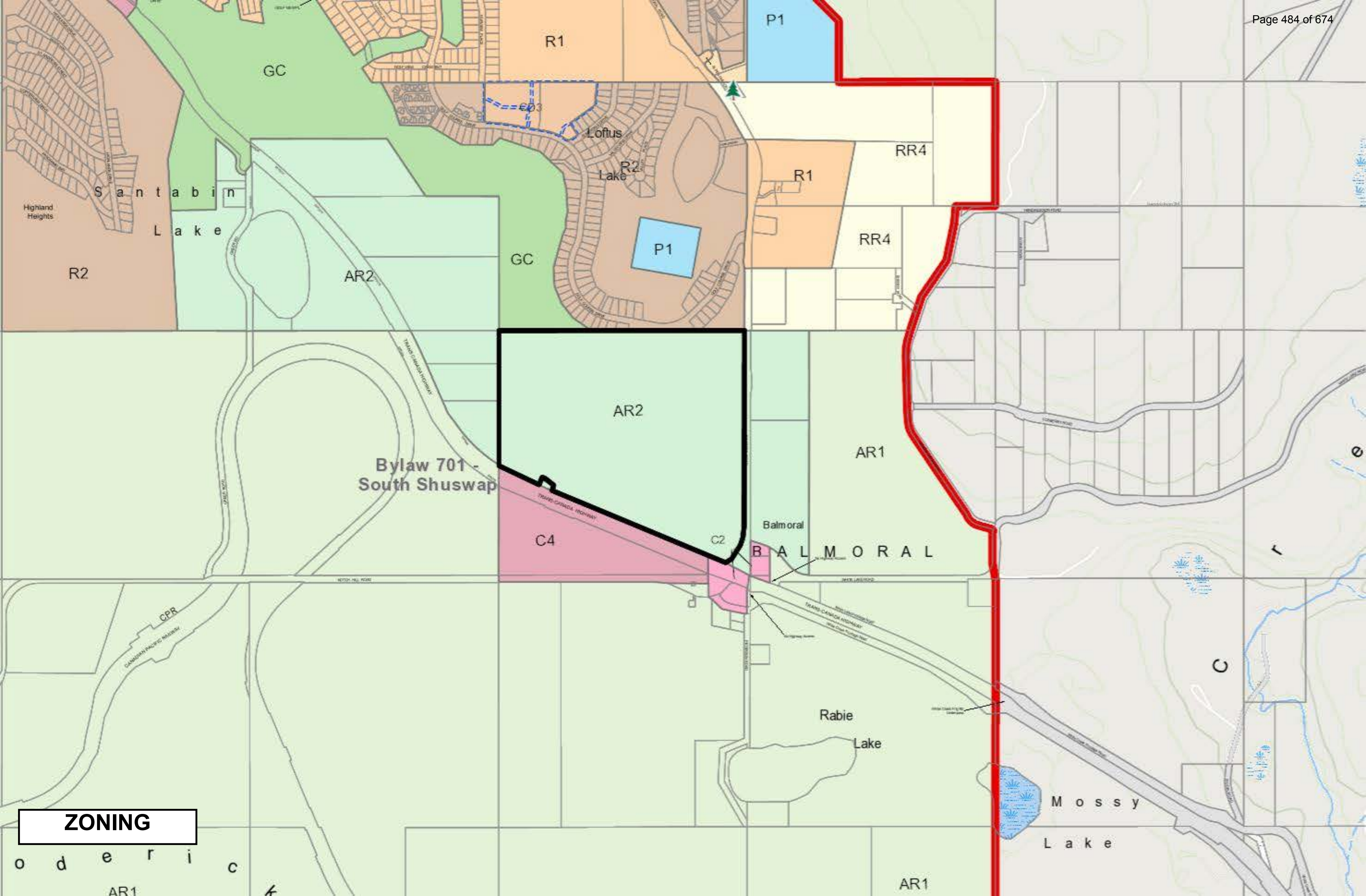
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ALR HISTORY



OCP



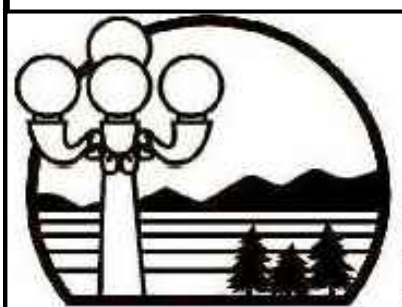
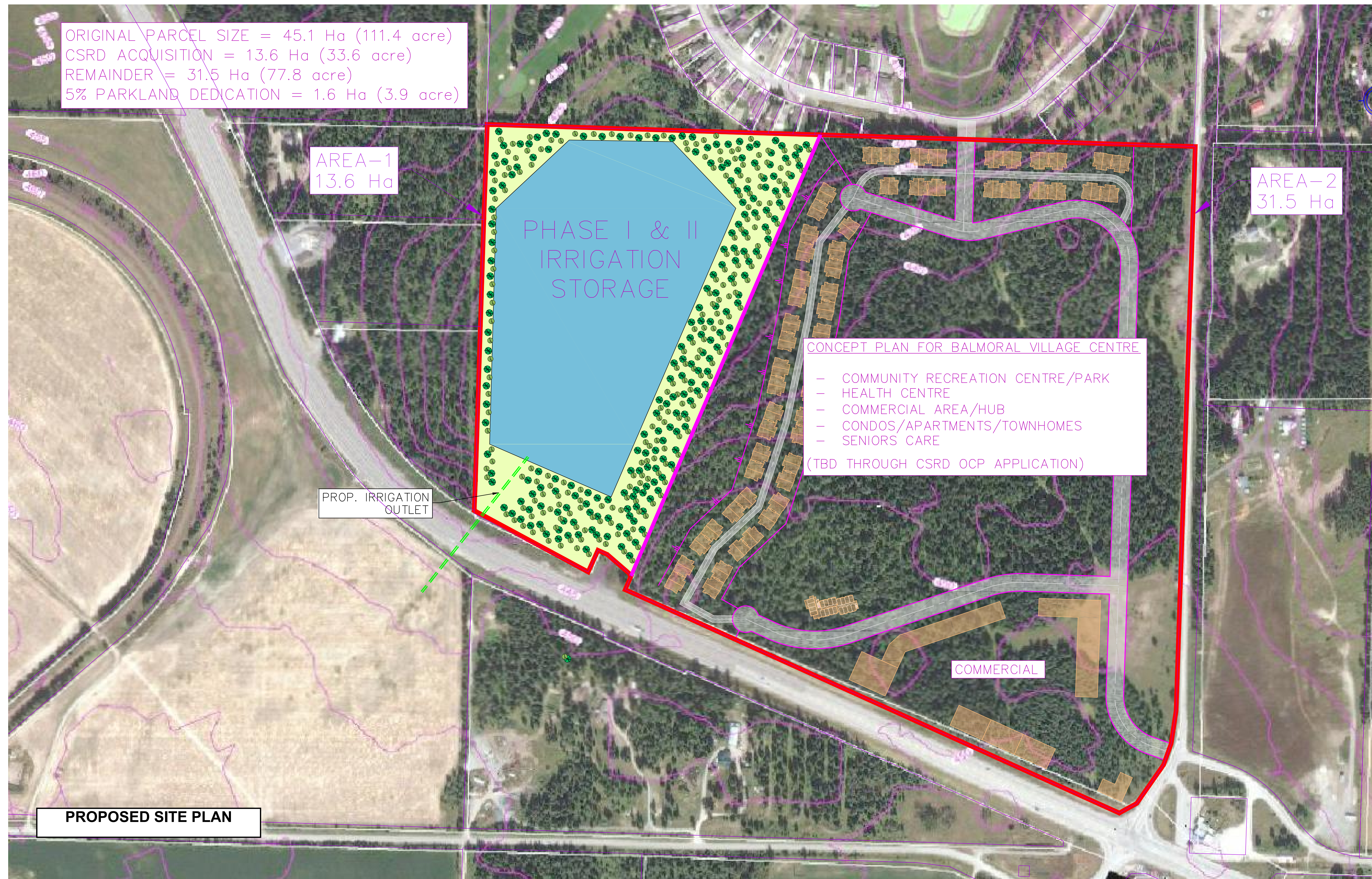
ZONING

o d e r i c

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4

AR1



**Shuswap Lake
ESTATES**

CONCEPT PLAN ONLY

SHUSWAP LAKE ESTATES
BLIND BAY VILLAGE CENTER

PROJECT: **BLIND BAY VILLAGE CENTER**

SCALE: 0 20 1:2000 100m

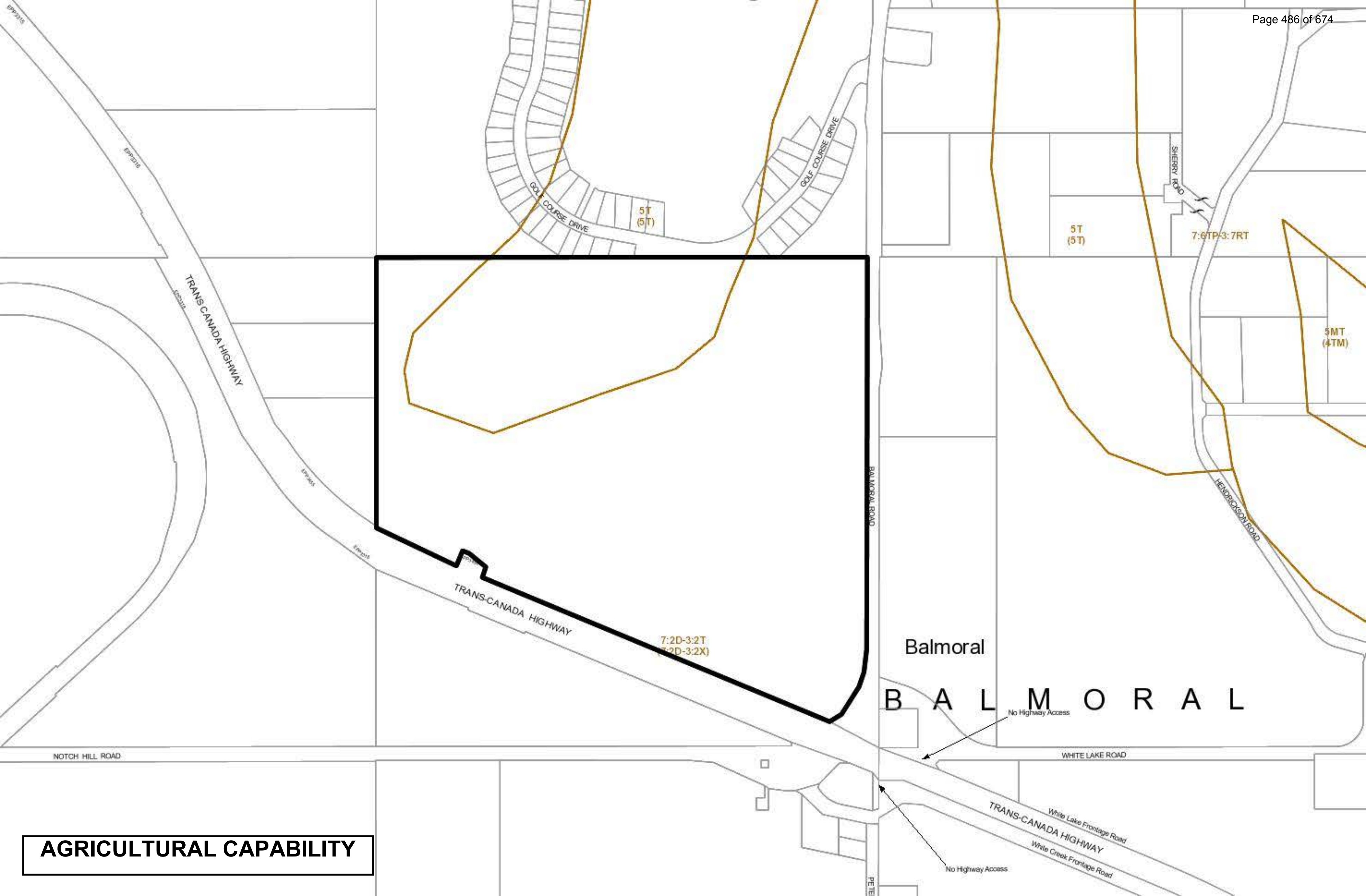
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REVISION DATE:

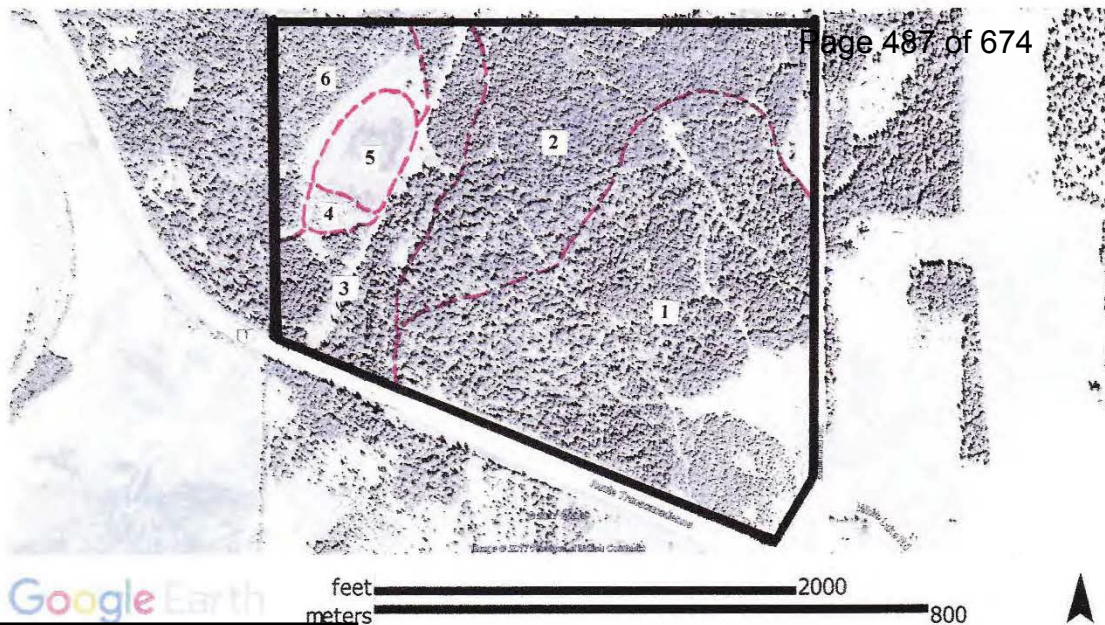
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DRAWING NUMBER: **17-101 - 030**

REVISION: **0**

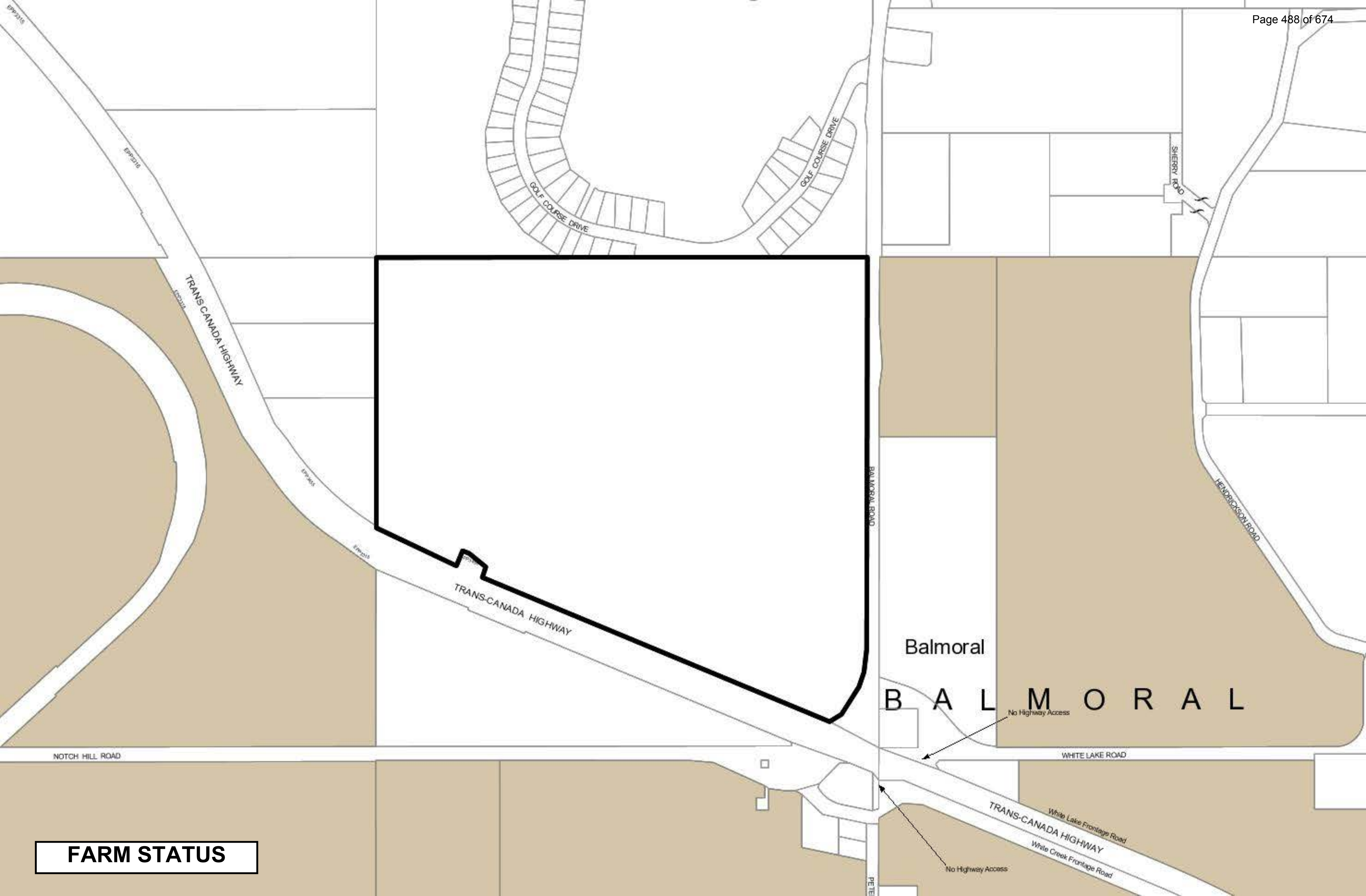


AGRICULTURAL CAPABILITY



SOIL POLYGONS

Figure 1. Soil polygon numbers and boundaries at the Balmoral Road property.



FARM STATUS



ORTHOPHOTO



BOARD REPORT

TO: Chair and Directors

File No:	BL750-02
	PL20160012
	BL751

SUBJECT: Electoral Area D: Ranchero / Deep Creek Official Community Plan Amendment (CSR D) Bylaw No. 750-02 & Ranchero / Deep Creek Zoning Bylaw No. 751

DESCRIPTION: Report from Jan Thingsted, Planner dated February 2, 2018.
Ranchero / Deep Creek, Electoral Area D

RECOMMENDATION #1: THAT: "Ranchero / Deep Creek Official Community Plan Amendment (CSR D) Bylaw No. 750-02" be read a second time, as amended, this 15th day of February, 2018.

RECOMMENDATION #2: THAT: "Ranchero / Deep Creek Zoning Bylaw No. 751" be read a second time, as amended, this 15th day of February, 2018.

RECOMMENDATION #3 THAT: a public hearing to hear representations on "Ranchero / Deep Creek Official Community Plan Amendment (CSR D) Bylaw No. 750-02" and "Ranchero / Deep Creek Zoning Bylaw No. 751" be held;

AND THAT: notice of the public hearing be given by the staff of the Regional District on behalf of the Board in accordance with Section 466 of the Local Government Act;

AND FURTHER THAT: the holding of the public hearing be delegated to Director Rene Talbot, as Director of Electoral Area D being that in which the land concerned is located, or Alternate Director Joy de Vos, if Director Talbot is absent, and the Director or Alternate Director, as the case may be, give a report of the public hearing to the Board.

SHORT SUMMARY:

Ranchero / Deep Creek Zoning Bylaw No. 751 (Bylaw No. 751) is a follow up to the Ranchero / Deep Creek Official Community Plan (OCP) Bylaw No 750. Bylaw No. 751 will provide land use regulations for the portion of Electoral Area D covered by the OCP and will repeal and replace Ranchero / Deep Creek Land Use Bylaw No. 2100.

VOTING:	Unweighted Corporate	<input type="checkbox"/>	LGA Part 14 (Unweighted)	<input checked="" type="checkbox"/>	Weighted Corporate	<input type="checkbox"/>	Stakeholder (Weighted)	<input type="checkbox"/>
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BACKGROUND:

Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02 and Ranchero / Deep Creek Zoning Bylaw No. 751 were given Second Reading as Amended on November 16th, 2017.

See "2017-11-16_Board_Report_DS_BL_751_750_02_CSRD.pdf"

POLICY:

Section 478(2) of the Local Government Act requires that all zoning bylaws adopted after an OCP must be consistent with that plan. Bylaw No. 751 proposes to introduce several land use zones which are currently not identified in the OCP. Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02 is, therefore, required to create designations and policies that complement the new zones and ensure consistency between the two bylaws. For example, the proposed foreshore zones for Gardom Lake require corresponding foreshore designations and policy statements in the OCP.

FINANCIAL:

There was \$10,000 allocated for 2017 to complete Bylaw No. 750-02 and Bylaw No. 751. This amount takes into consideration the cost of public open houses, a public hearing, advertising, and legal counsel review. Any monies remaining from 2017 are proposed to be rolled-over into the 2018 budget to allow for the completion of the project.

KEY ISSUES/CONCEPTS:

The intent of Bylaw No. 751 is to repeal and replace Bylaw No. 2100 with an up-to-date bylaw that reflects current legislation and is consistent with the OCP. The intent of Bylaw No. 750-02 is to ensure that the new zoning bylaw and current OCP are consistent with each other.

SUMMARY:

A summary of Bylaw No. 750-02 and Bylaw No. 751 was provided in November 16th, 2017 Board report at the time of second reading as amended.

Since that time, there has been a public open house and legal counsel review of Bylaw No. 751.

The public open house, held on December 12, 2017 at Ranchero Elementary School, was attended by approximately 60 members of the public. Staff spoke with local residents about the proposed zoning bylaw and encouraged attendees to fill out comment forms. The main concern residents raised at the open house was in regard to the Bylaw's proposed regulations for kennels. Many residents, especially those living in the Upper Mallory Rd. neighbourhood felt that kennels should not be permitted in the Medium Holdings zone or on parcels as small as 8 ha.

Key proposed changes to Bylaw No. 751 since second reading as amended:

- Updated definition of kennel to address litters
- Kennel to only be permitted on parcels zoned "Industrial 1" that are 16 ha or larger
- Creation of a site specific regulation in the Medium Holdings zone to recognize a rezoning that occurred prior to the adoption of the OCP
- Further clarity to definitions section
- Further clarification to the signage regulations

IMPLEMENTATION:

If Bylaw No. 751 and Bylaw No. 750-02 receive second reading as amended at the February 15th, 2018 Board meeting, the bylaws will be presented at a public hearing.

COMMUNICATIONS:

If the Board delegates a Public Hearing, staff will set a date for the Public Hearing and proceed with publication of newspaper notices in accordance with Section 466 the Local Government Act. Staff will also place notices of the public hearing on the CSRD website and social media.

DESIRED OUTCOMES:

That the Board endorse the staff recommendations.

BOARD'S OPTIONS:

1. *Endorse the Recommendations.*
2. *Deny the Recommendations.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. Ranchero / Deep Creek OCP Bylaw No. 750
2. Ranchero / Deep Creek Land Use Bylaw No. 2100
3. First and second reading information for Bylaw No. 750-02 and Bylaw No. 751

Report Approval Details

Document Title:	2018-02-15_Board_DS_BL751_BL750_02_CSRD.docx
Attachments:	<ul style="list-style-type: none"> - BL750-02_second_amended.pdf - BL750-02_Schedule_A_second_amended.pdf - BL750-02_Schedule_B_second_amended.pdf - BL751_second_amended.pdf - BL751_Schedule_A_second_amended.pdf - BL751_Schedule_B_amended.pdf - BL751_Schedule_C_amended.pdf - 2017-11-16_Board_DS_BL751_BL750-02_CSRD.pdf
Final Approval Date:	Feb 6, 2018

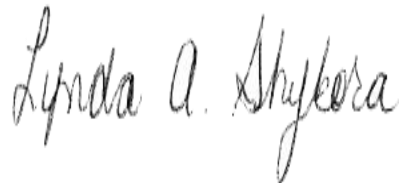
This report and all of its attachments were approved and signed as outlined below:



Corey Paiement - Feb 2, 2018 - 1:40 PM



Gerald Christie - Feb 2, 2018 - 4:36 PM



Lynda Shykora - Feb 6, 2018 - 11:21 AM

No Signature - Task assigned to Charles Hamilton was completed by assistant Lynda Shykora

Charles Hamilton - Feb 6, 2018 - 12:27 PM

COLUMBIA SHUSWAP REGIONAL DISTRICT
RANCHERO / DEEP CREEK OFFICIAL COMMUNITY PLAN
AMENDMENT (CSRD) BYLAW NO. 750-02

A bylaw to amend the "Ranchero / Deep Creek Official Community Plan Bylaw No. 750"

WHEREAS the Board of the Columbia Shuswap Regional District adopted Bylaw No. 750;

AND WHEREAS the Board deems it appropriate to amend Bylaw No. 750;

NOW THEREFORE the Board of the Columbia Shuswap Regional District, in open meeting assembled, HEREBY ENACTS as follows:

1. Ranchero / Deep Creek Official Community Plan Bylaw No. 750, as amended, is hereby further amended as follows:

A. TEXT AMENDMENT

- I. Bylaw No. 750 is amended by deleting Schedule A (the Official Community Plan text) which forms part of the Ranchero / Deep Creek Official Community Plan Bylaw No. 750 and replacing it with the attached Schedule A (the Official Community Plan text).

B. MAP AMENDMENT

- I. Bylaw No. 750 is further amended by deleting Schedule B (Land Use Designations - overview map and mapsheets) which forms part of the Ranchero / Deep Creek Official Community Plan Bylaw No. 750 and replacing it with the attached Schedule B (overview map and mapsheets).

2. This Bylaw may be cited as "Ranchero / Deep Creek Official Community Plan Amendment (CSRD) Bylaw No. 750-02."

READ a first time this _____ 17th day of _____ March _____, 2016.

READ a second time, as amended, this _____ 16th day of _____ November _____, 2017.

READ a second time, as amended, this _____ day of _____, 2018.

PUBLIC HEARING held this _____ day of _____, 2018.

READ a third time, as amended, this _____ day of _____, 2018.

ADOPTED this _____ day of _____, 2018.

CORPORATE OFFICER

CHAIR

CERTIFIED a true copy of Bylaw No. 750-02
as read a third time.

CERTIFIED a true copy of Bylaw No. 750-02
as adopted.

Corporate Officer

Corporate Officer



Columbia Shuswap Regional District

Electoral Area D

Ranchero / Deep Creek

Official Community Plan Bylaw No. 750

February 2018

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for double-sided printing.*

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SECTION 1- INTRODUCTION

1.1 PURPOSE

The purpose of the Ranchero/Deep Creek Official Community Plan (OCP) is to provide a comprehensive set of goals, objectives and policies for managing both private and public decisions regarding planning and land use management. It identifies community values, objectives and policies within the Plan Area. The objectives and policies contained in this OCP are a reflection of community values and are intended to be consistent with Provincial, and Federal government regulations and policies. Once adopted by bylaw, the Columbia Shuswap Regional District (CSRD) Board of Directors is obligated to abide by the policies of this plan. All bylaws enacted, permits issued and works undertaken within the Plan Area shall be consistent with the provisions of this OCP as in accordance with Section 478 of the *Local Government Act*.

1.2 PLAN PREPARATION

The development of this Plan was guided by an advisory working group comprised of residents from the different neighbourhoods in the Plan Area representing local social, economic and environmental perspectives. CSRD Development Services staff together with the Advisory Working Group, reviewed the previous Land Use Bylaw, and obtained input from the community and Provincial Agencies in preparation of this OCP.

1.3 PUBLIC CONSULTATION

Starting in February 2004, the public was engaged using a number of methods including a series of public and working group meetings and flyers. Using these methods, the community as a whole was given an opportunity to discuss key issues, establish community priorities and outline the vision for the future development of the area in Community Values Statements. In March 2004, an open house was held and surveys were handed out. Further public open houses were conducted in June 2005, June 2008 and November 2009. Additionally, separate meetings were held for the Ranchero/Shaw Rd. and Gardom Lake neighbourhoods.

The CSRD recognizes the need for ongoing public consultation through the implementation of this Plan. The community will continue to be consulted through the Advisory Planning Commission and public hearings held on development applications and through other ongoing CSRD consultation initiatives.

1.4 COMMUNITY VALUES

Ranchero/Deep Creek is made up of distinct neighbourhoods that have a diverse range of activities and interests but share many common values. The combination of temperate climate, spectacular natural environment, outdoor recreation opportunities, water resources, entrepreneurial spirit, and the progressive attitude of residents has resulted in a highly desirable and vibrant community. The area accommodates a broad mix of: agricultural, rural, residential, recreational, limited tourism, small scale commercial, small scale industrial, home businesses and resource uses with an emphasis on mutual respect and diversity.

The residents of Ranchero/Deep Creek recognize that there will be pressure for change and development in their neighbourhoods. Residents are seeking to define a level of compatible development, while at the same time maintaining the values that are fundamental to the health and prosperity of the community.

These following values have been generated from the input and priorities of the residents who make up the neighbourhoods of Ranchero/Deep Creek and will be used to help guide future decisions on development proposals, environmental protection initiatives, and infrastructure development for the community, by the CSRD and senior government agencies. These values include:

1. Protection of the Plan Area's rural character and containment of urban development;
2. Identification and protection of watersheds and aquifers from degradation, inappropriate development and pollution to ensure a continued safe water supply;
3. Recognition that the sustainable development of the Plan Area must be linked to groundwater quality and quantity for all residents;
4. Protection of environmentally sensitive areas, natural hazard lands, aquifer recharge areas and natural, environmental and geographic features;
5. Recognition that a comprehensive approach to managing sewage is required;
6. Recognition of the benefits afforded to the community through the continued existence of agriculture and rural lifestyles;
7. Recognition of the importance of agriculture in the local economy;
8. Support for economic diversity in new and existing small scale developments that complement the rural integrity of Ranchero/Deep Creek;
9. Recognition of the importance of small scale commercial and home-site or home-based businesses in the growth and diversification of the Plan Area;
10. Consultation with First Nations, in accordance with statutory requirements, to develop approaches to issues of mutual interest;
11. Protection of resource lands for suitable resource uses;
12. Minimization of encroachment of land uses that are incompatible with these community values;
13. Recognition of Gardom Lake as a unique environmental resource;
14. Recognition of Gardom Lake area parks and the Benches identified on Schedule 'E' as the primary recreational resources in the Plan Area;
15. Support for environmentally responsible recreational and silvicultural uses;
16. Preservation and enhancement of green space, access to public lands and integrated trails;
17. Recognition of the need and continued support for local schools and community centres;

18. Support for bylaw recognition of existing and legal manufactured home parks, multiple housing units, and suites;
19. Support for more affordable housing;
20. Recognition and support for efficient and safe rural local transportation;
21. Recognition that storm water management should be initiated;
22. A requirement for comprehensive public consultation with respect to decisions about the future development of all lands, including Crown land and services within our communities.

1.5 AUTHORITY AND REQUIREMENT OF THE LEGISLATION

Section 472 of the *Local Government Act* gives the CSRD the authority to adopt an OCP.

Section 473 of the *Local Government Act* identifies content that *must* be addressed in an OCP while Section 474 of the *Local Government Act* identifies policies, which a local government *may* include within an OCP.

An OCP is primarily a land use management document prescribed by Provincial legislation. If a local government proposes to include a matter in an OCP which is not within the jurisdiction of local government, the plan may only state the broad objectives of the local government with respect to that matter.

1.6 APPLICATION

This Plan consists of:

- Schedule 'A': The Plan Text
- Schedule 'B': Official Community Plan Land Use Designations (Overview Map and Mapsheets)
- Schedule 'C': Agricultural Land Reserve Map
- Schedule 'D': Aggregate Resource Potential Map
- Schedule 'E': Local Area and Transportation Network Map
- Schedule 'F': CSRD Parks Classification System

The Ranchero Deep/Creek Official Community Plan Bylaw No. 750 applies to the portion of Electoral Area 'D' of the CSRD as shown on the OCP Land Use Designation Overview Map and Mapsheets (Schedule B), which is attached and forms part of Ranchero/Deep Creek Official Community Plan.

The goals, objectives and policies of the Ranchero/Deep Creek Official Community Plan Bylaw No. 750 (Schedule 'A'), will be implemented by the Board of the CSRD using a number of tools. These tools may be subject to change as opportunities and resources are determined.

1.6.1 The Regional District will review and implement the policies of the Plan when

- considering decisions with regard to zoning, land use, servicing and development in the plan area.
- 1.6.2 The Regional District will continue to support and recognize the role of the appointed Advisory Planning Commission.
- 1.6.3 The Regional District will work with the community, including a public consultation process, to replace the current Zoning Bylaw to generally reflect the status quo in terms of land use and density as well as the goals and policies of this OCP.
- 1.6.4 The Regional District may consider issuing **Temporary Use Permits** through the authority of the *Local Government Act*. Temporary Use Permits can be considered in all designations. An objective of the Regional Board is to allow the opportunity for consideration of the issuance of a Temporary Use Permit in order to permit a temporary use to continue while a more suitable location for the use is determined, a rezoning application is completed, or where the event is a temporary use where the existing zoning does not permit the event. Temporary Use Permits are not a substitute for a rezoning application. Despite the zoning of a property, Temporary Use Permits for temporary uses may be supported, subject to approval by the Regional District Board of Directors.
- 1.6.4.1 The Regional District Board will consider the issuance of Temporary Use Permits based on the general conditions which include, but are not limited to:
- (a) must be clearly temporary or seasonal in nature;
 - (b) should not create a negative impact on the environment or on surrounding land uses;
 - (c) should not be considered noxious or emit pollutants that are detrimental to the environment, neighbouring properties, and the community as a whole;
 - (d) should not create noise, vibrations, or light pollution which disrupts the peaceful enjoyment of the surrounding neighbourhood;
 - (e) should carry out appropriate remedial measures to mitigate any damage to the natural environment as a result of the temporary use; and
 - (f) must be reviewed and approved by the Ministry of Transportation and Infrastructure (MoTI) with respect to access and effect on public roads.
- 1.6.4.2 Guidelines for Temporary Use Permits include the following:
- (a) Temporary Use Permit may be granted for any length of time up to a maximum of three years;
 - (b) appropriate parking and loading spaces are available;
 - (c) the proposed hours, size and scale of the use will be compatible with adjacent land uses;

(d) the use will be compatible with adjacent land uses in terms of noise, odours, dust, pollution, lighting, aesthetics, parking and traffic; and

(e) the proposed use will not have negative impacts on the natural environment.

- 1.6.4.3 The Regional District may establish conditions in the Temporary Use Permit including, but not limited to; the buildings to be used, the area of use, the hours of use, appearance, landscaping, site rehabilitation, and means of ensuring compliance.
- 1.6.4.4 The Regional District may require security in the form of a letter of credit and may impose reclamation and performance measures as conditions for the issuance of a Temporary Use Permit.
- 1.6.4.5 Specific permit conditions may address mitigation measures for potential negative impacts identified in the review process.
- 1.6.4.6 Upon expiration of a Temporary Use Permit, the uses for the property shall immediately revert to those outlined in the current Zoning Bylaw. The applicant may, prior to the expiration of the Temporary Use Permit, apply for a one time permit renewal of up to three years, approval of which will be at the discretion of the Regional District Board of Directors.
- 1.6.5 The Regional District will require development approval information pursuant to the *Local Government Act*. Procedures and policies for requiring development approval information are established in the Development Approval Information Bylaw No. 644 (Bylaw No. 644) for the following:
- Application for amendments to a Zoning bylaw;
 - Applications for a Development Permit; and
 - Applications for Temporary Use Permits.
- 1.6.5.1 Bylaw No. 644 applies to all lands within the Ranchero/Deep Creek OCP Bylaw No. 750 area. Bylaw No. 644 gives the CSRD the authority to require an applicant to provide information on the impact of the activity or development that is subject to the application. Bylaw No. 644 also specifies the matters for which additional on-site and off-site information will be required, including but not limited to such issues as:
- Assessment of sewage disposal site as required by the appropriate authorities;
 - Hydro-geological impact assessment on the quantity and quality of water resources as required by the appropriate authorities;

- Vehicle parking, transportation patterns and traffic flow, including pedestrian and bicycle pathway systems;
- The impact to and assessment of local infrastructure;
- Assessment of capacity of public facilities including schools and parks;
- The impact on or need for additional community services;
- The impact and assessment of the natural environment of the area affected;
- Assessment of slope stability conditions;
- Assessment of wildlife interface risks; and
- Assessment of how the development addresses on-site issues such as emergency use, accessibility, and water conservation.

1.6.5.2 In general, applicants will need to provide sufficient information in order to:

- Identify the development impacts, both positive and negative; and
- Specify measures to avoid, minimize, and mitigate negative impacts.

1.6.5.3 In the event that appreciable negative impacts are identified, the Regional District may request certain mitigations from the applicant in order to improve the proposal and minimize potential negative impacts on the land and neighbouring properties.

1.6.5.4 Bylaw No. 644 sets out procedures regarding requests for reconsideration of Development Approval Information requirements.

1.6.6 The Regional District will develop a “sustainability checklist” to be completed by anyone applying for an OCP amendment, Zoning Bylaw Amendment, Development Permit or Temporary Use Permit. The purpose of the checklist will be to assist applicants and the CSRD in working together to develop high quality projects that move communities in the plan area closer to achieving the vision set out in the community values. The relevance of the checklist questions will depend on the scope and nature of the project.

1.7 REVIEW AND AMENDMENT

The intent of this OCP is to provide direction on how the Ranchero/Deep Creek Plan Area will grow and change over the next 20 years. As new information becomes available, it is recommended that the OCP be reviewed every five years or as necessary.

Amendments to this OCP shall be made by bylaw. Requests to amend this OCP shall follow a formal application process to the CSRD Board of Directors.

1.8 SEVERABILITY

If any section, subsection, sentence, clause or phrase in this OCP is for any reason held to be invalid by the decision of any court of competent jurisdiction, such section, subsection, sentence, clause or phrase may be severed and the decision that it is invalid shall not affect the validity of the remainder of the bylaw.

1.9 SUMMARY OF ACRONYMS

ALC	Provincial Agricultural Land Commission
ALR	Agricultural Land Reserve
CSRD	Columbia Shuswap Regional District
DFO	Fisheries and Oceans Canada
DPA	Development Permit Area
LGA	Local Government Act
MoE	Ministry of Environment
MoTI	Ministry of Transportation and Infrastructure
OCP	Official Community Plan
QEP	Qualified Environmental Professional
RDNO	Regional District of North Okanagan
RAR	Riparian Areas Regulation
RDPA	Riparian Development Permit Area
SEP	Shuswap Emergency Program
SRW	Statutory Right of Way
TRIM	Province of British Columbia Terrain Resource Inventory Maps

SECTION 2- PLANNING STRATEGY

2.1 LAND BASE

The total land area covered in this plan is estimated to be approximately 10,052 ha. The topography is variable, ranging from land suitable for agriculture and development to land that is too steep for development. Elevations range from 500 m in the Deep Creek valley floor to 1440 m on the slopes of Mount Ida to the west.

The climate is generally characterized by mild temperatures. In January the historical average daily temperature is -4° C and in July it is 18.6° C. The Plan Area has historically had relatively high precipitation. The annual average is close to 669 mm, measuring between 65.6 mm in January and 53.9 mm in July. The dominant vegetation is almost exclusively woodland and the warm moist forest habitat is categorized as transition from Interior Douglas Fir Zone to Interior Cedar Hemlock Zone.

However, it is important to recognize that the historic climate patterns and dominant vegetation are likely to undergo change as a result of climate change. With the likelihood of future drier summers, forests in the plan area could be more susceptible to fires. Climate change will also increase the probability of extreme storm events triggering landslides and other run-off events.

2.2 SETTLEMENT AREAS

Ranchero/Deep Creek consists of a large agricultural base and a number of unique neighbourhoods. The compositions of these neighbourhoods differ in terms of geographic characteristics, relationship to adjacent municipalities and parcel sizes, but share a similar history and socio-economic profile.

The identification of neighbourhoods has been provided by participants in the planning process, and it is understood that these areas are only generally defined. These neighbourhoods, as shown on Schedule 'E', within the Plan Area are:

- Ranchero
- Shaw Road
- Deep Creek Valley Floor
- Mountain Benches
- Gardom Lake
- Mallory Road
- Wolfgang and Pyott Roads

Ranchero

In Ranchero, land uses are a mix of residential and commercial properties. The residential component consists mainly of 0.4 ha lots, four manufactured home parks, and some multi-family dwellings. The residents enjoy a suburban/rural lifestyle.

Home occupations are common and accepted. Residential properties are serviced by on-site sewer and water systems.

The highway commercial area is along Mellor Frontage Road between Hudson Road and Hurst Road. The services offered here include a variety of neighbourhood commercial operations

including a restaurant and small vehicle repair service. Note: At the time of writing, the Ministry of Transportation and Infrastructure (MoTI) is considering changing the name of Mellor's Frontage Rd. to Mayfair Rd.

Ranchero Elementary School provides for approximately 150 students. There are also some small parcels of land designated for park purposes.

Shaw Road

Shaw Road is accessible only through the City of Salmon Arm's Industrial Park. The majority of residential lots are between 0.6 and 2.02 ha, while some are as large as 8 ha. There is one manufactured home park. A golf course and driving range exist southeast of Shaw Road.

Deep Creek Valley Floor

The valley floor runs north-south, bordered by Mount Ida on the west and Mallory Road on the east; it is comprised of Agricultural Land Reserve (ALR) land and farming operations in 32-64 ha parcels. There is a long history of farming with most farms being second or third generation. Dairy operations predominate and the land is used to grow forages, grass and alfalfa with some sheep and beef farming.

The west side of the Deep Creek Road is primarily rural with a number of parcels ranging from 2 to 4 ha with a few exceptions down to 0.4 ha.

On the west slope there is extensive logging activity while the east slope is host to a number of woodlot type operations.

On the west and east slopes of the valley there are also many recreation opportunities which include: hiking, horse riding, mountain biking, cross country skiing, snowshoeing, and ATV riding. There are several areas where wildlife corridors cross from one range to another. The Deep Creek road corridor is very busy as it is a through road and scenic route used by commuters, bicyclists, motorbike enthusiasts, joggers, and trucks serving the agricultural community.

Mountain Benches

The Mountain Bench areas include the east side of Mt. Ida and the ridge dividing Deep Creek and the Shuswap River Valley. There are animal migration corridors in both. Some of the areas are used as woodlot operations. The east side of Mt. Ida is also a watershed for the valley bottom. The area is mainly Crown land and has value as a natural resource area.

Gardom Lake

The Gardom Lake area is characterized by a mix of land uses. There are approximately 40 residential parcels with lake frontage ranging in size from 0.2-1 ha, with an additional 20 residential parcels approximately 0.2 ha each, and a number of larger agricultural parcels across Gardom Lake Road.

Gardom Lake itself is small, approximately 1600 m long, and primarily spring-fed. It is a popular lake for wildlife viewing, canoeing, kayaking and fishing. Boats with gas motors are prohibited from Gardom Lake. A day use community park offers public access and includes a beach, picnic

area, and ball diamond. MoTI maintains a public road which provides access to the lake for boaters.

Two private camps are located on the south side of the lake. Gardom Lake Bible Camp, which offers private recreational facilities and meeting rooms, experiences a lot of activity during summer months and can accommodate roughly 180 campers at one time. The Royal Canadian Legion Veteran's Camp offers some cabins and RV sites for its members.

Mallory Road

This area is located on the western slopes of the rise of land dividing Deep Creek and the Shuswap River Valley. This area consists mainly of larger rural acreages between 4-8 ha where low density development and a rural lifestyle are desired.

Wolfgang and Pyott Roads

The Wolfgang and Pyott Road area is characterized by larger rural properties of 32-64 ha with some properties in the 4-12 ha range. Access to this area is largely through the District Municipality of Spallumcheen. Dead end roads keep traffic volumes low. The terrain is moderate to steep with shallow soil over bedrock. Some small scale agriculture operations exist, including cropland and some grazing, but the soil is not highly productive. The social and business orientation is predominately south toward North Okanagan communities.

2.3 POPULATION

Historically Electoral Area 'D' has been characterized by slow growth. In 2016 the population of Electoral Area 'D' was 4,044 persons, with Ranchero/Deep Creek accounting for 1,516 persons or approximately of 37% of Electoral Area 'D'. The CSRD (including member municipalities) has a population of 51,366 with Electoral Area 'D' representing approximately 8% of the total and Ranchero/Deep Creek representing approximately 3% of the total.

Growth trends for the Plan area actually indicate a slight population decline of 2%, or approximately 29 persons between 2001 and 2016 (Table 2.1).

Table 2.1 Ranchero - Deep Creek Population

**Source: Stats Canada, 2017*

Year	Population	Total Private Dwellings
2001	1,545	561
2006	1,471	594
2011	1,507	647
2016	1516	679

Table 2.2 indicates that the age profiles for the Electoral Area 'D' and the CSRD are fairly consistent with the province as a whole.

Table 2.2 Area 'D' Population Profile Comparison

**Source: Stats Canada, 2016*

Age	Area 'D'		CSRD		BC	
0-4 Years	215	4%	2,120	4%	205,650	5%
5-14 Years	420	11%	5,635	11%	500,415	13%
15-19 Years	310	8%	3,350	7%	270,275	7%
20-24 Years	160	4%	2,390	5%	244,065	6%
25-44 Years	1,035	26%	10,925	22%	1,174,775	30%
45-54 Years	710	18%	8,685	17%	599,705	15%
55-64 Years	595	15%	7,660	15%	379,750	10%
65-74 Years	350	9%	5,270	10%	286,710	7%
75-84 Years	180	4%	3,120	6%	186,345	5%
85 Years +	60	1%	970	2%	60,030	2%
Total	4,044	100%	51,366	100%	3,907,740	100%

2.4 NEW DEVELOPMENT ACTIVITY

Information on development activity in the Plan area was gathered for the period 2005-2015 to provide estimates for recent housing and population trends. Reliable statistics on recent development activity are difficult to obtain given that building permits are not issued within the Plan Area.

Table 2.4 New Development Activity 2005-2015

**Source: CSRD, 2016*

Year	New Dwellings	Subdivisions	Lots Created
2005	8	2	2
2006	3	1	1
2007	5	6	10
2008	5	4	4
2009	7	3	3
2010	8	2	2
2011	6	4	4
2012	3	2	8
2013	3	2	2
2014	6	2	2
2015	9	1	1
Total	63	29	39
Average	5.7	2.6	3.5

Information based upon the CSRD house numbering program indicates that new house numbers were issued for an average of 5.7 new dwellings per year for the years 2005-2015 and that subdivisions accounted for the creation of 39 new lots in that same time, as shown on Table 2.4. It should be noted, however, the number of house numbers assigned is only an indicator of housing starts since there is no building inspection in the plan area.

Given the existing vacant parcel count (excluding Crown lands) at about 61 parcels and assuming a continued new housing unit rate of approximately 5.7 per year, and number of new lots created at about 3.5 per year, it is expected there will be enough vacant parcels to accommodate close to 25 years of new development.

There is an uncertainty regarding both the availability and development suitability of existing vacant parcels. A large number of these vacant parcels may not be available for immediate use due to challenging topography or other constraints. In addition, there is the potential for future subdivision which may increase the number of vacant parcels.

2.5 DEMAND CONSIDERATIONS

The major factors influencing future growth and development in the Plan Area include: continued growth in adjacent municipalities, the desire for a rural lifestyle, and rising property costs in adjacent jurisdictions.

The anticipated housing needs over the next five years, as informed by population projections and previous development activity, can be met through the infilling of vacant parcels, new subdivisions and other policies noted in Section 3 of this Plan.

People continue to be attracted by the rural character of the area and would like to see the area retain its rural character and natural environmental qualities. Little is known about the aquifer and hydrologic regime that services most of the Plan Area but areas of concern were identified in a 2009 groundwater project. Section 4.1 of this Plan (Environmentally Sensitive Resources) provides specific groundwater objectives and policies.

A demand has been identified for accommodating those with special needs in terms of new affordable housing development. Persons with special housing related needs may include, but are not limited to:

- individuals with physical or mental disabilities and their caregivers
- individuals leaving violent homes or relationships
- young families
- youth
- seniors who wish to remain in the community but do not want to subdivide their existing parcel in order to accommodate a second dwelling.

SECTION 3 - THE DEVELOPMENT STRATEGY

The Development Strategy is a key component of the Rancho/Deep Creek OCP and sets the parameters for development within the plan area. The development strategy provides a framework for directing development to appropriate locations within the Plan Area or to adjacent municipalities in order to minimize urban sprawl.

The strategy for this Plan is driven by the Community Values Statement. The Development Strategy is illustrated through mapped 'Land Use Designations' that match the written objectives and policies to land uses, densities and parcel sizes. The designations reflect both current and future land uses. These Land Use Designations are shown on Schedule 'B'.

Taking into consideration the other values identified in this OCP, this plan supports the provision of affordable housing, rental housing and special needs housing in any land use designation that allows residential uses.

3.1 DEVELOPMENT CRITERIA

In the Rancho/Deep Creek plan area, when considering an application to amend the OCP, rezone or subdivide land to accommodate a development, an applicant must show that the proposal:

1. reflects the Community Values Statement (Section 1.4) and objectives and policies of the Official Community Plan;
2. preserves and protects the rural character of the area and directs higher density development to the Rancho and Shaw Road areas;
3. protects watersheds and aquifers from degradation and pollution;
4. protects and promotes natural, environmental, and geographic features;
5. preserves, enhances, and provides useable parkland that provides access and linkages to public lands where appropriate;
6. proposes a comprehensive approach to the management and disposal of sewage and septage;
7. proposes a comprehensive approach to drainage including management of storm water, and prevention of slope instability – in accordance with Provincial best management practices;
8. preserves archaeological areas through adherence to the Provincial Heritage and Conservation Act, and;
9. includes best practice interface forest fire mitigation techniques for building and landscaping.

3.2 GENERAL PLANNING POLICIES

1. Prior to supporting any OCP redesignation or rezoning that will increase water use on a property, the CSRD may require a hydro-geological impact review and assessment on the quantity and quality of water resources as specified in the CSRD Development Approval Information Bylaw. A qualified professional engineer or geoscientist with proven knowledge and experience in groundwater management must provide a written statement, through a hydro-geological impact assessment, verifying the long term reliability of the water supply for the proposed development. The assessment must also verify that there will be no significant negative impacts on other water supplies and properties.
2. On land outside the ALR, zoning will establish the minimum size for parcels that may be subdivided pursuant to LGA section 514. Any new parcels created by subdivision under this section, and the remainder, be at least 1 ha or larger in size, unless approved by the Environmental Health Officer.
3. All development will be strongly encouraged to use best practice interface forest fire mitigation techniques for building and landscaping.
4. All new development will be required to include provisions for surface water runoff management and the collection and treatment of domestic wastewater in accordance with all Provincial requirements and best management practices.
5. Agricultural uses are supported in all designations within the ALR. Outside ALR lands, agricultural uses are supported to an intensity compatible with surrounding uses. On ALR lands, agricultural uses are subject to the Agricultural Land Commission Act and Regulations.
6. Home occupations are permitted as an accessory use in the Rural Holdings, Agriculture, Medium Holdings, and Rural Residential designations, provided that these uses are compatible with the character of the area, do not present a potential conflict with surrounding properties, and comply with pertinent bylaws and Acts. Home occupations generally refer to any occupation, profession or craft where either the occupation, profession or craft is accessory to the use of the single detached dwelling. Regulations regarding home occupations will be specified in the Zoning Bylaw.
7. One dwelling unit shall be permitted per lot and one secondary dwelling unit may be considered in the Rural Holdings, Agriculture, Medium Holdings, and Rural Residential designations subject to zoning. The size of the parcel and size of the secondary dwelling unit will be subject to zoning restrictions. The secondary dwelling unit will be subject to special provisions, including but not limited to:
 - (a) setbacks from buildings and property lines;
 - (b) the provision of required parking and access; and
 - (c) the provision of adequate servicing that meets Provincial water and sewer regulations.
8. Vacation Rentals allow the use of dwelling units for temporary accommodation in residential areas on a commercial basis and are regulated either by a temporary use permit or through the zoning bylaw. Vacation Rentals may be considered in the Rural Holdings, Agriculture, Medium Holdings, and Rural Residential designations but would be

subject to a re-zoning. Although not required, it is recommended that Vacations Rentals first be considered on a three year trail basis by the use of a Temporary Use Permit. Vacations Rentals shall:

- (a) not create an unacceptable level of negative impact on surrounding residential uses;
 - (b) comply with all applicable regulations of the Provincial Agricultural Land Commission when located within the Agricultural Land Reserve;
 - (c) be subject to local health authority requirements; and
 - (d) be subject to all Ministry of Transportation and Infrastructure permit requirements.
9. Bed and Breakfast residential operations are permitted in residential areas, and are regulated through the zoning bylaw. Bed and Breakfasts are subject to special provisions, including but not limited to:
- (a) should be limited to a maximum of three (3) let rooms accommodating up to two (2) persons per room per single detached dwelling;
 - (b) the residential character of the site is maintained;
 - (c) subject to the local health authority requirements;
 - (d) located in the principal structure only; and
 - (e) when located within the Agricultural Land Reserve shall comply within all applicable regulations of the Provincial Agricultural Land Commission.
10. Any proposed cannabis production facility will only be permitted on ALR land and regulated under the current zoning bylaw. Cannabis production facilities must be properly licenced and meet all federal and provincial health and safety requirements. Such facilities are expected to fit within the character of the area and not create any, security risks, nuisance odours, or excessive lighting or noise.

LAND USE DESIGNATIONS

3.3 RURAL AND RESOURCE (RSC)

This land use designation applies to Crown lands that are used and valued for agriculture, forestry, natural resource extraction, or environmental conservation opportunities. Rural and Resource lands represent approximately half of the land base in the Plan Area. It is recognized that certain matters considered in this section are beyond the jurisdiction of the CSRD.

OBJECTIVES

1. Maintain the renewable natural resource land base and protect it from activities that may diminish resource value and potential.
2. Encourage more comprehensive management of the resource land base.
3. Protect, conserve and enhance the quality and quantity of freshwater resources.
4. Protect the environment, natural habitat and aesthetic appeal of Rural and Resource lands.
5. Encourage and protect responsible outdoor recreational opportunities in accordance with the Area 'D' Parks Plan as noted in Section 6.1 and Schedule 'F' of this Plan.
6. Direct development to be compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).
7. Establish strong lines of communication between the CSRD, First Nations, and other levels of government that are responsible for managing Crown lands.
8. Forestry should be managed in accordance with the Okanagan Shuswap Land and Resource Management Plan (OSLRMP). The Ministry of Forests is encouraged to use its regulatory authority to ensure that best management practices are followed by logging operations. Section 5.2 of this plan provides further details.

POLICIES

1. Lands within the Rural and Resource designation are shown on Schedule 'B' as "RCS".
2. Lands within the Rural and Resource designation shall be maintained as parcels of at least 60 ha minimum.
3. Users must minimize the disturbance and pollution of watercourses, aquifers and the watershed.
4. Development within the Rural and Resource designation is to be limited to the greatest extent possible to maintain resources areas in their current natural state.

5. Support communication with and participation by First Nations communities in the management and development of Crown land, including consultation with First Nations regarding any proposed trails or other back-country alterations.
6. Upon implementation, soil removal and deposit will be subject to the Regional District's soil removal and deposit bylaw.

3.4 RURAL HOLDINGS (RH)

This land use designation applies to private land that may have some use and value for agriculture, forestry, natural resource extraction, or environmental conservation opportunities, as shown on schedule 'B'.

OBJECTIVES

1. Maintain the rural land base and protect it from activities that may diminish rural values and character.
2. Protect the environment and encourage comprehensive management of the rural land base.
3. Encourage and protect farm activities on productive or potential agricultural land including suitable agritourism opportunities and value-added agriculture.
4. Encourage and protect responsible outdoor recreational opportunities in accordance with the Electoral Area 'D' Parks Plan.
5. Direct development to be compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. Lands within the Rural Holdings designation are shown on Schedule 'B' as "RH".
2. Lands within the Rural Holdings designation shall be maintained as parcels of at least 60 ha minimum.
3. One secondary dwelling unit may be considered in the Medium Holdings designation, subject to zoning and proof of adequate water and sewer services that meet Provincial regulations.
4. Zoning regulations shall provide for a mix of residential lot sizes based upon the level of servicing available and character of the neighbourhood.
5. Recognize the existing two private camps located on the south side of Gardom Lake in the current zoning bylaw.

3.5 AGRICULTURE (AG)

This land use designation applies to lands that are used and valued for agriculture. All lands within the ALR are in this land use designation. The objectives and policies relating to these matters are intended to serve as indicators of community preference and assist senior levels of government in planning and decision making.

OBJECTIVES

1. Maintain the agricultural land base and protect it from activities that may diminish agricultural value and potential.
2. Encourage suitable agritourism opportunities and value-added agriculture.
3. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).
4. Encourage farmers in the Plan Area to follow the measures described in the Farm Practices Guidelines as outlined by the Ministry of Agriculture.

POLICIES

1. Lands within the Agriculture designation are shown as "AG" on Schedule 'B'.
2. Lands within the Agriculture designation shall be maintained as parcels of at least 60 ha.
3. One secondary dwelling unit may be considered in the Agriculture designation, subject to zoning and proof of adequate water and sewer services that meet Provincial regulations.
4. For lands within the ALR, the regulations and policies of the Agricultural Land Commission (ALC) apply. Approval must first be obtained from the ALC where land in the ALR is proposed for subdivision, a second dwelling unit, or a non-farm use.
5. The Agriculture land use designations encompass agricultural uses, and uses accessory to agriculture. Subject to the guidelines of the Agricultural Land Commission and the zoning bylaw, the following uses are appropriate in lands designated Agriculture: agri-tourism operations, and uses which will not affect the long-term agricultural capability of the land.
6. Recognize the existing Canoe Creek Golf Course in the current zoning bylaw.

3.6 MEDIUM HOLDINGS (MH)

This land use designation applies to large lots, not presently located within the ALR, and generally 8.0 ha or more in size as shown on Schedule 'B'. These lands are intended to provide for traditional rural pursuits and serve as a buffer between Rural and Resource, Rural Holdings, and Agricultural lands and the more densely developed Rural Residential lands of the Plan Area.

In this land use designation, larger residential parcel sizes are the typical form of development and residents in the area promote the retention of large parcel sizes to protect each individual property's privacy and rural quality of life. Medium Holdings lands are characterized by the suitability to accommodate un-serviced rural activities. These parcels typically have an adequate water supply and wastewater can be treated and disposed of through on-site ground disposal systems.

OBJECTIVES

1. Preserve the rural character of lands within the Plan Area.
2. Encourage farm activities on productive or potential agricultural lands including suitable agritourism opportunities and value-added agriculture.
3. Contain the extent of growth of urban and suburban lands.
4. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. Lands within the Medium Holdings designation are shown on as "MH" on Schedule 'B'.
2. Lands within the Medium Holdings designation shall have a minimum permitted parcel size of at least 8.0 ha.
3. Residential development in the Medium Holdings designation shall be permitted at a maximum density of 1 principal dwelling unit per ha. One secondary dwelling unit may be considered in the Medium Holdings designation, subject to zoning and proof of adequate water and sewer services that meet Provincial regulations.
4. Notwithstanding subsection 3.6, Policy 2, the property legally described as Lot A, Section 17, Township 19, Range 9, W6M KDYD, Plan KAP58363 will be zoned to permit subdivision of the property into no more than four (4) parcels.

3.7 RURAL RESIDENTIAL LANDS (RR)

This land use designation recognizes the existing pattern of smaller lots distributed throughout the Plan Area and the relatively higher density lots located primarily in Ranchero, Shaw Road and around Gardom Lake. Neighbourhood agricultural pursuits are supported in these areas provided that they are consistent with adjacent densities and land use. Additional higher density development will be supported in the Shaw Rd and Ranchero areas for affordable housing units.

only. Affordable market housing refers to less costly housing that is produced at the low to moderate price range of the market for the Ranchero and Shaw Road areas.

It is essential that further infilling be in compliance with Provincial health regulations. The 1 ha minimum permitted parcel size is the smallest parcel generally allowed under current health policies for parcels with on-site water and sewage disposal. This does not mean that all properties are suitable for on-site water supply and sewage disposal.

OBJECTIVES

1. Support efforts to enhance the aesthetic appeal of rural residential neighbourhoods.
2. Ensure that the rural residential areas with natural hazards are identified and guidelines are provided to protect properties and lives from these hazards.
3. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).
4. Encourage affordable and subsidized housing opportunities.

POLICIES

1. Lands within the Rural Residential designation are shown as "RR" on Schedule 'B'.
2. Zoning regulations shall provide for a mix of residential lot sizes based upon the level of servicing available and character of the neighbourhood.
3. Lands within the Rural Residential designation shall have a minimum permitted parcel size of at least 1 ha.
4. Residential development in the Rural Residential designation shall be permitted at a maximum density of 1 principal dwelling unit per ha. One secondary dwelling unit may be considered in the Rural Residential designation, subject to zoning and proof of adequate water and sewer services that meet Provincial regulations.
5. Existing higher density residential uses including: manufactured home parks, duplexes, and townhouses shall be recognized in the implementing bylaws.
6. Notwithstanding Policy 4, higher density residential uses may only be considered in the Ranchero and Shaw Road areas (shown on schedule 'E'), to provide *affordable market housing* and subsidized housing. These units include, but are not limited to: duplexes, triplexes, four-plexes, townhouses and manufactured home parks. Higher densities will not be considered for units other than affordable housing.

These affordable housing developments will be small scale and the maximum density will not exceed 15 dwelling units per ha with adequate water and sewer services that meet current Ministry of Environment Municipal Sewage Regulation Requirements. The above density is inclusive of secondary dwelling units. Further details are to be established in the zoning bylaw.

7. When connecting to a local water facility, any OCP redesignation, rezoning or subdivision applicant must have written confirmation from the local water facility that sufficient quantity and quality of potable water is available for the development before the CSRD Board will positively consider the application.

3.8 COMMERCIAL (C)

There is a limited Commercial area within the Ranchero neighbourhood, as shown on Schedule 'B'. The objectives and policies below are intended to guide the development of this area as a strong community focal point.

The area designated Commercial is intended to support a variety of "small scale" commercial, community and professional services in the Ranchero area. Small scale services are those which reflect the existing scale of commercial activities in Ranchero including, but not limited to, gas station, general store, restaurant, and repair shops. Existing commercial sites may require redevelopment to benefit the viability, form and character of the commercial area.

OBJECTIVES

1. Concentrate compatible uses within the Commercial designation.
2. Promote the provision of improved services (sanitary sewer, water and storm sewer) to parcels within the Commercial designation.
3. Provide controlled development of commercial uses in the Plan Area to support commercial development in the area that respects the area's individuality and characteristics.
4. Avoid conflicts between commercial uses and adjacent residential and agricultural uses.
5. Recommend that the type and scale of commercial development follows community preferences to better serve the needs of the local community.
6. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. Lands designated Commercial are shown as "C" on Schedule 'B'.
2. Lands within the Commercial designation shall have a minimum permitted parcel size of at least 1 ha.
3. Residential development in the Commercial designation shall be permitted at a maximum density of 1 principal dwelling unit per ha.
4. Zoning regulations shall provide for a mix of neighbourhood commercial uses and some accessory residential uses.

5. New commercial development shall only be located in Ranchero where adequate services and access are available, or in non-commercial areas through the use of Temporary Use Permits (Section 1.6.4).
6. All new redesignation and rezoning applications for commercial uses which would require additional sewer or water capacity and which are located in proximity to a community sewer system and a community water system must connect to that system.

3.9 INDUSTRIAL (ID)

Industrial activities are provided for under the Industrial land use designation. The designation provides for limited industrial land uses.

The areas designated Industrial support a limited number of small scale light industries in the Ranchero area including an auto wrecker and saw mill. Future additional light and small scale industrial uses may be considered, but the Plan recognizes that any future heavy and medium industrial development will be directed to existing settlement areas, such as Salmon Arm, Enderby, and Armstrong/Spallumcheen, which are better able to function as service centers.

OBJECTIVES

1. Recognize existing light industrial uses in the Plan Area.
2. Provide for small scale, light industrial activities servicing the needs of local residents.
3. Minimize land use incompatibility and conflicts between industry and surrounding land uses.
4. Discourage industrial activities that are considered noxious, polluting, and noisy or are otherwise detrimental to the environment, neighbouring properties and the community as a whole.
5. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. Lands within the Industrial designation are shown as "ID" on Schedule 'B'.
2. Lands within the Industrial designation shall have a minimum permitted parcel size of at least 1 ha.
3. Residential development in the Industrial designation shall be permitted at a maximum density of 1 principal dwelling unit per ha.
4. Zoning regulations shall provide for a mix of light or small scale industrial uses.
5. New industrial development shall only be located in areas designated as industrial or in

non-industrial areas through the use of Temporary Use Permits (Section 1.6.4).

6. All industrial development must be in scale with and appropriate to the character of the rural community and must not adversely affect the natural environment.
7. Direct expanding light industry, future medium and heavy industrial development to the adjacent urban communities that have the necessary infrastructure and support services.
8. All new rezoning applications for industrial uses which would require additional sewer or water capacity and which are located in proximity to a community sewer system and a community water system must connect to that system.
9. Consider small-scale light industrial development proposals that reflect the needs of the local community and provide local employment using the following criteria:
 - (a) impact on farm land;
 - (b) capability of accommodating on-site domestic water and sewage disposal;
 - (c) capability of the natural environment to support the proposed development;
 - (d) compatibility with adjacent land uses and designations, and the character of the existing area;
 - (e) susceptibility to natural hazards including but not limited to flooding, slope instability or wildfire risk;
 - (f) proximity and access to the existing road network;
 - (g) mitigation of visual impacts where development is proposed on hillsides and other visually sensitive areas;
 - (h) provision of solid screening or other mitigation works from adjacent land uses and designations to lessen its impact (visual, loading, noise, odour, parking, impacts, etc.);
 - (i) exhibits an attractive and safe streetscape by providing for adequate off-street parking requirements, on-site landscaping, and appropriate signage, and;
 - (j) will be encouraged to include provisions for surface water runoff management in accordance with all Provincial requirements and best management practices.

3.10 PUBLIC AND INSTITUTIONAL LANDS (PI)

Lands that are designated as Public and Institutional Lands in this OCP include, but are not limited to: schools, community halls, churches, senior complexes and lands provided for health and emergency services.

OBJECTIVES

1. Recognize established public and institutional uses, community facilities and services.
2. Provide for additional public and institutional services to existing and future residents and ensure that they are appropriately located.
3. Support development that is compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. Lands designated as Public and Institutional are shown as "PI" on Schedule 'B'.
2. Partnerships among residents, landowners, business owners, and government agencies to improve Public and Institutional Lands are encouraged and supported by this Plan.
3. New Public and Institutional developments shall be encouraged.

3.11 FORESHORE AND WATER

The Foreshore and Water designation arises from the potential impact that structures, particularly docks, mooring buoys, private boat launches, boathouses and other private moorage and lake recreation facilities can have on the natural environment of lakes in the Plan area.

OBJECTIVES

1. To acknowledge existing permitted moorage uses and provide limited opportunities for future moorage.

POLICIES

1. The Foreshore and Water designation is shown on as "FW" on Schedule B.
2. Moorage, including docks, may be considered only for existing and new fee-simple waterfront parcels.
3. New development proposals on the waterfront parcel can provide a maximum of 1 moorage space per:
 - (a) New waterfront parcel created; or
 - (b) 30 m of water frontage of the parent parcel; and
4. Moorage proposals will be located away from or redesigned to avoid negative impacts on adjacent structures and uses, including other docks, marinas, beach access points, parks, utilities, water intakes, etc.
5. Support for new waterfront proposals should consider the provision of related public amenities such as dedicated moorage spaces and facilities for public use, dedicated public accesses to the foreshore (including boat launches), waterfront park dedication, or similar amenities which enable greater public access and use of the foreshore and water.
6. Moorage should be located away from or be designed to have minimal impact on fish and riparian habitat.

3.12 PARKS AND PROTECTED AREAS (PK)

POLICIES

1. The Parks and Protected Areas designation includes federal, provincial, and regional parks, and associated park uses as shown on Schedule B. Section 6.1 provides Goals, Objectives and Policies for Parks and Protected Areas.
2. The Parks and Protected Areas designation is shown on as "PK" on Schedule B.

SECTION 4 - THE NATURAL ENVIRONMENT

The protection of environmentally sensitive areas is critically important to residents. Environmentally sensitive areas include land and water that are sensitive to natural and human interference.

In addition to the protection afforded through local government bylaws, the protection of environmentally sensitive features falls under the jurisdiction of Federal and Provincial agencies. Fisheries and Oceans Canada and the Provincial Ministries of Environment and Natural Resource Operations are responsible for protecting fisheries and water resources through legislation.

4.1 ENVIRONMENTALLY SENSITIVE RESOURCES

The Plan Area is split between the South Thompson Watershed and Okanagan Watershed. Water in the north-eastern portion of the plan area flows into the Shuswap River system, Shuswap Lake, and eventually the Fraser River. In the south-west, water flows from Deep Creek into the Okanagan watershed. Water resources in the Plan Area include the Deep Creek system, the Canoe Creek system and underground aquifers all of which are important for drainage and domestic consumption. The East slope of Mount Ida is a significant source of water.

Gardom Lake's surface and groundwater resources are particularly unique and important to the Plan Area, as residents rely on these resources for domestic water and agricultural irrigation. Gardom Lake is part of an enclosed drainage system with limited surface outflow and is unique in the Plan Area for both its environmental assets and its recreational opportunities. The enclosed nature of the drainage system makes this lake susceptible to potential negative impacts caused by contaminated runoff, septic infiltration and increased erosion. Best practice septic and storm water management is essential to ensure that runoff and infiltration do not impact the environmental integrity as well as the recreational appeal of this lake.

Other small lakes and ponds in the Plan Area are also recognized as environmental assets and protected accordingly.

Ensuring that sufficient water quantity and quality is available for new subdivisions is a critical requirement when reviewing subdivision applications. Meeting the service requirements under the CSRD's Subdivision Servicing Bylaw No. 641 is mandatory prior to any subdivision approval.

GOAL

To protect the sustainability of groundwater, and surface water supplies.

OBJECTIVES

1. Identify environmentally sensitive resources and protect all freshwater resources to maintain their natural habitat, environmental quality, quantity, aesthetic appeal, and recreational value.
2. Conserve and enhance the quality and quantity of freshwater sources for all agricultural and domestic uses.
3. Plan development in a manner that minimizes impact on surface water and

groundwater sources.

4. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. In consultation with current land owners the CSRD will use the environmental guidelines contained in the Ministry of Environment document, "Develop with Care: Guidelines for Urban and Rural Land Development in British Columbia" (2014), to identify lands and waters that deserve to be recognized as environmentally sensitive resources (see section 7 of this Plan).
2. All watercourses as defined in the Riparian Areas Regulation (RAR) and the *Fisheries Act* are designated as Development Permit Areas and will be protected in accordance with the Federal *Fisheries Act* and the Provincial *Fish Protection Act* requirements.
3. The CSRD shall not support development on potential environmentally sensitive resource lands unless a proper environmental study has been undertaken which proves the proposed development will not adversely affect these areas. The Development Approval Information Bylaw gives the CSRD the authority to require an applicant to provide information on the impact of the activity or development that is subject to the application.
4. The CSRD recommends that the Approving Officer require subdivisions to be designed to maintain the hydrologic regime of streams and wetlands while providing sufficient drainage in a manner which does not interfere with groundwater recharge, destabilize the ground or allow the intrusion of sediment into natural watercourses, streams, lakes, and wetlands.
5. All new subdivisions, prior to approval, will be required to meet the servicing requirements in CSRD Subdivision Servicing Bylaw No. 641
6. Prior to supporting any OCP redesignation or rezoning that will increase water use on a property, the CSRD may require a hydro-geological impact assessment on the quantity and quality of water resources. A qualified professional engineer or geoscientist with proven knowledge and experience in groundwater management must certify, provide a written statement through a hydro-geological impact assessment, verifying the long term reliability of the water supply for the proposed development. The assessment must also verify there will be no significant negative impacts on other water supplies and properties.
7. The CSRD shall not positively consider development proposals in an area serviced by an existing or proposed water utility, unless written confirmation is provided from the water utility supplying the potential development ensuring it will provide sufficient quantity and quality of potable water for the development with no significant impacts on other water supplies and properties.
8. The CSRD shall not approve any OCP redesignation, rezoning or development permit, near potential environmentally sensitive resources unless a suitable storm water management plan is presented to the CSRD ensuring that storm water drainage from development does not increase the peak flow run off into adjacent areas nor disrupt natural drainage patterns.

9. The CSRSD will catalogue environmental sensitive areas (ESAs) as they become identified through the development approval information process.
10. The CSRSD will begin a public education program about water conservation, watershed protection and proper septic system care for the plan area.
11. In recognition of the environmental significance of Gardom Lake, the CSRSD will work with residents around the lake, Interior Health and the Ministry of Environment towards zero effluent seepage to the lake from septic systems and agriculture as soon as possible. The CSRSD will also raise concerns about ditching practices in the immediate vicinity of Gardom Lake with the Ministry of Transportation and Infrastructure.

4.2 PROTECTION OF WILDLIFE, AQUATIC LIFE AND NATIVE PLANTS

A number of species at risk can be found in the Plan Area including the Western Painted Turtle, Great Blue Heron, the Flammulated Owl and freshwater molluscs that have been identified in and adjacent to Gardom Lake. The aquatic species at risk that occur in Gardom Lake highlight the sensitivity of this lake and other small lakes.

Historically Gardom Lake has been rich in wildlife, with a wide variety of species observed in the water, on its surface and along its shoreline. This diversity of wildlife, however, has been compromised in recent years with the introduction of several introduced species of aquatic life, including perch and small-mouth bass, and Yellow flag (yellow iris) along its shorelines. The Plan Area also is endowed with an abundance of rare flora.

Additional significant areas have been identified in the Area 'D' Parks Plan which could result in small community parks that are oriented towards greenbelt, wildlife corridors or environmental protection. This is explained in more detail in Section 6.1 (Parks and Protected Areas).

GOAL

To conserve and protect native wildlife, aquatic habitat and plants in the Plan Area.

OBJECTIVES

1. Support the establishment of wildlife and waterfowl reserves and wildlife corridors.
2. Support the identification and designation of significant native flora and fauna areas.
3. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).
4. The CSRSD supports the identification and designation of areas that protect native flora and fauna in perpetuity. In particular, the CSRSD supports initiatives associated with the following areas: Provincially protected areas & parks, ecological reserves, fisheries

reserves and hatcheries, wildlife refuges, waterfowl habitat, nature trusts, conservation covenants and CSRD parkland.

5. The Plan supports and encourages the restoration and enhancement of streams, lakes and wetlands and their riparian corridors wherever possible by community groups, corporate bodies or land owners.
5. The Plan supports and encourages the identification, retention and enhancement of wildlife corridors.
6. The Plan supports the efforts of Provincial and Federal levels of governments to deal with the issue of introduced aquatic species in Gardom Lake.

POLICIES

1. Habitat protection along rivers, streams, and wetland areas is strongly supported and may be complemented with CSRD parkland initiatives.
2. The CSRD will engage in a public awareness program about minimizing runoff to water bodies and streams from fertilizers, pesticides, pet waste and other contaminants.

4.3 NATURAL HAZARD AREAS

Natural hazard areas are sources of potentially dangerous chance events. Examples of natural hazards are: fires, floods, mass movement of land, landslides and earthquakes.

Due to the vast forested areas in Ranchero/Deep Creek, there exists the potential for interface forest fires. It is important that best practice interface fire protection building and landscaping techniques be strongly encouraged to mitigate the potential for loss of life, property and the environment as a result of forest fires.

Flood potential on lands adjoining watercourses, lakes, creeks and wetlands is also a reality for lands in the Plan area.

Steep areas are more susceptible to mass movements of land, such as rock falls and landslides. The diversion of water and the removal of vegetation may destabilize slopes or adjacent slopes and consequently result in failure. The threat of landslides is a concern where development may occur near or below potentially unstable slopes. Landslides can also be triggered by inappropriate details of construction and location.

Significant seismic activity is a remote possibility within the Plan Area. The majority of the CSRD is classified as a Zone 1 area according to the Provincial Seismic Zoning Map. This indicates that the area is at low risk for seismic activity.

Other areas, locations and conditions may exist but have so far not been identified. Mapping of hazardous areas will be developed and continued to be refined as mapping data and other information becomes available.

GOAL

To reduce the potential for loss of property and personal injury.

OBJECTIVES

1. Protect existing and new development from potentially hazardous conditions.
2. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. All areas with slopes in excess of 30% within the Plan Area shall be considered as potentially hazardous areas until detailed terrain hazard assessments (site specific or general mapping) have been undertaken.
2. The CSRD shall not support any rezoning or issuance of a Temporary Use Permit in the Plan Area on or near potentially hazardous areas unless the applicant provides evidence that measures can and will be taken to remediate the hazard, or render the development capable of withstanding the effects of the hazard and to protect adjacent properties from possible impacts.
3. For rezoning and Temporary Use Permit applications which apply to lands on or near potentially hazardous areas, the CSRD will require that a geotechnical report be prepared and a covenant be registered under Section 219 of the Land Title Act where a geotechnical report indicates that the land may only be used safely subject to the conditions contained in the report.
4. Strongly encourage best practice interface forest fire mitigation techniques for development to protect life, property and the environment.
5. Provide education on fire safety through a Coordinated Public Fire Safety Program.

4.4 CLIMATE CHANGE

Scientific consensus has confirmed that increasing emissions of human-caused greenhouse gases (GHG) are rapidly changing the earth's climate. Greenhouse gases refer to any or all of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocabrons, sulphur hexafluoride and any other substance prescribed by regulation. Globally, the impacts of climate change will be profound, and are already evident. Regionally, the potential impacts and vulnerabilities are less well documented, however they are a growing concern.

As one of 175 local governments that are signatory to the B.C. Climate Action Charter, the CSRD is committed to reducing GHGs and has agreed to take actions to achieve certain goals. In order to address growing concerns regarding climate change, B.C.'s *Local Government Act* was amended in 2008 to require all OCPs to set targets for the reduction of greenhouse gases, as well as policies and actions to achieve the targets (LGA s. 473). Key Provincial initiatives include: Bill 44 (2007) Greenhouse Gas Reduction Targets Act, BC Climate Action Plan, BC Energy Plan,

Bill 10 (2008) Housing Statutes Amendment Act, Bill 27 (2008) Local Government (Green Communities) Statutes Amendment Act, Community Action on Energy and Emissions (CAEE), Pacific Carbon Trust, and the Landfill Gas Management Regulation (2008).

Approaches to Setting Targets

In 2007, the BC Ministry of Environment launched a GHG reporting system called the Community Energy and Emissions Inventory (CEEI) to provide emissions inventories for municipalities and regional districts in BC. These reports capture annual community-wide energy consumption and GHG emissions estimates for three key sectors: on-road transportation, buildings, and solid waste. The inventories exclude emissions sources such as woodstoves, gas and diesel generators, boats, and propane. Estimates of GHG emissions caused by deforestation as a result of land use changes (settlement and agriculture) are available at the regional district level only.

For the unincorporated areas in the CSRD, the 2007 GHG Emissions Sources are as follows:

61% On-road Transportation
29.5% Buildings
9.5% Solid Waste

While no CEEI data has been collected specifically for the Plan Area a study has been conducted to determine total GHG emission for Electoral Area 'D.' The table below provides a profile of Electoral Area 'D' and the estimated emissions for 2007.

Table 4.1

Population: 3,899		Projected annual growth: 1.5%	
GHG emissions (total): 26,100 tonnes CO ₂ e		GHG emissions (per capita): 6.7 tonnes CO ₂ e	
Dwellings		Transportation	
Number of Dwellings	1,631	Number of Registered Passenger Vehicles	2,196
% of Single detached	84%	% Small Passenger Vehicles	25%
% of Multi-family	4%	% Large Passenger Vehicles	17%
Age distribution (% > 30yrs old)	56%	% Light Trucks, Vans, SUVs	58%

Source: CSRD Community Greenhouse Gas Emissions Strategy, 2010

A "business-as-usual" (BAU) forecast was developed for each Electoral Area to 2050. The forecasts are driven by population growth (as outlined in Table 4.1 above), but consider efficiency improvements expected as a result of senior government policy, which will occur regardless of action taken by the Regional District. Overall GHG emissions are *projected* to increase in Area 'D' by approximately 6% by 2030 under a BAU scenario.

Table 4.2. Estimated Business as Usual (BAU) energy and GHG forecast, 2030

BAU 2030	ENERGY [GJ]	GHGs [tonnes CO₂e]
Buildings	372,500	8,800
Vehicles	227,600	15,100
Solid Waste	-	3,500
TOTAL	600,100	27,400
PER CAPITA		4.9

Source: CSRD Community Greenhouse Gas Emissions Strategy, 2010

The challenge in rural areas is the availability of indicator data and the varying degrees of accuracy of the data in each sector. Electricity consumption for a defined area can be obtained from BC Hydro and it is very accurate, whereas “vehicle kilometres travelled”: (VKT) data is difficult to estimate. While there is no specific CEEI data for the Plan Area, the above baseline data is still helpful in understanding the current situation for Area 'D'.

OBJECTIVES

1. Understand the likely impacts and vulnerabilities of regional climate change within the plan area.
2. Strive to reduce greenhouse gas emissions measurably within the plan area.
3. Consider the impacts of climate change and greenhouse gas emissions in all land use decision-making.

POLICIES

1. Targets: Adopt a 10% reduction in GHG emissions by 2020 from 2007 levels and a 20% reduction in GHG emissions by 2030 from 2007 levels. If these targets are met it would signify a 25% per capita reduction by 2020 and a 45% per capita reduction by 2030.
2. Facilitate information exchange among local residents and conservation programs including:
 - Energy Efficient Building Strategy: More Action, Less Energy,
 - LiveSmart BC Program,
 - BC Hydro's Power Smart Program,
 - BC Hydro's Energy Saving Kits,
 - BC Hydro's Guides and Tips – Green Your Home,
 - EnerGuide Rating System (energy rating of 80 or higher for new homes),
 - Passive solar design, and
 - BC Living Water Smart.
3. In consultation with other jurisdictions within the watersheds of the Plan Area, undertake to:
 - Identify the potential impacts, risks and vulnerabilities regionally,
 - Identify and prioritize adaptive measures, and
 - Inventory and establish a monitoring process for GHG emissions.

4. Strive to encourage more compact and complete communities.
5. Encourage and support non-vehicular walkways and trails and alternative modes of transportation that are accessible and convenient, to help reduce vehicle dependency.
6. Encourage and support initiatives to upgrade wood-burning appliances through wood stove exchange programs.
7. Encourage reductions in building-related emissions for all new buildings and the retrofit of existing buildings.
8. Encourage the protection and restoration of natural areas and forest ecosystems.
9. Promote and support the expansion of local agriculture and food production, processing, and distribution.
10. Encourage businesses and employment that help to address GHG reduction.
11. Encourage local renewable energy generation, e.g., solar hot water technology.
12. Encourage employment opportunities that support GHG reduction, e.g., conducting energy audits for buildings, commercial composting operations.
13. Encourage and support sustainable infrastructure and use of resources, including water conservation and energy production.
14. Encourage the development of alternative transportation options such as walking and cycling within the Plan Area, and car sharing and shuttle bus services for commuters to other communities.
15. Encourage efficient vehicles and driving habits through education (e.g. anti-idling campaigns, web material).
16. Provide more opportunities for home-based business and industry to decrease dependence on automobiles in appropriate zones.
17. Support local food security through large and small scale agriculture, local food processing and local food consumption in appropriate zones.
18. Promote conservation of sensitive ecosystems and forested land—especially unfragmented areas.
19. Support the policies in the Solid Waste Management Plan to fulfill the vision that all economic activities in the CSRD will be consistent with a “Zero Waste” community.

SECTION 5 – NATURAL RESOURCE MANAGEMENT

5.1 AGRICULTURE

Existing productive farming areas and most of the undeveloped lands, with some agricultural capability within Rancho/Deep Creek plan area, are designated Agriculture. Lands within the Agricultural Land Reserve (ALR), shown on Schedule 'C', are subject to the *Agricultural Land Commission Act*. The mandate of the Provincial Agricultural Land Commission (ALC) is to preserve agricultural land and encourage farming. Non-agricultural development, including subdivision or non-farm use of these lands is not permitted without ALC approval. Therefore, lands designated in the ALR should be retained for agricultural purposes.

While regulations governing the ALR largely ensure that the land base is protected, problems may still develop at the interface between urbanizing areas and agricultural communities. *The Farm Practices Protection (Right to Farm) Act* ensures that bona fide agricultural operations, operating under normal farm practices, cannot be limited through zoning bylaws. This OCP supports agriculture and provides for buffer lands (designated Rural Holdings and Medium Holdings) to enhance land use compatibility in the Plan Area.

GOAL

To protect agricultural land both within and outside the ALR for agricultural based activities.

OBJECTIVES

1. Protect the agricultural land resources of the Plan Area for present and future food production and other agricultural purposes.
2. Recognize and protect the needs and activities of agricultural operations when considering development on adjacent lands.
3. Support farming practices that protect soil and water resources.
4. Encourage protection of the quantity and quality of the water supply, seek to improve water availability for irrigation purposes, and encourage the use of current best practices with respect to irrigation.
5. Encourage non-agricultural development away from agricultural lands.
6. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).
7. Encourage farmers in the Plan Area to follow the measures described in the British Columbia Farm Practices Guidelines as outlined by the Ministry of Agriculture.

POLICIES

1. This Plan supports the Agricultural Land Commission's mandate of preserving and encouraging the development of lands for agricultural purposes.

2. The CSRD encourages the retention of large land holdings within the Plan Area, including the ALR, to maintain future opportunities for farm use.
3. The CSRD discourages encroachment and fragmentation of farmland by non-farm related uses.
4. The location and construction of new roads, trails, utility or communication rights-of-way should be sited to avoid Agricultural lands wherever possible. Where unavoidable, these rights-of-way should be sited in a manner that will cause minimal impact on agricultural operations. Alignments should be established in consultation with affected landowners and the ALC.
5. Encourage adjacent property owners to cooperate in the establishment of fencing or buffers.
6. In the case of new developments adjacent to Agriculture lands, the CSRD strongly encourages the provision of adequate vegetative buffers to protect agricultural values and prevent encroachment.

5.2 FORESTRY

Forestry is a prominent land use in the Plan Area. Although most of the forest land within the Plan Area is Crown Land, there are also large areas of private holdings some of which may be regulated by the *Private Managed Forest Land Act*. Most of these lands are concentrated on Mount Ida and south and east of Gardom Lake. Existing forests are in various stages of maturity.

This Plan supports the protection of forestlands for timber production and value-added silviculture activities. Where objectives in this section relate to matters beyond the jurisdiction of the CSRD, these policies guide the Board in making recommendations to senior levels of government and private forest landowners in decisions for the management of forest lands.

GOAL

To support environmentally sensitive and sustainable practices on forest lands.

OBJECTIVES

1. Maintain the forested land base by supporting sustainable timber production and associated forestry management practices.
2. Protect environmentally sensitive areas, watersheds and water courses to prevent erosion, protect wildlife habitat, riparian areas and sources of water for domestic and agriculture uses.
3. Support appropriate and responsible recreational and educational uses.
4. Strongly encourage best practice interface forest fire mitigation techniques for development to protect life, property and the environment and limit access to the forests during times of extreme wildfire potential.

5. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).
6. Appropriate Provincial agencies are encouraged to:
 - (a) ensure the quantity and quality of fresh water within the drainage system of watercourses, streams, lakes and wetlands is not compromised;
 - (b) maintain the aesthetic appeal and visual integrity of the Plan Area;
 - (c) prevent disturbance of areas of unique vegetation or wildlife;
 - (d) use methods that do not increase, or contribute to, soil erosion or slope instability;
 - (e) use silviculture methods that promote healthy forests;
 - (f) use best practice interface forest fire mitigation techniques and minimize fire hazards;
 - (g) ensure reforestation in a timely manner; and
 - (h) promote and develop slash treatments that mitigate greenhouse gas emissions.
7. The CSRD will encourage Provincial leadership towards ensuring environmentally sound forestry practices.
8. Provincial and Federal governments are encouraged to protect environmentally sensitive areas.
9. Appropriate Provincial agencies shall be encouraged to ensure the viability of responsible outdoor recreation in the woodlands.

5.3 MINERAL & GRAVEL RESOURCES

The CSRD has only limited influence on the management of mineral and aggregate resource extraction, as decisions related to such uses are generally beyond the jurisdiction of the Regional Board. The objectives and policies of this section remain broad in nature to offer guidance to senior governments in their decision-making process, as part of the referral process.

The aggregate resource potential for the Plan Area is shown on Schedule 'D', which is intended to provide estimates of broad, regional aggregate distribution. Areas are ranked for their potential to host natural aggregate deposits (mainly gravel).

GOAL

1. Minimize conflicts between extraction activities and adjacent lands, watersheds and riparian areas.
2. Encourage the Ministry of Energy, Mines and Petroleum Resources to engage in public consultation when issuing, amending, or reviewing mining licences.
3. Encourage the Ministry of Energy, Mines and Petroleum Resources to engage in meaningful dialogue with the CSRD regarding mining licences.

OBJECTIVES

1. Support good conservation practices during mining operations so as not to jeopardize the long-term renewable resource potential of the area.
2. Encourage site rehabilitation and reclamation of damaged landscapes for subsequent productive use and environmental protection.
3. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).
4. When considering development in an area underlain by mineral resources, the feasibility of removing the resource should be adequately considered by the Province and the CSRD.
5. Prior to issuing a permit for a mining operation, the Province is encouraged to refer the application to the CSRD and the public and provide adequate consideration to:
 - (a) possible impacts on neighbouring residential and rural parcels and the natural environment; and,
 - (b) the potential impacts of resource removal on the quantity and quality of surface and groundwater at the local and watershed scale.
6. The CSRD recommends that environmentally sound reclamation and conservation practices be undertaken at all mineral and aggregate resource extraction operations to protect long-term resource potential in the Plan Area. Specifically, where a mine or related activities may cause significant disturbance to the surface of the land, the Province shall be encouraged to require that a performance bond be posted to ensure the proper reclamation of the damaged landscape under all relevant legislation.
7. Sand and gravel extraction should be undertaken in accordance with the best management practices of the Ministry of Energy, Mines and Petroleum Resources.

SECTION 6 – COMMUNITY RESOURCES

6.1 PARKS AND PROTECTED AREAS

The CSRD currently has only a few small undeveloped community parks dispersed throughout the rural residential areas in the Plan Area which are designated on Schedule 'B' as "PK". These parks were established as part of the requirements of property subdivision pursuant to Section 510 of the *Local Government Act*. Future parks obtained through subdivision or by other means are permitted in any land use designation without amendment to this OCP. A park acquisition reserve fund is also supported when cash-in-lieu of park dedication is chosen. The 13 park sites in the plan area, including present and proposed, are identified on Schedule 'B'.

Through the development of an Electoral Area 'D' Parks Plan and through the Parks Advisory Commission, residents have had the opportunity to identify additional park land that should be developed for the:

- (a) identification and protection of known streams, wetlands, natural areas, and wildlife corridors;
- (b) provision of access to lakes and streams for recreation purposes;
- (c) provision of linear walking trails and greenway alternatives beside roadways;
- (d) protection of historical features, and;
- (e) pursuit of outdoor recreational and leisure activities.

A more detailed description of the Park Classification System and Implementation Strategy is found in Schedule 'F.' This Official Community Plan seeks to implement the Parks Plan, and therefore the relevant excerpts in Schedule F have been updated and modified slightly for consistency with this plan and statutory requirements.

GOAL

To ensure suitable land is available to meet the active and passive recreational needs of the resident population and visitors to the area, as well as to protect significant natural and historical features of the area.

OBJECTIVES

1. Support the Electoral Area 'D' Parks Plan as it pertains to the Plan Area, including the Park Classification System and Implementation Strategy (Schedule 'F').
2. Ensure that parks and recreational uses form an integral part of the community infrastructure.
3. Support public open space opportunities on Provincial, Federal, CSRD and private lands.
4. Establish and improve public access to lakes and linear recreational connections along creeks and river corridors in appropriate non-environmentally sensitive locations.
5. Improve paths and walkway alternatives which link roadways to provide safe walking, bicycling, horseback riding, and other non-motorized transportation opportunities.

6. Encourage the availability of the area's Crown lands for recreational enjoyment and education.
7. Advise and inform the public that park land can be voluntarily donated to many levels of government and that park land and the development of parks can be funded through donations and tax appropriations. The public will also be informed that conservation covenants, nature trusts and pathway statutory right of ways and easements can be established on private land.
8. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. Lands within the Parks and Protected Areas designation are shown as "PK" on Schedule 'B'. Note that both existing and proposed park sites have been identified. For a complete list of existing and proposed sites refer to Schedule 'F'.
2. For the purposes of Section 510 of the *Local Government Act*, the entirety of the Electoral Area covered by this OCP is designated as having future park potential. Schedule 'F' of this Plan generally determines the provision of parkland within the Plan Area. In addition, the CSRD will consider the following policies, designations, locational attributes and type of parks when determining a potential park land dedication, or the Board's decision to require cash-in-lieu, under Section 191 of the *Local Government Act*.
 - Close proximity to settlement areas, other parks & trails, and bodies of water;
 - Safe distance from environmental hazard areas;
 - Average slope should be 20% or less;
 - Adequate accessibility:
 - (a) vehicular ingress and egress should meet or exceed Ministry of Transportation standards;
 - (b) in the case of trails and pedestrian-access only parks, there should be various linkages to and from the trail or park, with at least one linkage wide enough to allow for maintenance vehicle access;
 - Cultural or natural features of significance, including beaches, waterfalls, wetlands/marshes, viewsapes and heritage sites;
 - Potential for additional dedication of park land from subdivision applications of surrounding parcels;
 - Potential for recreation (active park), conservation (passive park) or enhancement of public access; and,
 - Compatibility with the strategic directions and sites identified in Schedule 'F' and the remaining policies of this section.
3. The CSRD shall endeavour to obtain parkland for community recreation, nature preservation, linear connections, or other parkland uses including the monitoring of alienation of Crown land and subdivisions to meet these objectives.
4. The CSRD shall encourage the Province and forest companies to protect the natural woodlands and landscape features of the area and provide opportunities for controlled

use of industrial logging roads during non-operation periods for outdoor recreation.

5. The CSRD shall encourage and support volunteer assistance in the development and management of community parks, stream keeper projects and trails.
6. Through the implementation of the OCP and the Area 'D' Parks Plan, the CSRD will strive to achieve the above objectives providing a better parkland and open space service, including trails, protected areas, access to lakes and streams, and developed recreational areas.
7. Consult with the public, Parks Advisory Commission, volunteer groups, service organizations and other local governments including the City of Salmon Arm, the North Okanagan Regional District and the District Municipality of Spallumcheen for inter-municipal park and open space initiatives.
8. CSRD parks will be managed in a manner respectful of First Nation's cultural heritage resources.

6.3 COMMUNITY FACILITIES

Community and institutional facilities in the Plan Area include the Ranchero/Deep Creek Fire Hall, Mennonite Church and School, the Farmers' Institute locations on Deep Creek and Mallory Roads, Anchor Academy, and the Beyond 12 Steps Healing Centre.

The Ranchero/Deep Creek Fire Department provides community fire protection to the Plan Area and to the adjacent Grandview Bench area of the North Okanagan Regional District (RDNO) Electoral Area 'F' through a cross boundary agreement. The CSRD and the Ranchero/Deep Creek Fire Department participate in Mutual Aid agreements with both RDNO Electoral Area 'F' and District Municipality of Spallumcheen.

There are community and institutional facilities found throughout the Plan Area but no new facilities proposed at this time. Higher density uses shall be encouraged to locate where appropriate in the Plan Area or in adjacent municipalities.

GOAL

Encourage the continuance of sufficient community facilities to service the present and future needs of residents.

OBJECTIVES

1. Encourage community use and support of community facilities.
2. Encourage the establishment of future community facilities to locate in appropriate areas.
3. Recognize the existing emergency services provided within the Plan Area.
4. Encourage improved coordination for providing emergency services for existing and future residents.

5. Support the strategic location of fire halls and future ambulance stations to serve the growing needs within the Plan Area.
6. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. The CSRD shall encourage new proposals for private institutional facilities in appropriate locations in the Plan Area.
2. The Plan recognizes the location of the existing fire hall and fully supports the valuable volunteer fire fighting and emergency services provided by the Rancho/Deep Creek Volunteer Fire Department and the assistance provided through mutual aid agreements by RDNO's Electoral Area 'F' and the District Municipality of Spallumcheen Fire services.
3. The CSRD will continue to support coordination between volunteer fire departments to ensure that adequate fire fighting services are able to accommodate future development within the Plan Area and to improve fire protection service to rural areas and encourage interface fire mitigation techniques in all building and landscaping.
4. The Plan recognizes and fully supports the valuable volunteer emergency services provided by the Rancho/Deep Creek First Responders.
5. The Plan encourages the CSRD to continue to fund the Shuswap Emergency Program (SEP) to provide for the training of volunteers and to participate in the development of emergency evacuation plans, disaster preparedness plans, in coordination with the appropriate Federal and Provincial government agencies.

6.4 COMMUNITY WATER AND SEWER SYSTEMS

There are eight registered water utilities in the Plan Area and there may be other systems that are not registered with Interior Health. These systems rely primarily on ground water (aquifers) for their supply and are located in the Shaw Road/Rancho area.

The Plan Area relies heavily on aquifer and surface water resources. The quantity of water available from these sources is undefined and the long-term viability of both quality and quantity is not fully understood. Precautions need to be taken to protect these water resources.

At this time there are no major water or sewer systems anticipated for the Plan Area. However, as development occurs, the need for such community systems will become more important. The CSRD will consider acquiring only those community water and sewer systems that have at least 50 connections or serve at least 50 parcels and are expected to be financially viable to own and operate. Shaw Road, Rancho and Gardom Lake may be areas in the future that will require these services. Such a proposal would require community consultation prior to proceeding.

GOAL

Ensure adequate water and sewer services are provided while protecting water resources and existing users prior to new development being approved. Encourage proper functioning and

maintenance of existing sewer systems through education and facilitation of disposal of septic sludge.

OBJECTIVES

1. Registration of private/public water and sewer utilities.
2. Local water purveyors will be encouraged to work with Interior Health, the Ministry of Environment and the CSRD to ensure water quantity and quality is sufficient and can be sustained for future development options.
3. Future publicly funded community sewer services are to be first proposed for those areas with environmental or public health concerns.
4. Development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. CSRD to take on a greater role in water quality preservation and sewage system regulation including:
 - (a) investigation of a comprehensive study (Liquid Waste Management Plan) to identify areas at risk and problems and solutions within the life of this plan;
 - (b) supporting environmentally safe and practical use of on-site sewage systems for the life of the system and supporting Provincial regulations and setbacks for on-site septic fields;
 - (c) supporting the provision of economical and legal facilities for disposal of septic tank sludge;
 - (d) supporting a public education program to help property owners understand and maintain their on-site septic systems;
 - (e) investigating an inventory and monitoring program for existing on-site septic systems in cooperation with Interior Health.
2. Developers and water utilities must, in consultation with Interior Health and MOE, ensure there is adequate quantity and quality of water available for any future development.
3. This Plan strongly recommends that all future subdivisions where proposed lots are smaller than one hectare be serviced with community water and sewer systems.
4. This Plan supports development of community sewer systems within the Plan Area for those areas with identified environmental or public health needs.
5. Future community infrastructure should be located where it will pose no significant negative impact on the environment.

6.5 TRANSPORTATION

Highway 97B and Deep Creek Road, shown on Schedule 'E', are the main vehicular routes in the Plan Area. Highway 97B enters the Plan Area at the City of Salmon Arm boundary at the north and travels south, turning east where it enters the North Okanagan Regional District (RDNO) east of Gardom Lake. Highway 97B is a controlled access highway and provides an important connection for vehicles between Shuswap and Okanagan communities. The intersection of Highway 97B and Hudson Road provides access to the Ranchero neighbourhood and commercial development along Mellor Frontage Road. No major new roads are anticipated at this time but the CSRD will work closely with MoTI in any future road development planning.

Deep Creek Road begins at the intersection with Highway 97B across from the Ranchero/Deep Creek Fire Hall, heads west then turns south and follows the Deep Creek watercourse. Deep Creek Road is mainly a north/south corridor. Gardom Lake and Mallory Road neighbourhoods can be accessed from Deep Creek Road or from Gardom Lake Road which intersects Highway 97B at the RDNO boundary.

GOAL

To promote safe and efficient motor vehicle, agricultural, bicycle, pedestrian and equestrian transportation throughout the Plan Area.

OBJECTIVES

1. To plan for the provision of a road network capable of safely servicing existing and future development.
1. To acquire land and encourage greenways and alternatives to motor vehicles including park dedication further to LGA s.510, such as cycling, walking and horse trails when considering rezoning or subdivision, along road ways.
2. Support development that is compatible with the Community Values (Section 1.4) and Development Guideline Criteria Statements (Section 3.1).

POLICIES

1. Traffic impact studies must be undertaken for major development proposals in order to:
 - (a) ensure safety and mobility are maintained through access management;
 - (b) minimize disruption to farming operations;
 - (c) ensure that projected traffic volumes do not reduce the present levels of existing roadway services including: bicycle allowances, water, sewage collection and disposal, drainage and other utilities, and negative effects are mitigated; and
 - (d) ensure that existing and future roads and alignments are designed with due consideration for the protection of fish and wildlife habitat and other environmentally sensitive areas.
2. Roads should be designed for safety and enhanced to accommodate use by pedestrians, cyclists and horses. It is encouraged that additional lanes, alternative trails or pathways are developed to accommodate non-motorized traffic in a safe manner.

3. Inform property owners and residents about Ministry of Transportation and Infrastructure Access Permit requirements for developments on all land use designations.
4. Encourage buffering consistent with the Provincial Agricultural Land Commission and the Ministry of Agriculture and Land specifications and accommodate the movement of agricultural machinery.
5. Work with the Ministry of Transportation and Infrastructure to discuss a Road Network Plan that is current, defines access management agreements where applicable, and coordinates mapping with the CSRD.

6.6 PUBLIC TRANSPORTATION

GOAL

To support the development of enhanced local area public transit.

OBJECTIVES

1. Support the development of public transportation opportunities for residents of Ranchero/Deep Creek.
2. Direct development to be compatible with the Community Values (Section 1.4) and Development Criteria (Section 3.1).

POLICIES

1. The CSRD shall encourage the development of alternative transportation opportunities such as mini-bus services and facilitating car-pooling and car-sharing.
2. In consultation with BC Transit and the City of Salmon Arm, the CSRD will investigate further development of the Shuswap Transit System to better meet the needs of Ranchero/Deep Creek residents.
3. The CSRD shall investigate the development of improved mini-bus services for the handicapped and elderly if ridership warrants it.

6.7 SOLID WASTE MANAGEMENT

There are currently no solid waste facilities or plans for any such facilities in the Plan Area. The CSRD, however, adopted a new Solid Waste Management Plan in 2009. Some of the highlights of the plan include:

- Vision: All economic activities in the CSRD will be consistent with a “Zero Waste” community.
- The CSRD will emphasize and encourage the 6R hierarchy (Rethink, Reduce, Reuse, Recycle, Recover, Manage Residuals), and continually strive towards a higher “R” in waste management practice.

- The CSRD will continue to finance the cost of residual waste disposal through a region-wide user pay system to encourage an equitable and sustainable approach to managing residuals.
- The CSRD will perform a carbon footprint assessment on all existing solid waste management programs as a benchmark to assess new program delivery.
- The CSRD will explore offset methods to achieve a carbon-neutral waste management system.
- The CSRD will review landfill gas recovery systems at all landfills to determine the feasibility of constructing such facilities to reduce fugitive methane.
- Where feasible, the CSRD will mitigate greenhouse gas emissions at all regional landfills and identify the resulting carbon credits.
- The CSRD will work with member municipalities to develop curbside collection programs to reduce residential transportation costs for disposal and recycling, provide a higher diversion rate, and reduce greenhouse gas emissions by reducing the total amount of traffic driving to transfer stations, landfills, and recycle depots.
- An Extended Producer Responsibility approach will shift end-of-life material management responsibilities from the general taxpayer to the manufacturers and consumers (Product Stewards) who produce and use the goods, encouraging them to consider environmental impacts when designing their products.

POLICIES

1. Support implementation of the policies in CSRD's amended Solid Waste Management Plan.
2. Encourage, through education, efficient and environmentally responsible solid waste disposal, especially reduction of waste, reuse of materials, recycling and backyard composting

SECTION 7- RIPARIAN AREAS REGULATION (RAR) DEVELOPMENT PERMIT AREA

PURPOSE

The Riparian Areas Regulation Development Permit Area (RAR DPA) is designated under the *Local Government Act* for the protection of the natural environment, its ecosystems and biological diversity.

AREA

The RAR DPA is comprised of Riparian assessment areas for fish habitat, which include all watercourses and adjacent lands shown on Provincial TRIM map series at 1:20,000, as well as unmapped watercourses.

As illustrated in Figure 7.1, the area comprises land:

- Within 30 m of the high water mark of the watercourse;
- Within 30 m of the top of the ravine bank in the case of a ravine less than 60 m wide; and
- Within 10 m of the top of a ravine bank for ravines 60 m or greater in width that link aquatic and terrestrial ecosystems that exert an influence on the watercourse.

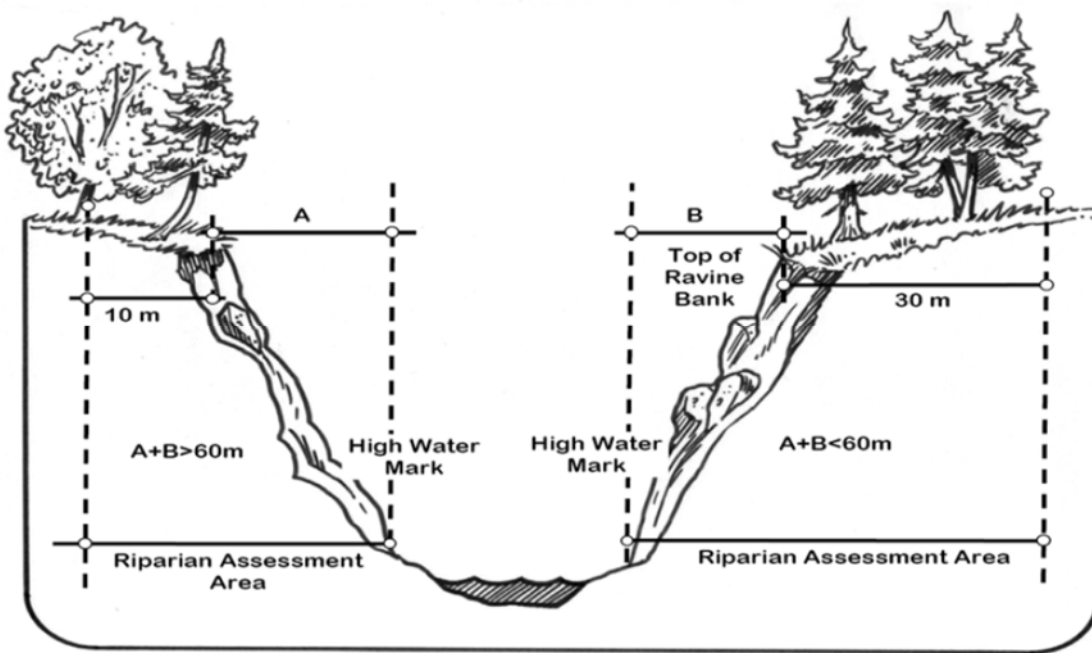


Figure 7.1

Unless the proposed development is clearly outside the riparian assessment area the location of the development shall be determined accurately by survey in relation to the RAR DPA to determine whether a development permit application is required.

The CSRD shall consider creating a policy to address information requirements for proposed developments that are not clearly shown to be outside of the Riparian Assessment Area.

JUSTIFICATION

The primary objective of the RAR DPA designation is to regulate development activities in watercourses and their riparian areas in order to preserve natural features, functions and conditions that support fish life processes (spawning, nursery, rearing, food supply and migration). Development impact on watercourses can be minimized by careful project examination and implementation of appropriate measures to preserve environmentally sensitive riparian areas.

GUIDELINES

A Development Permit must be obtained from the CSRD for any development on land or subdivision identified as a riparian assessment area within the RAR DPA except where exempted. Development requiring a Development Permit shall include, but may not be limited to, any of the following activities associated with or resulting from residential, commercial or industrial activities or ancillary activities, subject to local government powers under the *Local Government Act*:

- Removal, alteration, disruption or destruction of vegetation within 30m of a watercourse.
- Disturbance of soils, within 30 m of a watercourse;
- Construction or erection of buildings and structures within 30m of a watercourse;
- Creation of nonstructural impervious or semi-impervious surfaces within 30m of a watercourse.
- Flood protection works within 30 m of a watercourse;
- Construction of roads, trails, docks, wharves and bridges within 30m of a watercourse;
- Provision and maintenance of sewer and water services within 30m of a watercourse;
- Development of drainage systems within 30 m of a watercourse;
- Development of utility corridors within 30 m of a watercourse; and
- Subdivision as defined in the Land Title Act, and including the division of land into two or more parcels any part of which is within 30 m of a watercourse.

A Development Permit may be issued once the following guidelines have been met:

- Assessment by a Qualified Environmental Professional (QEP) in accordance with the Riparian Areas Regulation established by the Provincial and Federal Governments; and
- Provincial notification that a QEP has submitted a report certifying that he or she is qualified to carry out the assessment, that the assessment methods have been followed, and provides in their professional opinion that a lesser setback will not negatively affect the functioning of a watercourse or riparian area and that the criteria listed in the Riparian Areas Regulation has been fulfilled;

Exemptions: The RAR DPA does not apply to the following:

- Construction, alteration, addition, repair, demolition and maintenance of farm buildings;
- Farming activities;
- Institutional development containing no residential, commercial or industrial aspect;
- Reconstruction, renovation or repair of a legal permanent structure if the structure remains on its existing foundation in accordance with provisions of the relevant section of the *Local*

Government Act. Only if the existing foundation is moved or extended into a riparian assessment area would a RAR DPA be required;

- An area where the applicant can demonstrate that the conditions of the RAR DPA have already been satisfied, or a Development Permit for the same area has already been issued in the past and the conditions in the Development Permit have all been met, or the conditions addressed in the previous Development Permit will not be affected;
- A letter is provided by a QEP confirming that there is no visible channel or a water course to be identified:
- Mining activities, hydroelectric facilities and forestry (logging) activities; and
- Land classified as Private Managed Forest Land

SECTION 8 - IMPLEMENTATION

8.1 IMPLEMENTATION STRATEGY

The Ranchero/Deep Creek Official Community Plan has been prepared and adopted in accordance with the *Local Government Act*. Once adopted, it is intended that all bylaws enacted, permits issued and works undertaken will be consistent with the Official Community Plan.

The Plan will be implemented over a number of years through a combination of different types of initiatives, ranging from the amendment or creation of bylaws, improved communication with senior levels of government, and the direct involvement of residents and stakeholders.

Responsibility for initiating and undertaking these initiatives does not lie solely with the CSRD Board. Citizens, neighbourhoods, regional governments and senior governments must also initiate and undertake initiatives to implement the Plan. In many cases, collaboration and cooperation among all of the responsible parties will be required.

It is noted that the CSRD Board must weigh the wishes of communities with the priorities of the Region in deciding which implementation initiatives to commit resources to, and when to undertake the various implementation initiatives supported in the OCP.

The implementation strategy policies specify the anticipated timing of each implementation action. Immediate implementation actions are those actions that will be complete within one to two years of the adoption of the Ranchero/Deep Creek Official Community Plan as a bylaw. Short-term implementation actions are those actions that have an anticipated two to four year timeframe for completion. Continuous implementation actions are longer term or ongoing actions.

OBJECTIVES

1. Identify key actions to implement the Ranchero/Deep Creek Official Community Plan.
2. Identify responsible parties for key actions.
3. Identify timing of key actions.

POLICIES

1. The following table outlines the key actions required, parties responsible for key actions, and timing of each key action enabling the implementation of the Ranchero/Deep Creek Official Community Plan.

Section	Responsible Parties			Timing	Action Items
	Senior Gov't	CSRD	Individuals & Community		
1.6	✓	✓	✓	Immediate	Conduct a complete review of the zoning bylaw and other documents to ensure consistency with the OCP
4.1	✓	✓		Immediate	Pursue provincial involvement in the mapping of Environmentally Sensitive Areas (ESAs).
4.1	✓	✓	✓	Immediate & Continuous	Identify environmentally sensitive resources and protect all freshwater resources to maintain their natural habitat, environmental quality, quantity, aesthetic appeal, and recreational value.
4.1	✓	✓	✓	Immediate	Work with residents around the Gardom Lake and other water courses, Interior Health, Ministry of Environment towards zero effluent seepage to the lake from septic systems and agriculture as soon as possible.
4.1	✓	✓		Immediate	Raise concerns about ditching practices in the immediate vicinity of Gardom Lake with the Ministry of Transportation and Infrastructure
4.1	✓	✓	✓	Immediate & Continuous	Develop and circulate water conservation and watershed protection information
6.4	✓	✓		Immediate & Continuous	Develop and circulate septic system maintenance and upgrading information.
5.2	✓	✓	✓	Short-term & Continuous	Encourage and support ESA stewardship.
6.1	✓	✓	✓	Short-term	Improve paths and walkways adjacent to and linking roadways to provide safe walking, bicycling, horseback riding, and other non-motorized transportation opportunities.
7.0		✓		Short-term	Create a policy to address information requirements for proposed developments that are not clearly shown to be outside of the Riparian Assessment Area.
6.5	✓	✓	✓	Short-term	Work with the MoTI to discuss a Road Network Plan that is current, defines access management agreements where applicable, and coordinates mapping with the CSRD
6.6	✓	✓	✓	Short-term	Examine the feasibility of expanding the Shuswap Transit System to better meet the needs of Ranchero/Deep Creek residents.

	✓	✓	✓	Short-term	Begin formal OCP review within four years of its adoption.
1.3	✓	✓	✓	Continuous	Facilitate on-going community involvement in the implementation of the plan in response to the growth and development of the community by utilizing a full range of media
1.4		✓	✓	Continuous	Require development applicants to provide a comprehensive approach to drainage including storm water management and prevention of slope instability.
1.6		✓	✓	Continuous	The Regional District will continue to support and recognize the role of the appointed Advisory Planning Commission.
1.6	✓	✓	✓	Continuous	The CSRD will require development approval information pursuant to Section 484 of the <i>Local Government Act</i> .
4.4		✓	✓	Continuous	Support new developments which incorporate sustainable building design and infrastructure.
4.4	✓	✓	✓	Continuous	Participate in Provincial and Federal government initiatives that help reduce GHG emissions.
6.1		✓	✓	Continuous	Advise and inform the public that park land can be voluntarily donated to many levels of government and that park land and the development of parks can be created through donations and tax appropriations, conservation covenants, nature trusts and SRW/pathway easements
6.2	✓	✓		Continuous	Consult with School District No. 83 periodically in planning for future of school needs in the community.
		✓		Annuals	Produce and publish an annual update on OCP implementation progress

Schedule 'F' CSRD Electoral Area 'D' Parks Plan – Sections applicable to the OCP Plan Area

The following has been taken from the Electoral Area 'D' Parks Plan, not the complete plan but rather key sections which pertain to the Ranchero/Deep Creek OCP Plan Area, and modified for implementation through the OCP and consistency with statutory requirements.

CSRD PARKS CLASSIFICATION SYSTEM

Most park systems are predicated upon a classification system that defines the characteristics of each type of park category (e.g. community playgrounds, natural recreation parks, wilderness parks, etc.), and a set of park standards which help to define the minimally acceptable levels of service and facilities for each category. The park classification system below was agreed during public workshops to be appropriate for Electoral Area 'D':

- 1) Waterfront Park – provides access to and from the shores of Gardom Lake, and other suitable water bodies. Provides opportunities for beach activities, swimming, picnicking, canoeing/kayaking and where appropriate, boat launching.
- 2) Community Recreation Park – provides opportunities for intensive recreation including arenas, sports fields, and playgrounds, in a residential community setting.
- 3) Trail Corridors – a linear corridor that provides opportunities for non-motorized trail based activities including hiking, bicycling, horseback riding, cross country skiing, in a natural setting. Multi-purpose trails, including motorized use, may be designated where deemed appropriate.
- 4) Conservation Park – a large natural area that provides for low-impact outdoor recreation opportunities such as nature appreciation and wilderness hiking. Focus is more on conservation and protection of natural values of the area.
- 5) Special Feature Park – Protects and presents a regionally unique and significant natural and cultural feature such as First Nations or early settlement history, or provincially red listed species. Levels of visitor use and development are contingent upon the capacity of the “special feature” to withstand use.

A total of 13 present and proposed park sites in the OCP Plan Area have been identified in the five park classification categories for the CSRD Area 'D' Parks Plan. Where noted, some sites are identified as Public and Institutional on Schedule 'B' Land Use Designations. For certainty, park designations in relation to private lands are not intended to limit uses to public uses; these designations assist in identifying parkland dedication requirements under section 941 of the *Local Government Act* upon subdivision or redevelopment of the land, and other opportunities for dedication and acquisition as opportunities arise.

Gardom Lake Park can be accessed as follows: turn at Gardom Lake Road off Hwy. 97B, proceed for 4 km, and then turn left on Park Road. Approximately ½ km down Park Road, the park entrance is on the left. The park is an important part of the local community's recreational infrastructure. There is a swimming and picnic area, a ball diamond and activities such as bird watching, fishing (trout) and canoeing. The park includes two islands with old growth forest and a trail system through natural areas. This additional shoreline provides habitat for nesting birds and amphibians. Overall the park comprises 30 acres of provincial crown land that is under License of Occupation to the Deep Creek Recreational Society. Operating funds are provided through an annual grant-in-aid from the CSRD.

Musgrave Road is one of several public (MoTI) accesses to Gardom Lake. It would need some improvement for parking and boat launching. However, there are environmental concerns and this site will require careful analysis. Motorized boats are of particular concern. Other public accesses to Gardom Lake are undeveloped except for Teal Road which is too narrow and

adjacent residents have been inconvenienced by vehicles parking their trailers in front of private driveways.

Ranchero Elementary School grounds contain a playing field for soccer that doubles as a baseball field with a small backstop. There are also basketball hoops and playground equipment. A partnership could be sought with School District #83 to enable the local residents and their families to use the school facilities for community recreation purposes; alternatively, park dedication could be sought on subdivision or redevelopment of the property (Note: This site is identified as Public and Institutional on Schedule 'B' Land Use Designations).

Ranchero – Black Road is a 0.32 hectare strip of undeveloped land that averages 15 metres wide and is 215 metres long. The southern access is from Black Road just east of the junction with Mayfair Road. It is densely treed, but has an informal trail that could be improved as a walking/ hiking trail. The north end terminates at private property and any development beyond would require the approval of the property owners, until such time as acquisition is secured including through park or road dedication on subdivision or redevelopment.

Ranchero – Ranchero Drive East is a tiny 0.096 hectare site located immediately adjacent to Ranchero Elementary School in Ranchero. It is mostly grassed and thinly treed along its western edge. It is currently used by the school as a play area and as access to the back of the school. It is generally undistinguishable from the school yard. Dedication of lands from the school property could be used to expand this park.

Ranchero – Gannor Road is a 0.32 hectare parcel located on the east side of Gannor Road in Ranchero. It is vacant land that is mainly open field with trees around its southern perimeter and a rough road crossing it from Gannor Road.

Ranchero Parallel Trail, as with the Salmon River Parallel Trail, would provide residents with a safe trail beside the road for walking, biking and riding opportunities for themselves and their families. Ideally, this trail would extend along the east side of Highway 97B from Black Road in the north to Deep Creek Road in the South. Much of this trail is already in place informally and is used by children and local residents on a regular basis. No cost acquisition through park or road dedication on subdivision or redevelopment is preferred but other opportunities may be considered.

Ranchero – Highway 97B is located near the junction of Highway 97B and Auto Road. It is a 0.212 hectare site that has Canoe Creek flowing through it from south to north. It is undeveloped and because Canoe Creek is a fish bearing stream, and it is located adjacent to a busy highway, its development potential as a recreation park is limited.

Deep Creek Parallel Trail would essentially be a continuation of Ranchero Parallel Trail along the side of Deep Creek Road from the junction of Highway 97B to the southern boundary of the Regional District near Hullcar Road. No cost acquisition through park or road dedication on subdivision or redevelopment is preferred but other opportunities may be considered.

Mt. Ida Trails are located on the south side of Mt Ida and can be accessed via logging roads from both Deep Creek and Silver Creek. Specific trail routes remain to be determined, but there is high potential for loop trails with outstanding views.

Mallory Ridge is an upland area with high conservation values located to the south east of Gardom Lake. It averages about 700 metres ASL and reaches about 750 metres at its highest point. The area is particularly rich in tree and plant species because the dry southern interior bioregion meets the wetter interior bioregion and this transition encourages a great variety of vegetation to flourish. The area also includes a variety of rich habitats which allow many species of birds to successfully nest and raise their young. Mallory Ridge provides year round opportunities for hiking, mountain biking, horseback riding and cross country skiing or snow shoeing.

Waby Lake is a small fairly deep lake that effectively forms the headwaters of Crossman Creek. It is used as a waterfowl and songbird nesting and resting area during migration in the spring and the fall. It is completely surrounded by fields used for raising cattle and is located on private property. An Environmental Farm Plan is a tool that could help protect natural values; however, any protection or restoration of the natural habitat is dependent upon the property owner at this time. No cost acquisition of the lake itself and adjacent lands, including access, through park dedication on subdivision or redevelopment is preferred but other opportunities may be considered.

Deep Creek Community Hall is an old community hall owned by the Deep Creek Farmer's Institute. It is located at 634 Deep Creek Road at the junction of School House Road about 4.6 km from Highway 97B. It serves today as an occasional meeting hall, but is in need of repairs and upgrading to modern standards. Its actual historical significance remains to be determined. (Note: This site is identified as Public and Institutional on Schedule 'B' Land Use Designations).

Local communities will be consulted to determine specific interests such as baseball or soccer, playgrounds, or other priorities to meet their particular needs. Most proposed sites are owned by the Province, CSRD, local School Boards or are community owned; therefore acquisition costs will likely be modest. For private lands, no cost acquisition through park or road dedication on subdivision or redevelopment is preferred but other opportunities may be considered. Development and maintenance costs will vary greatly depending on the stated needs of the respective communities.

The **13** parks and trails listed above have been identified in the Plan Area through the Parks planning process. This is not a static list, and more sites are likely to be identified in the future, as the Parks Plan and the Official Community Plan is implemented. Clearly, immediate action cannot be taken on all proposed sites. The following factors were considered in assigning priorities for implementation:

- The perceived public interest and expressed desire to have a particular site established and developed as a park as identified in public meetings and open houses.
- Relative importance of each site compared to others within its park classification category and across categories.
- Current availability (or lack) of similar park settings as the proposed site.
- Current opportunities for acquisition or development.

The following priorities reflect the timeframes within which acquisition and development is recommended.

Priority	Implementation
High	Within 1-2 years
Medium	3-5 years
Low	> 5 years

The suggested priority for any park may change as site availability, park and road dedication, and other administrative opportunities arise in the future. Also, if private lands are acquired through measures other than no-cost dedications, the increased costs may force a reassessment of priorities in light of available funds. The following table summarizes the number of proposed parks in each of the priority categories.

Implementation Priority for Area 'D' Parks

Priority	IdPlan	IdPark	Park Name	Park Classification Category
2 High (within 1-2 years)	dC1	ddck0005	Mallory Ridge	Conservation
	dW3	ddck0001	Gardom Lake Park	Waterfront
4 Medium (3-5 years)	dT10	dmik0001	Mt. Ida Trails	Trail
	dT3	ddck0004	Deep Creek Parallel Trail	Trail
	dT2	drck0008	Ranchero Parallel Trail	Trail
	dW4	ddck0003	Musgrave Road	Waterfront
7 Low (> 5 years)	dR13	drck0007	Ranchero Elementary School	Recreation
	dC2	drck0009	Waby Lake	Conservation
	dR8	drck0001	Ranchero – Highway 97B	Recreation
	dR9	drck0003	Ranchero – Black Road	Recreation
	dR10	drck0002	Ranchero – Ranchero Dr. E.	Recreation
	dR11	drck0004	Ranchero – Gannor Road	Recreation
	dS2	ddck0002	Deep Creek Hall	Special Feature

Disclaimer: Parks and Trails on Private Property

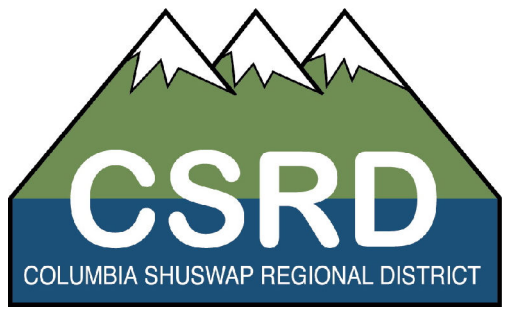
Any park or trail suggestions in the plan that are within or cross private property are subject to the approval of the owners and will not be designed or developed without their expressed consent and/or agreement. Portions of such lands may be acquired at no cost through dedication on subdivision or redevelopment.

Conclusion and Recommendations:

The residents of the communities in Electoral Area 'D' have exhibited enthusiasm for the preparation of this plan as they feel their communities have been overlooked in the provision of recreational opportunities and amenities for a long time. Local communities were extensively involved in the development of the vision for Electoral Area 'D' parks, and in identifying the candidate parks, their location and priority for development. The vision for their parks system emphasizes the development of local community parks to provide needed recreation amenities for public enjoyment, the development of parallel trails and local trails, the development and preservation of, public access to waterfront, and the recognition of the need and importance of protecting unique natural and cultural features found within Electoral Area 'D'.

The following recommendations relate specifically to the implementation of this plan.

1. Discussions should be initiated immediately with provincial staff of the agencies who are current owners of many of the properties identified in this study to negotiate long term leases/licenses or to make application for free crown grants.
2. Further investigations are needed to verify presence and determine precise locations of red and blue-listed species and their significance for possible inclusion within CSRD conservation parks.
3. Consultation should take place with local communities to identify priorities for facility development so that the specific needs of the communities can be met.
4. Further discussion should be held with recreational user groups to identify and prioritize preferred amenities and types of development for specific trails and park sites.
5. Policies and regulations should be developed that clarify appropriate activities and levels of service to be provided in each park.



Official Community Plan
Ranchero / Deep Creek
Area D - Bylaw 750

Schedule B Land Use
KeyMap *

Legend

- Lake
- Highways & Roads
- Unsurveyed Roads
- Electoral Areas Boundary
- Bylaw Boundary
- Parcel Boundary

OCP Designations

RSC - Rural Resource (60 ha)

AG - Agriculture (60 ha)

RH - Rural Holdings (60 ha)

MH - Medium Holdings (8 ha)

RR - Rural Residential (1 ha)

C - Commercial

ID - Industrial

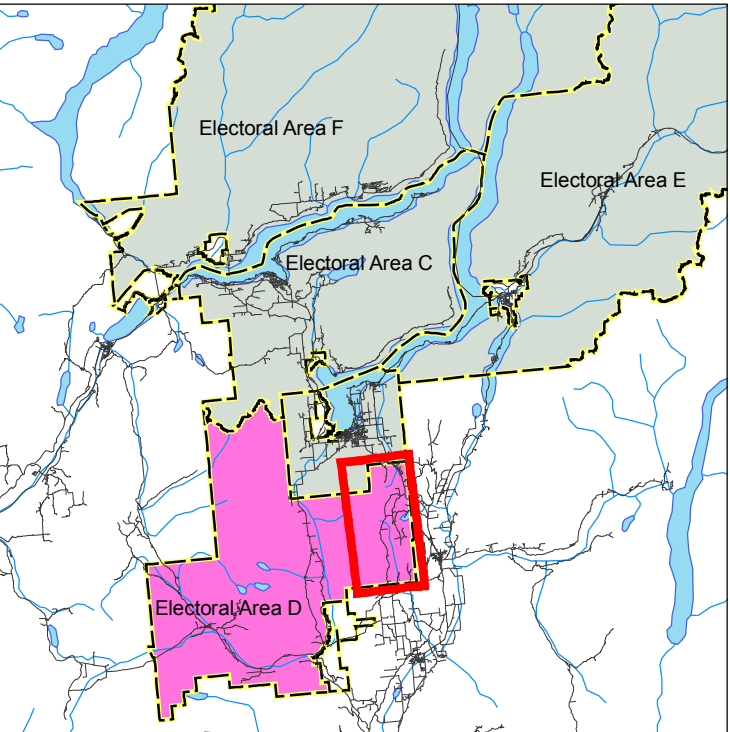
PI - Public and Institutional

PK - Parks and Protected Areas

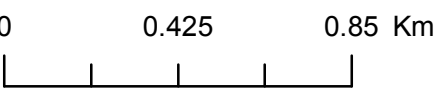
FW - Foreshore Water

* Please refer to enlarged maps for
identification of OCP boundaries.

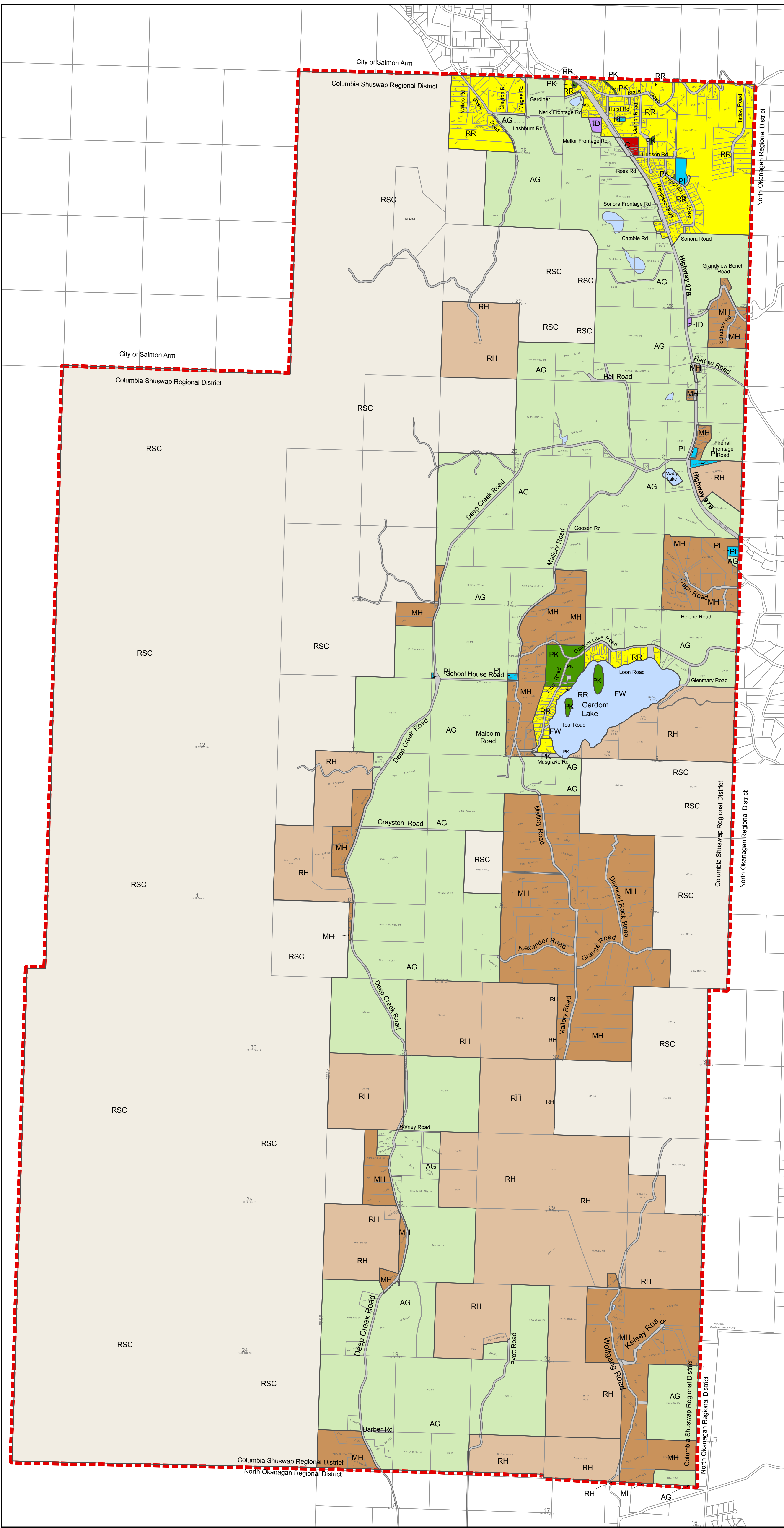
Overview Maps



1:18,500
Scale accurate if plotted on 24x36 inch paper



This information was compiled by the CSRD for
regulatory and internal reference purposes only.
No representation or warranty is made as to the
accuracy of this information.
File: OCP_AreaD_all_maps_sde.mxd
Nov 2, 2017



COLUMBIA SHUSWAP REGIONAL DISTRICT
RANCHERO / DEEP CREEK ZONING BYLAW NO. 751

WHEREAS the Board of the Columbia Shuswap Regional District wishes to adopt a zoning bylaw for the Ranchero / Deep Creek area of the Columbia Shuswap Regional District;

AND WHEREAS the *Local Government Act* provides that the Board may adopt a zoning bylaw;

NOW THEREFORE the Board of the Columbia Shuswap Regional District, in open meeting assembled, HEREBY ENACTS as follows:

1. Ranchero / Deep Creek Land Use Bylaw No. 2100 and amendments thereto are hereby repealed.
2. The following Schedules are attached hereto and form part of Ranchero / Deep Creek Zoning Bylaw No. 751:
 - (a) Schedule A, Ranchero / Deep Creek Zoning Bylaw No. 751 Text;
 - (b) Schedule B, Ranchero / Deep Creek Zoning Bylaw No. 751 Maps; and
 - (c) Schedule C, Ranchero / Deep Creek Zoning Bylaw No. 751 Mapsheets.

3. This bylaw may be cited as "Ranchero / Deep Creek Zoning Bylaw No. 751."

READ a first time this 21st day of January, 2016.

READ a second time, as amended, this 16th day of November, 2017.

READ a second time, as amended, this _____ day of _____, 2018.

PUBLIC HEARING held this _____ day of _____, 2018.

READ a third time this _____ day of _____, 2018.

Received the approval of the Ministry of Transportation and Infrastructure this _____ day of _____, 2018.

ADOPTED this _____ day of _____, 2018.

CHIEF ADMINISTRATIVE OFFICER

CHAIR

CERTIFIED true copy of Bylaw No. 751
as read a third time.

CERTIFIED true copy of Bylaw No. 751
as adopted.

Corporate Officer

Corporate Officer



Columbia Shuswap Regional District

Electoral Area D

Ranchero / Deep Creek

Zoning Bylaw No. 751

February 2018

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for double-sided printing.*

Amendments

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Schedule B	Ranchero / Deep Creek Zoning Bylaw No. 751 Overview Map
Schedule C	Ranchero / Deep Creek Zoning Bylaw No. 751 Individual Mapsheets

Amendments

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Part 1. Administration

1.1 Title

This *Bylaw* may be cited as the Ranchero / Deep Creek Zoning Bylaw No. 751.

1.2 Application

This *Bylaw* applies to the Ranchero / Deep Creek Zoning Bylaw No. 751 area shown in mapping Schedules B and C of this *Bylaw*.

1.3 Compliance with Other Legislation

Nothing in this *Bylaw* shall be taken to relieve any person from complying with the provisions of any other bylaw of the Columbia Shuswap Regional District (CSRD) or applicable provincial or federal statute or regulation.

1.4 Conformity

- .1 Land, including the airspace above it and the surface of water, *buildings* and *structures* may only be used, constructed, altered and located in compliance with this *Bylaw*. For certainty, in a *zone* every *use* is prohibited that is not expressly permitted in the *zone*.
- .2 *Subdivision* must be in compliance with this *Bylaw*.

1.5 Severability

If any provision of this *Bylaw* is determined to be invalid by a court, the provision must be severed and the remainder of this *Bylaw* is deemed to be valid.

1.6 Incorporation

Schedule B (Overview Maps) and Schedule C (Mapsheets) attached are part of this *Bylaw*.

1.7 Inspection

The Chief Administrative Officer, Manager of Development Services, a *Bylaw* Enforcement Officer, those persons retained by the CSRD or designated by the CSRD Board for inspection purposes, and Agents of the CSRD are authorized individually or in any combination to enter at all reasonable times on any *parcel* and into any *building* or *structure* to ascertain whether the provisions of this *Bylaw* are being observed.

1.8 Contravention of Bylaw

A person who:

- (a) contravenes this *Bylaw*;
- (b) causes or permits an act or thing to be done in contravention of this *Bylaw*;
- (c) neglects or omits to do a thing required by this *Bylaw*;
- (d) fails to comply with an order, direction or notice given under this *Bylaw*, or prevents or obstructs or attempts to obstruct the authorized entry of an officer onto property under Section 1.7;

commits an offence.

1.9 Offence

Each day of continuance of an offence under Section 1.8 constitutes a new and separate offence.

1.10 Penalty

Every person who commits an offence under this *Bylaw* is liable on summary conviction to the maximum fine as set out in the Offence Act and the cost of prosecution.

Part 2. Definitions

2.1 Definitions

The following words and phrases wherever they occur in this *Bylaw*, shall have the meaning assigned to them as follows:

A

ACCESSORY BUILDING or STRUCTURE means a detached *building* or *structure* located on the same *parcel* as the principal *building*, the *use* of which is subordinate, customarily incidental, and exclusively devoted to that of the principal *building*;

ACCESSORY USE is the *use* of land, *buildings* or *structures* that is customarily ancillary to and exclusively devoted to a *principal use* or *single detached dwelling*;

AFFORDABLE MARKET HOUSING means less costly housing that is produced at the low to moderate price range of the market;

AGGREGATE SALE is limited to the *use* of land, *buildings* or *structures* for the storage and sale of sand, gravel, rock, earth or minerals, but does not include the processing or washing of any of these materials;

AGRICULTURE is the *use* of land, *buildings* or *structures* for conducting a farm operation as defined by the Farm Practices Protection (Right to Farm) Act (FPPA);

AGRICULTURE, LIMITED is the *use* of land, *buildings* or *structures* for the growing, rearing, producing, and harvesting of agricultural products. The keeping of animals is permitted in concentrations of one (1) *animal unit* or less per hectare;

AGRI-TOURISM means a tourist activity, service or facility accessory to land that is classified as a farm under the Assessment Act, if the *use* is *temporary* and *seasonal* and promotes or markets farm products grown, raised or processed on the farm operation, but excludes accommodation;

AIRFIELD is an area of land set aside for the take-off, landing, and maintenance of aircraft;

ALR means Agricultural Land Reserve;

ANIMAL UNIT For the purpose of this *Bylaw*, the total number of animals making up one (1) *animal unit* shall be:

1 cow, or
2 pigs, or
2 donkeys, or
2 horses, or
2 ostriches or emus, or
4 llamas or alpacas, or
5 goats, or
5 sheep, or
10 lambs, or
10 turkeys or geese or ducks, or
25 rabbits, or
25 chickens (excluding roosters), or
25 doves or pigeon;

With the exception of lambs, offspring of a permitted animal are not counted as part of an *animal unit* until they reach reproductive age;

ASSISTED LIVING HOUSING means housing intended for both independent and semi-independent living in the form of either multiple *dwelling units*, or *sleeping units*, within which is provided for the exclusive use of the occupants, their families and guests, daily common meal preparation using commercial cooking facilities, dining area and laundry facilities. *Assisted living housing* may or may not accommodate health services such as nursing care, home support, rehabilitative and transportation services.

B

BACKCOUNTRY RECREATION is the *use* of land, not immediately accessible by vehicle, for outdoor recreational activities including, but not limited to: hiking, horseback riding, mountain biking, skiing, or snowmobiling;

BED AND BREAKFAST is the *use* of not more than three (3) *guest rooms* within a principal *single detached dwelling* to provide *temporary* accommodation to the traveling public, and includes food service to guests;

BERTH is a moorage space for a single *boat* at a *floating dock*;

BOAT is a small vessel propelled on water by oars, paddles, sails, or a motor;

BUILDING is a particular type of *structure* used or intended for supporting or sheltering a *use* or occupancy but does not include a tent, yurt, *recreational vehicle* or *park model*;

BYLAW is the Ranchero / Deep Creek Zoning Bylaw No. 751;

C

CAMPING SPACE is the *use* of land in a *private campground* for one *camping unit*;

CAMPING UNIT is one *recreational vehicle*, yurt, or one camping tent. *Park models* are not considered *camping units*;

CANNABIS means all parts of the genus cannabis whether growing or not, the seed or clone of such plants, including derivatives and products containing cannabis;

CANNABIS PRODUCTION FACILITY means the *use* of land, *buildings* or *structures* for: research and development; testing; cultivation; production; administration; storage; packaging; labeling; or distribution, of *cannabis* and related substances;

CEMETERY is the *use* of land, *buildings* or *structures* for the internment of human or animal remains and includes burial grounds, mausoleum, memorial park;

CHILD CARE FACILITY is any facility licensed under the Community Care and Assisted Living Act, as amended from time to time, that provides child care in accordance with the Act;

CHILD CARE FACILITY, IN-HOME is any facility licensed under the Community Care and Assisted Living Act, as amended from time to time, that provides in-home child care in accordance with the Act;

CIVIC FACILITY means premises in which government services are provided to the public including a public health facility, fire hall, *library*, post office, public works yard, public health centre, ambulance or police station;

COMMERCIAL means the *use* of land, *buildings* or *structures* for the purpose of buying and selling commodities, and supplying services;

COMMERCIAL LODGING means a *building* used for the *temporary* accommodation or the traveling public, including hotels, inns, hostels, motels and lodges and may contain *accessory* assembly, commerce, entertainment, indoor recreation, and *eating and drinking establishments*;

COMMUNITY CARE FACILITY means any facility licensed under the Community Care and Assisted Living Act as amended from time to time that provides personal care, supervision, social or education training or physical or mental rehabilitative therapy, with or without charge, to persons not related by blood or marriage to an operator of the facility;

COMMUNITY HALL is a *building* or part of a *building* designed for, or intended to be used by the public for such purposes as civic meeting, educational meeting, political meetings, recreational activities or social activities and may include banquet facilities and a community kitchen;

COMMUNITY GARDEN is a piece of land that is collectively developed, cultivated, gardened, or maintained by a group of people;

COMMUNITY MARKET is the *use* of land, *buildings* or *structures* for the purposes of a group of stalls or booths intended to be used by farmers or other vendors to sell their products directly to customers;

COMMUNITY SEWER SYSTEM is a sewage collection, treatment and disposal system serving 50 or more connections, or *parcels*. Facilities may include wastewater treatment (disposal) plants and ancillary works, sanitary sewers and lift stations for the collection and treatment of wastewater, and the discharge or re-use or both of treated effluent wastewater and biosolids;

COMMUNITY WATER SYSTEM is a waterworks system serving 50 or more connections, or *parcels*. Facilities may include water treatment plants and ancillary, works, reservoirs, impoundments (dams), groundwater development (wells), and pumping stations for the collection, treatment, storage, and distribution of domestic potable water;

CSRD means Columbia Shuswap Regional District;

D

DENSITY is the number of residential *dwelling units* on a *parcel*, expressed in units per hectare or units per *parcel*;

DRIVING RANGE is the *use* of land, *buildings* or *structures* for practicing golf drives and shots, and does not include a *golf course* except where a permitted *golf course* includes a *driving range*;

DUPLEX is a singular *building* divided horizontally or vertically into two (2) *dwelling units*;

DWELLING UNIT means one (1) or more rooms in a detached *building* with self-contained eating, living, sleeping and sanitary facilities and not more than one *kitchen*, used or intended to be used as a residence for no more than one (1) *household*. *Dwelling unit* does not include *camping unit*, *park model*, or a *commercial lodging sleeping unit*;

E

EATING AND DRINKING ESTABLISHMENT means a facility where prepared foods and beverages are offered for sale to the public for consumption within the premises or off the site, such as

restaurants, neighborhood pubs, lounges, cafes, delicatessens, tea rooms, dining rooms, refreshment stands and take-out restaurants, and mobile catering food services;

EDUCATIONAL FACILITY means a building(s) including residences, *structures* and grounds associated with the operation of a school, college, university or training centre;

EVENT VENUE is the *use* of land, *buildings* or *structures* for the purpose of providing a commercially operated space that can hold events; including but not limited to parties, weddings, anniversaries, reunions, and concerts;

EXTERIOR SIDE PARCEL BOUNDARY is a *parcel* boundary, other than a *front parcel boundary* or a *rear parcel boundary*, common to the *parcel* and a *highway* other than a *walkway*;

F

FASCIA SIGNS means any *sign* painted on or attached to an exterior *building* wall, or any other permitted *structure*, on which a two dimensional representation may be placed, so that the *sign* does not extend more than 40 cm out from the wall or *structure* nor beyond the horizontal limits of the wall. Fascia signs may or may not be permanent. This definition includes banners, billboards and any other two dimensional medium;

FARM AND GARDEN SUPPLY is the *use* of land, *buildings* or *structures* for the growing and sale of plants and may also include the sale of farming and gardening equipment, and materials such as soil, bark mulch, fertilizer, and the storage of vehicles and equipment necessary to, and used in, the provision of farming and gardening services;

FENCE is a constructed barrier of any material or combination of materials erected to enclose or screen areas of land and specifically excludes *retaining structures* and *landscape retaining structures*. For the purpose of calculating *fence* height, any arch, arbor, trellis or pergola affixed to or supported by a fence shall be deemed part of the *fence*;

FINISHED GROUND ELEVATION means either a natural or altered ground level but shall not include areas artificially raised through the *use* of *retaining structures* unless the *retaining structure* provides a level ground area that is a minimum of 1.2 m wide measured from the face of the *building*; or earth piled against the *building* with a slope greater than 2:1 (horizontal to vertical);

FLOATING DOCK is a *structure* used for the purpose of mooring *boat(s)* which may include multiple berths but which does not include permanent physical links to shore or lakebed, except cables;

FLOOD CONSTRUCTION LEVEL means a designated flood level plus freeboard, or where a designated flood level cannot be determined, a specified height above a *natural boundary*, natural ground elevation, or any obstruction that could cause ponding;

FLOOD PROOFING PROTECTION means the installation of improvements, provided they are upland of the current *natural boundary*, that are specifically designed to prevent damage to existing natural earthen banks caused by the erosive effects of water and wave action by armouring the soil surface through the use of geotextile materials and some combination of rip-rap or other protective surfacing materials. *Retaining structures* and *landscape retaining structures* are not included under this definition;

FLOODPLAIN is a lowland area, whether dyked, floodproofed, or unprotected, which is at an elevation susceptible to flooding, as determined under Section 3.13 of this *Bylaw*;

FLOODPLAIN SETBACK means the required minimum distance from the *natural boundary* of a *watercourse*, lake, or other body of water to any landfill or structural support required to elevate a floor system or pad above the *flood construction level*, so as to maintain a floodway and allow for potential land erosion;

FORESHORE is the land between the *natural boundary* of a *lake* and the water;

FORESTRY is the growing, cultivating, protecting, harvesting, sorting or storage of forest products grown on the same site, and may include accessory auction, retail or wholesale of forest products grown on the same site, and the storage of harvesting equipment or supplies and temporary repair of such equipment used on the same site, but excludes the *manufacturing* of any forestry products;

FREE-STANDING SIGN is a *sign* which is supported independent of a *building*;

FRONT PARCEL BOUNDARY means the *parcel boundary* that is the shortest *parcel boundary* common to the lot and an abutting *highway* or access route in a bare land strata plan, and where in the case of a *panhandle lot* means the line separating the *panhandle driveway* from the main part of the *parcel*;

G

GOLF COURSE is the *use* of land, *buildings* or *structures* for playing golf and may include an administration *office*, *driving range*, clubhouse, *eating and drinking establishment*, pro shop, and other accessory facilities necessary for the operation of the golf course;

GROSS FLOOR AREA is the total area of all floors in a *building* measured to the outside face of exterior walls or, as applicable, the total area of all floors in a portion of a *building* in a particular *use*, measured to the outside face of the walls of the area of the *use*;

GUEST RANCH is the *use* of land, *buildings* or *structures* to provide tourists the opportunity to experience the daily operations of a working ranch, but does not include overnight accommodation or *event venue*;

GUEST ROOM means a sleeping room that does not include a *kitchen*, used or maintained for the *temporary* accommodation of an individual or individuals;

H

HABITABLE FLOOR SPACE means the sum total of the horizontal area of each floor of a *building* as measured from the inside surface of the outermost exterior wall, excluding uninhabitable and unusable areas such as garages and open airspace above stairwells and entryways.

HABITATION means the support of life processes within a *building*, including, but not limited to, sleeping, eating, food preparation, waste elimination, personal cleaning, and rest and relaxation areas;

HEIGHT is the vertical distance between the highest point of a *building* or *structure* and the lowest point of a *building* or *structure* where the *finished ground elevation* and the *building* meet, excluding localized depressions such as vehicle and pedestrian entrances to a maximum width of 6 m. The highest point excludes a mast, antenna, vent, chimney, elevator shaft, solar heating panel or similar structure that projects above the roof;

HEALTH SERVICES FACILITY means an establishment primarily engaged in providing medical services, or other health care services to individuals including: the offices of physicians, dentists, optometrists, physiotherapists, massage therapists, naturopaths, chiropractors, or similar services;

HIGHWAY includes a street, *road*, bridge or viaduct and any other way open to the *use* of the public;

HOME OCCUPATION is any *commercial* activity conducted accessory to a *residential use* on a property;

HORTICULTURE is the *use* of land, *buildings* or *structures* for growing flowers, fruits, vegetables, or other plants for domestic *use*;

HOUSEHOLD means people living together in one (1) *dwelling unit* using a common *kitchen*;

I

ILLUMINATED SIGN is a *sign* which emanates or reflects artificial light;

INTERIOR SIDE PARCEL BOUNDARY is a *parcel boundary* other than a *front parcel boundary* or a *rear parcel boundary* that is not common to a *highway* other than a lane or walkway;

K

KENNEL is any premise on which five (5) or more dogs (over the age of four [4] months), or more than one (1) litter of puppies (aged four [4] months or less) are kept;

KITCHEN means facilities used or designed to be used for the cooking or preparation of food;

L

LAKE is Gardom Lake or any other waterbody within the *Bylaw* area;

LANDSCAPING is any horticultural element designed to visually enhance a property;

LANDSCAPE RETAINING STRUCTURE means a specific type of *retaining structure*, the *use* or intended *use* of which is to hold back and resist, stabilize or support less than 1.2 m of retained material, such as an earthen bank;

LANDSCAPE SCREEN is an opaque or semi-opaque barrier formed by a row of shrubs, trees, by a *fence* or masonry wall or by a combination of these;

LOADING SPACE means a space located on a lot used for a commercial vehicle while loading or unloading goods and materials;

M

MANUFACTURING is the small-scale processing, manufacturing, fabricating or assembling of semi-finished or finished goods, products or equipment; the storage, cleaning, servicing, repairing or testing of materials, goods and equipment normally associated with light-industrial, business or *household use*. This *use* may include administrative *office* and warehousing;

MANUFACTURED HOME is a detached *dwelling unit*, that is factory built to comply with or exceed the CAN/CSA Z240 MH Series, "Mobile Homes";

MANUFACTURED HOME PARK is the *use* of land, *buildings* or *structures* that has been divided into *manufactured home spaces* and improved for placement of *manufactured homes* for permanent residential *use*;

MANUFACTURED HOME SPACE is the *use* of land within a *manufactured home park* for placement of one *manufactured home*;

MINI STORAGE is the *use* of land, *buildings* or *structures* to provide separate, individual self-storage units inside a *building*, each with a separate entrance designed to be rented or leased to the general public for private storage of personal goods, materials or equipment;

MULTIPLE-DWELLING is a *building* containing three or more *dwelling units* each of which is occupied or intended to be occupied as a permanent home or residence of not more than one *household*;

N

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

NAVIGATION is the *use* of land for the transportation of goods or people over water and includes watercraft recreation;

NUCLEUS COLONY means a colony of not more than five (5) removable frames primarily used for rearing and storing queen bees;

O

OFFICE is the *use* of land, *buildings* or *structures* for the purpose of carrying out an occupation or professional activity but does not include *retail sales*, industrial *uses*, *public assembly*, or *personal service use*;

ONSITE SEWAGE DISPOSAL SYSTEM is the collection, treatment and disposal of sewage to the ground on the *parcel* on which the sewage is generated, but does not include a *privy* or an outhouse;

OUTDOOR RECREATION FACILITY is the *use* of land, *buildings* or *structures* for outdoor recreation in conjunction with a *private educational camp facility*. Typical *uses* include, but are not limited to: playing field, hiking trails, climbing wall, zip-line, playground, and archery course. *Outdoor recreation facility* does not include *golf course* or *driving range*;

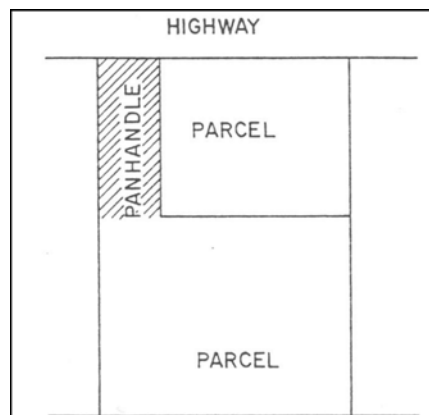
OUTDOOR SALES is the *use* of land, *buildings* or *structures* for outdoor retail sale of lumber; building products; landscaping materials; home, yard, garden and agricultural supplies; but does not include the sale of *park models*, *shipping containers*, or *manufactured homes*;

OUTDOOR STORAGE is the storage of equipment, goods, or materials in the open air where such storage of goods and materials does not involve the erection of permanent *structures*, *shipping containers*, or the material alteration of the existing state of the land;

P

PAD is a prepared surface on which blocks, posts, runners or strip footings are placed for the purpose of supporting a *manufactured home* or *park model*;

PANHANDLE LOT means a *parcel* that has its primary *highway* frontage through a narrow strip of land which projects to the *highway* from the main portion of the *parcel*. This narrow strip is an integral part of the *parcel* and is referred to as the *panhandle driveway* (shown hatched in the diagram below):



Panhandle lot and driveway

PANHANDLE DRIVEWAY means that portion of a *panhandle lot* that is the narrow strip fronting a *highway*;

PARCEL is any lot, block or other area in which land is held or into which it is subdivided, but does not include a *highway*;

PARCEL BOUNDARY means any boundary of a *parcel*;

PARCEL COVERAGE is the horizontal area within the vertical projection of the outermost edge of all *buildings* and *structures* (to the drip line of the roof) on a *parcel* and includes carports, swimming pools, covered patios, and decks, expressed as a percentage of the *parcel* area;

PARCEL WIDTH is the horizontal distance between the two *side parcel boundaries*, measured at the minimum *front setback* from the *front parcel boundary*. For a *reverse pie-shaped parcel*, the *parcel*

width is the horizontal distance between the two side boundaries measured at the minimum *rear parcel boundary setback*;

PARK is the *use* of land, *buildings* or *structures used* and operated for the recreation and enjoyment of the public, and where:

- (a) the land is dedicated as park by a plan deposited in the Land Title Office or operated as a park local service or extended service pursuant to Part 14 of the Local Government Act;
- (b) the land is under tenure from the crown for the purpose of a *park*;
- (c) the land is under tenure from a private property owner for the purpose of a *park*;
- (d) the land has been dedicated as a provincial park; or
- (e) the land has been dedicated as a national park;

PARK MODEL is a trailer or recreational unit which conforms to CSA Z241 standard for *recreational vehicles* and which has a *gross floor area* which does not exceed 50 m². A *park model* trailer shall not be considered a *dwelling unit* or *camping unit*;

PARKING AREA is one or more off-street *parking spaces* and includes circulation ways;

PARKING SPACE is an off-street space for the parking of one vehicle or bicycle exclusive of *parking area* circulation ways, driveways, ramps or obstructions;

PASSIVE RECREATION is the *use* of land for *outdoor recreation activities* that do not involve the *use* of *buildings*, *structures*, camping or motorized vehicles;

PERSONAL SERVICE is a *use* in a *building* which provides a service to the person including but not limited to hair dressing, esthetics, laundry, medical and dental practice, veterinarian, office, lawyer, accountant, and other similar professional practices;

PRINCIPAL USE is the main purpose that land, *buildings* or *structures* on a *parcel* are ordinarily used;

PRIVATE CAMPGROUND is the *use* of land, *buildings* or *structures* for the purpose of providing *seasonal temporary accommodation* in cabins, tents or *recreational vehicles* on *camping spaces*, and is not intended for *commercial lodging* or *use* by the travelling public. This *use* may include accessory facilities for eating and assembly purposes, washrooms, bathing and laundry facilities, entrance kiosk, campground manager's accommodation and is open only to members and their guests for a membership fee;

PRIVATE EDUCATIONAL CAMP FACILITY means lands, *buildings*, or *structures* used for recreation, eating, sleeping, religious, philanthropic, and education activities serving the needs of organizations or large groups and not intended for *commercial lodging* or *use* by the travelling public;

PRIVY is a small portable *building* that rests on or above the surface of the ground, has a bench with a hole or holes through which human excretion may be evacuated into a waterproof vault that forms an integral part of the built *structure* of the *building*;

PUBLIC ASSEMBLY FACILITY is the *use* of land, *buildings* or *structures* where people gather periodically for public, educational, cultural, religious, recreational, philanthropic or entertainment purposes;

PUBLIC UTILITY is the *use* of land, *highway*, *buildings* or *structures* for electrical, telephone, water, sewer, gas, cable television, telecommunications transmission facility (including towers), or other like services provided by government, or an authorized provider but does not include any office, administrative facilities, works, repair, maintenance or storage yards;

R

REAR PARCEL BOUNDARY is the *parcel boundary* that lies the most opposite to and is not connected to the *front parcel boundary* or, where the rear portion of the *parcel* is bounded by intersecting *side parcel boundaries*, it is the point of this intersection;

RECREATIONAL VEHICLE is a vehicular-type of portable *structure* on wheels, without permanent foundation, that can be towed, hauled or driven and that is primarily designed for *use* as *temporary* living accommodation for the purposes of recreation, camping and travel, including, but not limited to, travel trailers, truck campers, camper vans, tent trailers and self-propelled motor homes (does not include park model);

RECYCLING DROP-OFF FACILITY is the *use* of land, *buildings* or *structures* for the buying, collecting, sorting and short-term storage of bottles, cans, paper, cardboard, metal, plastic and similar recyclable materials where all storage is within enclosed *buildings* or bins;

REMOVABLE WALKWAY is a *structure* used for providing pedestrian access to and from a *floating dock* with no permanent physical links to shore;

RENTAL SHOP is the *use* of land, *buildings* or *structures* for the rental and sale of equipment, vehicles, boats, farm machinery and implements, and other merchandise; but not including *park models*, *manufactured homes*, and *shipping containers*;

RESIDENTIAL CAMPSITE is the *use* of land for one (1) *camping unit*, for *temporary* free accommodation on a non-commercial basis by guests of the residents of the *single detached dwelling* that is situated on the same *parcel*;

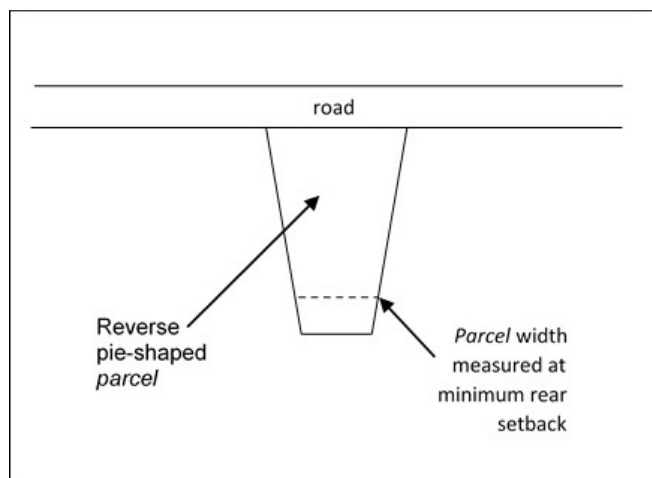
RESIDENTIAL USE is the *use* of land, *buildings* or *structures* for sleeping, eating and other activities generally associated with *habitation* for more than four (4) consecutive weeks in 365 days;

RESOURCE EXTRACTION is all related activities necessary for the extraction of sand, gravel, earth or mineralized rock found on or under land, but does not include post-extraction activities (secondary crushing, sorting, screening, washing) to render the extracted material marketable;

RETAIL STORE is the *use* of land, *buildings* or *structures* for the selling and display of merchandise and for the public and includes limited on-site storage or limited seasonal outdoor sales to support that store's operations. *Retail store* does not include an *eating and drinking establishment*, *personal services*, warehouse sales, heavy agricultural and industrial equipment sales, or outdoor storage;

RETAINING STRUCTURE means a specific type of *structure* that is subject to lateral earth pressure, is laterally unsupported at the top and retains more than 1.2 m of soil material at any point along its length, measured as the difference between the finished ground elevation at the top and bottom of the structure, and specifically excludes *landscape retaining structures* and retaining *structures* which are part of and connected structurally to a *building*;

REVERSE PIE-SHAPED PARCEL is a *parcel* which is generally configured such that its width at the *rear parcel boundary* is less than at its *front parcel boundary* (see diagram below);



Reverse Pie-Shaped Parcel

S

SEASONAL means no more than 26 weeks in a calendar year;

SECONDARY DWELLING UNIT is an additional, self-contained, *dwelling unit* that is accessory to the *principal dwelling* unit on a *parcel*. For clarity, *duplexes* and *multiple-dwellings*, boarding rooms and rooming houses are excluded from the definition of secondary dwelling unit;

SECONDARY USE is a *use* which is permitted only in conjunction with an existing *principal use*;

SERVICE STATION is the *use* of land, *buildings*, or *structures* for the retailing of motor fuels, *vehicle repair*, servicing, washing; but does not include *vehicle wrecking* or autobody repair and paint shops;

SETBACK means the required minimum distance between a *structure*, *building* or *use* and the respective *parcel boundary*;

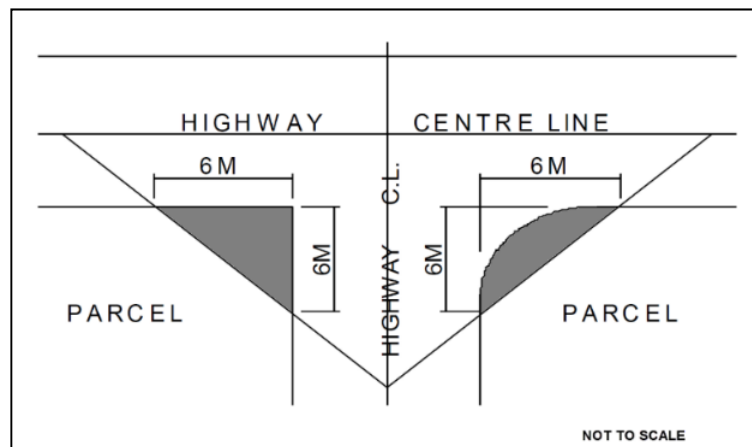
SHIPPING CONTAINER is a large portable metal or steel unit that is intended for the transport of materials, products, and/or goods from one mode of transport to another without unloading and reloading the contents of the container, whether or not it is actually used for such a purpose. *Shipping container* includes intermodal freight containers (ISO, shipping, cargo, and hi-cube containers; conex boxes; and sea cans), but does not include garbage bins/dumpsters, and recycling bins/receptacles;

SHARED WATERFRONT PARCEL includes waterfront and semi-waterfront *parcels*, and also includes *parcels* which are separated from the *natural boundary* of a *lake* only by common property associated with that *parcel*;

SIDE PARCEL BOUNDARY is a *parcel boundary* other than a *front parcel boundary* or a *rear parcel boundary*;

SIGN is any symbol, identification, description, illustration, contrivance, *structure*, or device visible from a public place which is intended to direct attention to a product, service, place, activity, person, institution, business, or solicitation;

SIGHT TRIANGLE means the area formed by a triangle in the angle formed by the right of way boundaries or boundaries produced and two (2) points on those boundaries 6 m from the point of intersection, as shown shaded in the diagram below;



Sight Triangle

SINGLE DETACHED DWELLING means a detached *building* containing only one (1) principle *dwelling unit* and, where permitted by this *Bylaw*, one (1) *secondary dwelling unit*. For the purposes of this *Bylaw*, a *manufactured home* is considered a single detached dwelling;

SKIRTING means detachable panels fitted between the ground surface and the base of the *manufactured home* to enclose the *pad*;

SLEEPING UNIT means one (1) or more rooms used or intended to be used as a residence, which is normally accessed only from a common corridor and will contain sleeping, living and washroom facilities, but does not contain an area or facilities for the preparation or serving of food and is located within a building or complex containing a common *kitchen* or dining facility;

SLEEPING UNIT, TEMPORARY is one or more rooms, with not more than one bedroom and without *kitchen* facilities, to be *used for temporary* accommodation;

SMALL-SCALE SAWMILL is a mill for sawing logs into dimensional lumber having a capacity of less than 10 m³ (4238 F.B.M.) per day;

STRUCTURE means anything constructed or erected, whether fixed to, supported by or sunk into land or water;

SUBDIVISION is a division of land as defined in the Land Title Act and a bare land subdivision as defined in the Strata Property Act or any subsequent Act or Acts which may be enacted in substitution thereof;

SWIMMING PLATFORM is a floating *structure* used for non-motorized recreational activities, such as swimming, diving and sun-bathing, but not *boat* mooring;

T

TEMPORARY means less than four (4) consecutive weeks;

U

USE is the purpose or function to which land, *buildings* or *structures* are put or are designed or intended to be put;

V

VACATION RENTAL is the *use* of a residential *dwelling unit* for *temporary* accommodation on a commercial basis;

VEHICLE REPAIR is the *use* of land, *buildings* or *structures* for the service or repair of automobiles, *boats*, or other vehicles but does not include *vehicle wrecking* or the sale of vehicles;

VEHICLE WRECKING is the *use* of land, *buildings* or *structures* for the dismantling and storage of vehicles and sales of used vehicle parts. *Vehicle wrecking* may also include *vehicle repair* provided it is subordinate to the *vehicle wrecking*;

W

WATERCOURSE is a natural depression with banks and a bed of 0.6 m or more below the surrounding land and one of the following:

- a) serving to give direction to a current of water for at least six (6) months of the year,
- b) having a drainage area of 2 km² or more,
- c) an area designated as a *watercourse* by the Province, and includes lake, pond, river, stream, creek, spring, ravine, swamp, and wetland;

WATERFRONT PARCEL is a *parcel* having a boundary, including a point, in common with the *natural boundary* of a *lake*;

WHOLESALE is the sale of goods to retail dealers or to other wholesale dealers or to contractors or manufacturers for resale or for incorporation into other products;

ZONE is an area delineated by this *Bylaw* for a specific use.

Part 3. General Regulations

3.1 Uses and Buildings Permitted in Each Zone

The following *uses* and *structures* are permitted in each *zone*, except as expressly prohibited:

- (a) the *use* of a *building* or part thereof as a temporary polling station, election official's headquarters, candidate's campaign office, and any other official, *temporary use* in connection with a federal, provincial, or municipal election, referendum or census;
- (b) *highway* and transportation rights-of-way held by, or on behalf of, a government;
- (c) landscaping and *horticulture*;
- (d) *accessory use*;
- (e) *park* (also permitted in all foreshore *zones*); and
- (f) *public utility*.

3.2 Setback Exemptions

The following *buildings* and *structures* are exempt from the minimum *setback* requirements of this *Bylaw*:

- (a) air conditioners and heat pumps provided they are not closer than 1 m from any *side parcel boundary*;
- (b) driveways, walkways, and exterior stairways not forming part of a *building*;
- (c) eaves and gutters, provided they are not closer than 1 m from any *parcel boundary*;
- (d) *fences* not exceeding 2.5 m in height (unless otherwise specified in Section 3.24) or *retaining structure* not exceeding 1.5 m above ground;
- (e) *landscape retaining structures*, provided that such *structures* must be separated from each other by a minimum 1.5 m distance measured horizontally from the face (or from the toe of the upper wall to the top face of the lower wall, if the *landscape retaining structures* are not vertical) of each *landscape retaining structure* and specifically excludes *landscape retaining structures* proposed to be constructed adjacent to a Section 42 road, as defined in the Transportation Act, or in the *sight triangle*.
- (f) *landscaping*;
- (g) open-air surfaced areas, including but not limited to, pavements, curbs, walks and patios;
- (h) rainwater harvesting *structures*, equipment and apparatus, including rain-barrels and cisterns which are 2.5 m or less in height;
- (i) *signs*, provided they are not closer than 1 m from any *parcel boundary*;
- (j) steps, provided they are not closer than 1 m from any *parcel boundary*;
- (k) utility poles, including poles used for area lighting; and
- (l) wheel chair ramps.

3.3 Setbacks from Highway No. 97B

Notwithstanding any other provisions of this *Bylaw*, no principal or *accessory buildings* or *structures* permitted within a *zone* shall be sited closer than 4.5 m from the existing Highway No. 97B right-of-way

A lesser *setback* from the centre line of the Highway 97B may be approved by the CSRD where relief has been obtained from the Regional Approving Officer, Ministry of Transportation and Infrastructure.

3.4 Visibility at Intersections

No *fences*, *signs*, plants, or *structures* higher than 0.6 m are permitted within the *sight triangle*.

3.5 Interior Side Parcel Boundary Setbacks on Bare Land Strata Parcels

The *interior side parcel boundary* requirements of this *Bylaw* shall not apply to bare land strata *parcels* under a registered plan pursuant to the Strata Properties Act where there is a common wall shared by two (2) or more *dwelling units*.

3.6 Height Regulation Exemptions

.1 The following *structures* are exempt from the *height* limitations specified in each *zone* in this *Bylaw*:

- (a) flag pole carrying provincial, federal or municipal flags
- (b) water tower or water storage tank that is part of a *community water system*;
- (c) spire, steeple, belfry;
- (d) chimney, smoke stack;
- (e) dome, cupola;
- (f) monument or sculpture;
- (g) industrial cranes;
- (h) antenna or mast for the transmission or reception of radio and television signal; and
- (i) *structures* and *buildings* required for the operation of a farm in accordance with the Farm Practices Protection (Right to Farm) Act.

.2 No exempted *structure*, other than *structures* and *buildings* required for the operation of a farm in accordance with the Farm Practices Protection (Right to Farm) Act; radio transmission towers, or water towers shall exceed 20 m in *height*;

3.7 Subdivisions to Provide Residence for a Relative

Lots proposed for *subdivision* pursuant to Section 514 of the Local Government Act shall be permitted provided that:

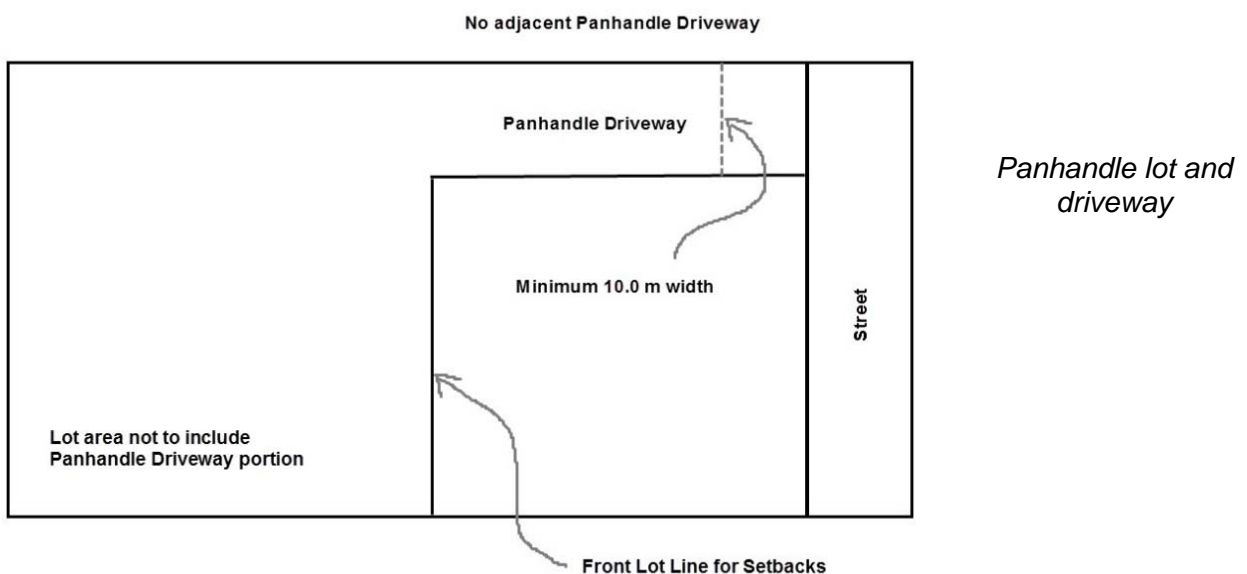
- (a) all new *parcels* (including remainders) created by *subdivision* are a minimum of 1 ha in size; and
- (b) all requirements of provincial legislation, including the ALC Act and ALC regulations, can be satisfied.

3.8 Subdivision for Panhandle lots

Where a *subdivision* application proposes to create a *panhandle lot* the *panhandle lot* must meet the following requirements:

- (a) The minimum width of the *panhandle driveway* is 10 m;
- (b) The *panhandle driveway* portion of the lot is not included in lot area calculation for minimum *parcel* size; and,
- (c) No more than two (2) *panhandle lots* shall be next to each other.

As illustrated in the following drawing:



3.9 Exemptions from Minimum Parcel Size Requirements

- .1 The minimum *parcel* size regulations for new *subdivisions* stated in Part 4 do not apply if all the requirements of this subsection are met:
 - (a) the *subdivision* occurs within a *parcel* that has two (2) or more zoning designations and occurs along a *zone* boundary.
 - (b) *parcel boundaries* are relocated to facilitate an existing development or improve a *subdivision* pattern;
 - (c) no additional *parcels* are created;
 - (d) all *parcels* are contiguous; and
 - (e) no *parcel* shall be enlarged to a size permitting further *subdivision*.
- .2 The minimum *parcel* size regulation for new *subdivisions* does not apply where a portion of the *parcel* is physically separated from the remainder of the *parcel* by a *highway* or other titled land provided that:
 - (a) no *parcel* created (including the remainder) has a *parcel* area of less than 1 ha;
 - (b) the *subdivision* is restricted to dividing the *parcel* along the *highway* or other titled land that physically separates the *parcel*; and
 - (c) the *parcels* were not registered as part of a reference, explanatory or *subdivision* plan in the Land Title Office after the adoption of this *Bylaw*.
- .3 Minimum *parcel* size regulations for new *subdivisions* do not apply to *parks*, *civic facilities*, or *public utilities* for which on-site water and septic servicing is not required.
- .4 Any homesite severance must be consistent with the ALC Act and the regulations of the ALC.

3.10 Bare Land Strata Plan Access Route

Despite any other provision of this *Bylaw*, for the purpose of a *setback*, a *highway* includes an access route within land subdivided as a bare land strata plan under the Strata Property Act.

3.11 Establishment of Floodplains

- .1 The following land is designated as *floodplain*:
 - (a) land below the *flood construction level*; and
 - (b) land within the *floodplain setback*.
- .2 The following *flood construction levels* apply:
 - (a) 1.5 m above the *natural boundary* of all *watercourses*

- .3 The *floodplain setback* is:
 - (a) 15 m from the *natural boundary* of any *watercourse*.

3.12 Measurement of Flood Construction Level & Floodplain Setback

- .1 The *flood construction level* is determined by measuring at a 90 degree angle to the *natural boundary* to a point where the elevation is the required elevation above the *natural boundary* as stated in subsection 3.11.2.
- .2 The *floodplain setback* is determined by measuring at a 90 degree angle to the *natural boundary* the distance stated in subsection 3.11.3.

3.13 Application of Floodplains

- .1 A *building* including a *manufactured home*, or *structure* must not be constructed, reconstructed, moved or extended into, or moved from place to place within a *floodplain setback*.
- .2 The underside of a floor system or top of concrete slab that is used for *habitation*, occupation, or the storage of goods which are susceptible to damage by floodwater must be above the *flood construction level*.
- .3 If landfill or structural support or both are used to comply with subsection 3.13.2, they must be protected against scour and erosion from flood flows, wave action, ice and other debris and not extend within the *floodplain setback*.
- .4 Furnaces and other fixed equipment susceptible to damage by floodwater must be above the *flood construction level*.
- .5 The Manager of Development Services or a person designated by the Regional Board may require that a *Surveyor Certificate* be submitted to the CSRD by the land and property owners to verify compliance with the *flood construction level* and *floodplain setback*.
- .6 The following are exempted from the requirements of subsection 3.13.2 as they apply to the *flood construction levels*:
 - (a) a renovation of an existing *building*, *manufactured home*, or *structure* that does not involve an addition to the exterior of the *building*, or *structure*;
 - (b) an addition to a *building*, *manufactured home*, or *structure* of less than 25% to a maximum of 100 m² of the *floor area* existing the date this *Bylaw* comes into force however the addition must be no lower in elevation than the floor existing the date this *Bylaw* comes into force;
 - (c) a carport or domestic garage;
 - (d) a *building* used for *agriculture*, excluding closed-sided livestock housing and a *dwelling unit*; and
 - (e) a farm *dwelling unit* that is located on a *parcel* 8 ha or larger within the ALR provided that:
 - (i) the underside of a wooden floor system;

- (ii) the top of a concrete slab;
- (iii) in the case of a *manufactured home*, the top of the *pad*; or
- (iv) the ground surface under an area *used* for *habitation*; and is no lower than 1 m above the natural ground elevation or no lower than the *flood construction level*, whichever is the lesser.

.7 The following are exempted from the requirements of subsections 3.13.1 and .2 as they apply to the *flood construction levels* and *floodplain setback*:

- (a) a *dock*
- (b) a floating *structure*
- (c) a *fence* constructed through which water can flow freely;
- (d) *flood proofing* protection works constructed to stabilize the shoreline or banks of a *watercourse*;
- (e) a roof overhang or cantilevered deck with no footings within the *setback* area;
- (f) ground level patios;
- (g) detached *accessory building* that do not include *habitation*;
- (h) exterior stairway not forming part of a *building* or attached in any way to another *structure*, provided it does not extend below the *parcel boundary*, or the *natural boundary*;
- (i) electrical or mechanical equipment not susceptible to damage by floodwater; and,
- (j) storage of goods not damageable by flood waters.

3.14 Accessory Building

- .1** An *accessory building* must be located on the same *parcel* as the *principal use* with which it relates and must only be used for an *accessory use*, *home occupation* or *secondary dwelling unit* provided these *uses* are permitted in the zone where the *accessory building* is located. Any *accessory building* used for *habitation* must meet the BC Building Code requirements for *habitation*.
- .2** *Accessory buildings* shall not be closer than 3 m to a *principal residential use building* or 4 m if the *accessory building* contains a *dwelling unit*.

3.15 Accessory Use

An *accessory use* must be located on the same *parcel* as the *principal use* with which it relates.

3.16 Secondary Dwelling Unit

- .1** Within the applicable zones where a *secondary dwelling unit* is permitted, a *secondary dwelling unit* may take on one the following forms:
 - (a) a *secondary dwelling unit* as part of a *single-detached dwelling*;

- (b) a *secondary dwelling unit* as part of an *accessory building*; or
 - (c) a detached standalone *building*.
- .2 One (1) *secondary dwelling unit* may be permitted per *parcel* in the zones specified in Part 4 of this *Bylaw* if the following conditions are met. The *secondary dwelling unit* must:
- (a) have a *habitable floor space* of no more than 90 m²;
 - (b) be located on a *parcel* 1 ha or greater if the *secondary dwelling unit* is not a part of a *single-detached dwelling*;
 - (c) be constructed in compliance with the BC Building Code for either:
 - (i) a "secondary suite", when located within a *single detached dwelling* not exceeding 40% of the *habitable floor space* of the *building* that it is located; or
 - (ii) any other form of additional *dwelling unit*;
 - (d) have a door direct to the outdoors without passing through any part of the *single detached dwelling unit*;
 - (e) remain under the same legal title as the principal *dwelling unit* and not be stratified;
 - (f) have a maximum of one (1) *kitchen*;
 - (g) have its own sleeping and bathing facilities;
 - (h) meet all provincial and Interior Health requirements regarding water and sewer servicing;
 - (i) not be used as a *vacation rental* unless otherwise specified by this *Bylaw*;
 - (j) not be used as a *bed and breakfast*;
 - (k) not be closer than 4 m to any *building* containing a *dwelling unit* or 2 m from an *accessory building* not containing a *dwelling unit* if the *secondary dwelling unit* is detached;
 - (l) comply with all parking and access requirements as set out in Part 5 of this *Bylaw*; and
 - (m) only be permitted on lands within the ALR if the *secondary dwelling* meets the requirements of the ALC Act.

3.17 Home Occupation

A *home occupation* is subject to the following regulations:

- (a) The *home occupation* shall only be carried out in a *zone* that permits *residential use*;
- (b) The *home occupation* shall be carried out accessory to and on the same *parcel* as the *dwelling unit* to which the *home occupation* relates;
- (c) A maximum of one (1) *home occupation* shall be permitted per *parcel* unless otherwise permitted in this *Bylaw*;

- (d) All activities, including the storage of materials, equipment, and products, must be completely enclosed within a *dwelling unit*, *accessory building*, or an area completely screened from adjoining properties and *highways* at a minimum height of 1.8 m, with the exception of daycares and parking;
- (e) The maximum area of all *home occupation use* on a *parcel* shall be no greater than:
 - (i) 150 m² on *parcels* less than or equal to 0.4 ha;
 - (ii) 200 m² on *parcels* greater than 0.4 ha, but less than or equal to 2 ha;
 - (iii) 250 m² on *parcels* greater than 2 ha, but less than or equal to 8 ha;
 - (iv) 300 m² on *parcels* greater than 8 ha;
- (f) Only persons residing in the *dwelling unit* associated with the *home occupation* may be involved in the *home occupation* plus:
 - (i) A maximum of two non-resident employees on *parcels* less than or equal to 2 ha;
 - (ii) A maximum of three (3) non-resident employees on *parcels* greater than 2 ha, but less than 8 ha;
 - (iii) A maximum of four (4) non-resident employees on *parcels* greater than 8 ha;
- (g) The *home occupation* shall not produce, discharge or emit: smoke (except smoke produced from the heating of the *home occupation* space), dust, litter, vibrations; odorous, toxic or noxious matter or vapours; heat; glare; radiation; electrical or television interference; or sufficient noise, congestion or traffic to constitute a nuisance offensive to the community;
- (h) The *home occupation* shall limit the area used for the display and sale of retail goods on a *parcel* to 25% of the *gross floor area* used for the *home occupation* and must be auxiliary and incidental to the *home occupation*;
- (i) *Home occupation* expressly prohibits:
 - (i) *aggregate sales* or processing;
 - (ii) asphalt or concrete batch plant;
 - (iii) *cannabis production facility*;
 - (iv) *cannabis* retail;
 - (v) *eating and drinking establishment*;
 - (vi) *event venue*;
 - (vii) *kennel*;
 - (viii) *saw mill* (unless zoned MH on a *parcel* greater than 8 ha)
 - (ix) *vehicle wrecking yard*; or
 - (x) *wholesale* activity;
- (j) All parking and access associated with the *home occupation* shall be located on-site. Parking and access requirements for *home occupations* are set out in Part 5 of this *Bylaw*;
- (k) The *home occupation* shall limit total signage (excluding framing) used for the purpose of advertising the *home occupation* on each *parcel* to 0.6 m² in area

(two-sided) and 2 m in height if free standing. *Signs* shall have a minimum *setback* of 1 m from *parcel boundaries*; and

- (l) A *home occupation* located on ALR land is subject to the requirements of the ALC Act.

3.18 Agricultural Land Reserve Land

- .1 In addition to the regulations established in this *Bylaw*, all lands within the Agricultural Land Reserve are also subject to the provisions of the Agricultural Land Commission Act, regulations and orders of the Agricultural Land Commission (thereby not permitting the *subdivision* of land or the development of non-farm *uses* unless approved by the Agricultural Land Commission).
- .2 Screening vegetation, fencing and *building setbacks* on the non ALR side of the residential/ALR interface shall be provided in accordance with the “Landscaped Buffer Specifications” prepared by the Agricultural Land Commission in 1993. Buffering requirements shall be considered as a condition of *subdivision* approval.

3.19 Setbacks for Agricultural Buildings and Structures

The minimum *setbacks* of *buildings*, *structures* and confined livestock intended to accommodate agricultural uses shall be:

- (a) 15 m from the *rear parcel boundary* and *interior side parcel boundary*;
- (b) 30 m from the *front parcel boundary* and *exterior side parcel boundary*;
- (c) 30 m from any *dwelling unit* or *secondary dwelling unit*;
- (d) 30 m from any *watercourse*;
- (e) 30 m from any domestic water supply intake;

3.20 Bed and Breakfast

A *bed and breakfast* must comply with the following regulations:

- (a) a *bed and breakfast* shall be an *accessory use*;
- (b) there may be a maximum of one (1) *bed and breakfast* on a *parcel*;
- (c) a *bed and breakfast* shall not be operated in conjunction with a *vacation rental*;
- (d) a maximum of three (3) *guest rooms* in a *single detached dwelling* may be used for a *bed and breakfast*;
- (e) a *bed and breakfast* must be operated by a permanent resident of the *single detached dwelling* with which it relates;
- (f) a *bed and breakfast* shall not produce a nuisance for surrounding residents, including, but not limited to noise, light or traffic that is disruptive to surrounding resident's quiet and enjoyment of their property;
- (g) a *bed and breakfast* must meet all provincial and Interior Health requirements regarding water and sewer servicing;

- (h) total signage used for the purpose of advertising the *bed and breakfast* located on that *parcel* shall not exceed 0.6 m² in area. *Signs* shall have a minimum *setback* of at least 1 m from any *parcel boundary*; and
- (i) All parking and access associated with the *bed and breakfast* shall be located on-site. Parking and access requirements for *bed and breakfast* are set out in Part 5 of this *Bylaw*;

3.21 Vacation Rental

- .1 A *vacation rental* may be permitted in both the *single detached dwelling* and the *secondary dwelling unit*. *Residential campsites*, *camping units*, and *park models* shall not be used for *vacation rental* unless otherwise permitted in this *Bylaw*;
- .2 Where a *vacation rental* is permitted, a maximum of four (4) bedrooms per *parcel* may be used for a *vacation rental* and no more than eight (8) guests are permitted in a *vacation rental* at any one time;
- .3 A *vacation rental* located in a detached *secondary dwelling unit* is only permitted on a *parcel* 1 ha in size or larger;
- .4 A *vacation rental* shall not be operated in conjunction with a *bed and breakfast*;
- .5 A *vacation rental* shall not include ancillary uses typical of *commercial lodging*. Such uses include, but are not limited to: meeting rooms, *eating and drinking establishment*, concierge, and *retail sales*;
- .6 A *vacation rental* shall not produce a nuisance for surrounding residents, including but not limited to noise, light or traffic that is disruptive to surrounding residents' quiet and enjoyment of their property;
- .7 One (1) on-site *parking space* shall be provided for each bedroom used for *vacation rental*;
- .8 Total signage (excluding framing) used for the purpose of advertising the *vacation rental* on each *parcel* shall not exceed 0.6 m² in area (two-sided) and 2 m in *height* if free standing. *Signs* shall have a minimum *setback* of 1 m from *parcel boundaries*; and
- .9 A *vacation rental* must be sited in accordance with *setback* regulations and meet all provincial and Interior Health Authority requirements regarding water and sewer servicing.

3.22 Outdoor Storage

Except as permitted in a *zone*, a *parcel* must not be used for the *outdoor storage* of discarded materials, rubbish; nor for *vehicle wrecking* or the storage of a vehicle which has been without a license under the Motor Vehicle Act for more than two (2) years, is not housed in a garage, carport or screened, and which is intended to be self-propelled but is not capable of locomotion under its own power.

3.23 Residential Campsite

- .1 Where a *residential campsite* is permitted, a maximum of one *residential campsite* is permitted per *parcel*;
- .2 A *single detached dwelling* that a *residential campsite* is associated with, must be the *principal use* on the *parcel*;
- .3 A *residential campsite* must meet all provincial and Interior Health Authority requirements regarding water and sewer servicing; and
- .4 A *residential campsite* must be sited in accordance with *setback* regulations.

3.24 Fences

- .1 No *fence* constructed at the natural grade in residential *zones* (MH, RR1, MHP1, RM1, or VR) shall exceed 2 m in height, except where abutting an agricultural, commercial or industrial *use*, the maximum height is 2.4 m.
- .2 In residential *zones*, the maximum height is 1.2 m for the portion of the *fence* that is placed within the front yard. *Fences* constructed in non-residential areas shall not exceed 2.4 m in *height*.
- .3 *Fence height* shall be measured using the average grade *setback* of 1 m from each side of the *fence*. Consistent Retaining wall section??
no fence constructed at the natural grade (list the zones) exceed 2 m except where abutting an agricultural, commercial or industrial *use*, the maximum height is 2.4 m.
- .4 Height shall be measured from any point on the ground level of the site at the structure or fence line

3.25 Shipping Containers

Shipping Containers must comply with the following requirements:

- (a) *shipping containers* are permitted in all *zones*, except *Foreshore zones*, to allow for storage for a maximum of six (6) months in any 24 months;
- (b) the maximum width of a *shipping container* shall be 2.5 m;
- (c) the total combined length of all *shipping containers* on a *parcel* shall not exceed 12.2 m;
- (d) *shipping containers* shall comply with the *setback* requirements set out in Part 4 of this *Bylaw*;
- (e) any *facia signage* on a *shipping container* shall comply with the Signage Regulations in Part 6 of this *Bylaw*.
- (f) if reconstructed or structurally modified in any way, if placed on a foundation, or if it remains on a property for more than six (6) months, a *shipping container* is considered an *accessory building* and is then subject to all applicable regulations in this *Bylaw* and also the BC Building Code;

3.26 Cannabis Production Facilities

Cannabis Production Facilities shall only be permitted on ALR land and shall be subject to the following regulations:

- (a) *Cannabis production facilities* shall be licensed by the Federal Government and meet all Provincial Government requirements, including the requirements of the ALC Act;
- (b) *Cannabis production facilities* shall be located on a *parcel* having a minimum area of 4 ha;
- (c) All *buildings*, land, or *structures* used for *cannabis production facilities* shall be *setback* a minimum of 50 m from all *parcel boundaries* and will be subject to Development Permit Guidelines and/or Section 3.13 Floodplain Regulations

3.27 Location and Extent of Foreshore Zones

- .1 The location and extent of each foreshore *zone* on Gardom Lake is shown on Schedules B and C of Ranchero/Deep Creek Zoning Bylaw No. 751. Although not shown on Schedules B and C, all other *watercourses* in the *Bylaw* area are zoned Foreshore Water (FW).
- .2 Unless expressly shown on Schedules B and C, all *zones* except Foreshore Water (FW) extend 40 m from the *natural boundary* into the *lake*. {narrow portions in Gardom Lake are less.}
- .3 Except for Foreshore Water (FW), the *zone boundaries* on the maps in Schedules B and C shall be interpreted as follows:
 - (a) *zone boundaries* extend perpendicular to the general trend of the shoreline from the *natural boundary* into the *lake*.
 - (b) where a *zone boundary* does not follow a legally defined line, such as the *natural boundary*, and where distances are not specifically stated, the *zone boundary* shall be determined by scaling to the centre of the *zone boundary line* as shown on the maps in Schedules B and C.

Part 4. Zones

4.1 Establishment of Zones

The Ranchero / Deep Creek Zoning Bylaw area is divided into *zones* with the titles and symbols stated in Table 1. Column 1 lists the title of each *zone* and Column 2 states a descriptive symbol for each *zone* that is for convenience only.

Table 1. Zone Titles and Zone Symbols

COLUMN 1 ZONE TITLE	COLUMN 2 ZONE SYMBOL
Rural and Resource	RSC
Rural Holdings	RH
Agriculture 1	AG1
Medium Holdings	MH
Rural Residential 1	RR1
Manufactured Home Park 1	MHP1
Multiple-Dwelling 1	RM1
Vacation Rental	VR
Comprehensive Development Zone D1	CDD1
Highway Commercial	HC
Industrial 1	ID1
Golf Course	GC
Public and Institutional	PI
Park and Protected Area	PK
Foreshore and Water	FW
Foreshore Park	FP
Foreshore Residential 1	FR1
Foreshore Multiple-Dwelling 1	FM1
Foreshore General 1	FG1

4.2 Location and Extent of Zones

The location and extent of each *zone* is shown in **Schedule B** and **Schedule C**.

4.3 Zone Boundaries

- .1 The *zone* boundaries on the maps in **Schedule B** and **Schedule C** shall be interpreted as follows:
 - (a) where a *zone* boundary is shown following a *highway*, the centerline of the *highway* is the *zone* boundary;
 - (b) where a *zone* boundary does not follow a legally defined line, and where distances are not specifically stated, the *zone* boundary shall be determined by scaling to the centre of the *zone* boundary line as shown on the maps in Schedule B and Schedule C.

RSC

4.4 RSC Rural and Resource Zone

.1 Intent

To accommodate a variety of resource related uses on Crown land parcels.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the RSC *zone* as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *airfield*
- (b) *agriculture*
- (c) *backcountry recreation*
- (d) *forestry*
- (e) *resource extraction*

.3 Secondary Uses:

The *uses* stated in this subsection and no others are permitted in the RSC *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*

.4 Regulations

On a *parcel* zoned RSC, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	60 ha
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	100 m
(c) Maximum <i>parcel</i> coverage	25%
(d) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m

(e) Minimum <i>setback</i> from: <ul style="list-style-type: none">▪ all <i>parcel boundaries</i>	<ul style="list-style-type: none">▪ 5 m
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RH

4.5 RH Rural Holdings Zone

.1 Intent

To accommodate a variety of resource, agriculture, and residential related uses on large privately-owned rural parcels.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the RH *zone* as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *agriculture*
- (b) *airfield*
- (c) *backcountry recreation*
- (d) *forestry*
- (e) *resource extraction*
- (f) *single detached dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the RH *zone* as secondary *uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *agri-tourism*
- (c) *bed and breakfast*
- (d) *childcare facility, in-home*
- (e) *guest ranch*
- (f) *home occupation*
- (g) *residential campsite*
- (h) *secondary dwelling unit*
- (i) *small-scale sawmill*

.4 Regulations

On a *parcel* zoned RH, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

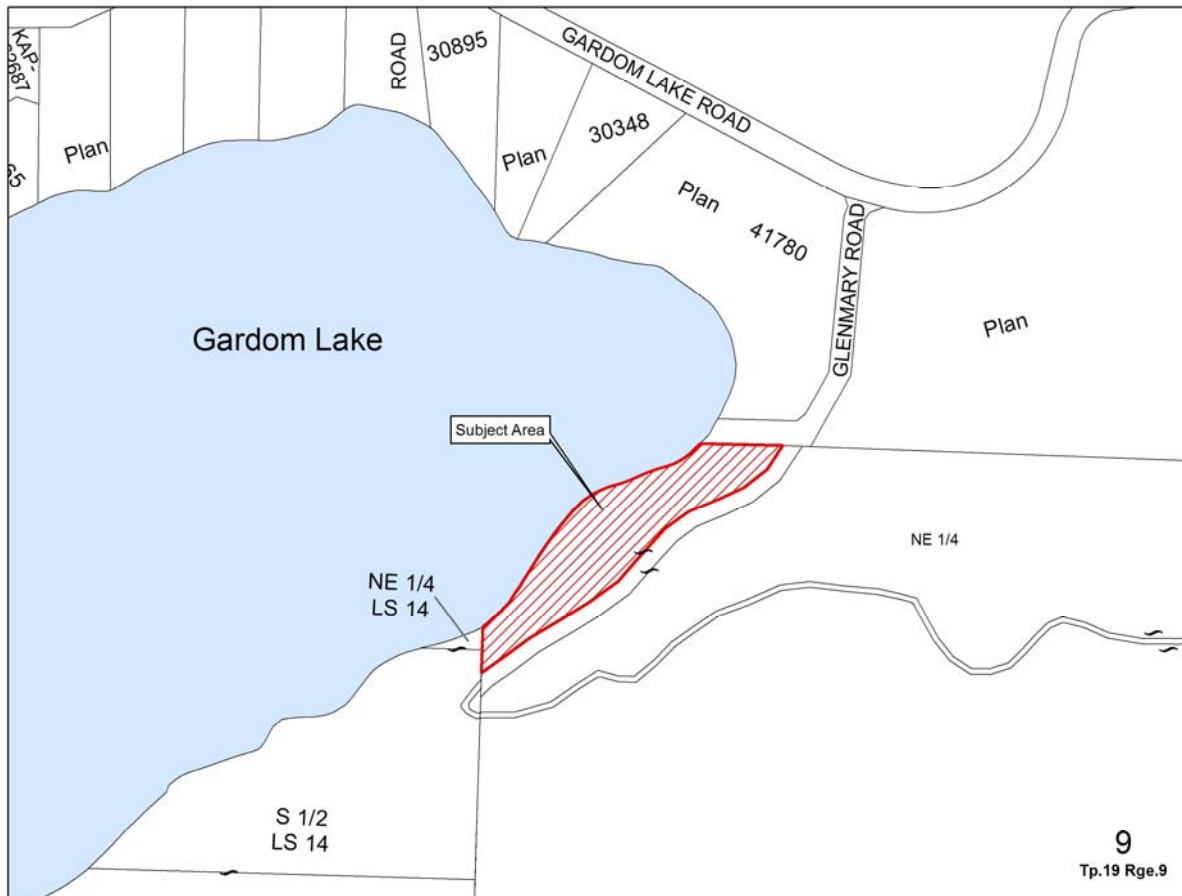
COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	60 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	100 m
(c) Maximum <i>parcel coverage</i>	25%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	One
(e) Maximum number of <i>secondary dwelling units</i> per <i>parcel</i> (subject to Section 3.16 of this <i>Bylaw</i>)	One
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(g) Maximum <i>habitable floor space</i> of <i>secondary dwelling unit</i>	90 m ²
(h) Maximum <i>gross floor area</i> of a <i>home occupation</i>	Shall be in accordance with Section 3.17
(i) Minimum <i>setback</i> from all <i>parcel boundaries</i>	<ul style="list-style-type: none"> ▪ 5 m
(j) <i>Small-Scale Sawmill</i>	Permitted on a <i>parcel</i> 4 ha or larger. <i>Small-Scale Sawmill</i> must be a minimum of 30 m from a <i>parcel boundary</i> .

.5 Site Specific Regulation

In this subsection, lands are described by legal description and by map. In the event of any discrepancy between the legal; description of the lands and the map, the map governs.

- (a) In addition to the *principal uses* in subsection 4.5(2) of this Bylaw, the *principal uses* on Section 9, Township 19, Range 9, Part NE ¼, W6M, KDYD {Royal Canadian Legion Veteran's Holiday Camp} shall include *private campground* on the portion the subject property shown shaded on the map below. The following regulations also apply:
- (i) maximum number of *camping spaces* is 18;
 - (ii) maximum number of cabins is seven (7);
 - (iii) cabins must have a *gross floor area* of no greater than 120 m²;

- (iv) *private campground* shall only be used on a *seasonal* basis, no *residential* use is permitted with exception of the campground manager's accommodation; and
- (v) all *private campground* facilities must be serviced by a water and septic system which meets Interior Health Authority requirements.



AG1

4.6 AG1 Agriculture Zone

.1 Intent

To accommodate agricultural uses and agri-tourism on large parcels which are primarily located in the Agricultural Land Reserve. All uses on ALR land are subject to the ALC Act policies and regulations.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the AG1 *zone* as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *agriculture*
- (b) *cannabis production facility* (only permitted in the ALR)
- (c) *forestry*
- (d) *single detached dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the AG1 *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *agri-tourism*
- (c) *bed and breakfast*
- (d) *childcare facility, in-home*
- (e) *guest ranch*
- (f) *home occupation*
- (g) *secondary dwelling unit*

.4 Regulations

On a *parcel* zoned AG1, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel size</i> created by <i>subdivision</i>	60 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	100 m
(c) Maximum <i>parcel coverage</i>	25%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	One
(e) Maximum number of <i>secondary dwelling units</i> per <i>parcel</i> (subject to Section 3.16 of this <i>Bylaw</i> and <i>ALC Regulations</i>)	One
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(g) Maximum <i>habitable floor space</i> of <i>secondary dwelling unit</i>	90 m ²
(h) Maximum <i>gross floor area</i> of a <i>home occupation</i>	Shall be in accordance with Section 3.17
(i) Minimum <i>setback</i> from all <i>parcel boundaries</i> :	▪ 5 m

MH

4.8 MH Medium Holdings Zone

.1 Intent

To accommodate single detached dwellings and agricultural uses on medium-sized parcels.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the MH *zone* as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *agriculture* (on *parcels* 2 ha and greater)
- (b) *forestry*
- (c) *single detached dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the MH *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *agriculture, limited* (on *parcels* less than 2 ha)
- (c) *agri-tourism* (on *parcels* 2 ha and greater)
- (d) *bed and breakfast*
- (e) *childcare facility, in-home*
- (f) *home occupation*
- (g) *residential campsite*
- (h) *secondary dwelling unit*

.4 Regulations

On a *parcel* zoned MH, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations. All agricultural uses must have a *setback* of at least 5 m from any *parcel boundary* and be contained by a *fence*.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	8 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	30 m
(c) Maximum <i>parcel coverage</i>	25%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	One
(e) Maximum number of <i>secondary dwelling</i> units per <i>parcel</i> (subject to Section 3.16 of this <i>Bylaw</i>)	One
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(g) Maximum <i>habitable floor space</i> of <i>secondary dwelling unit</i>	90 m ²
(h) Maximum <i>gross floor area</i> of <i>accessory building</i>	200 m ² on <i>parcels</i> less than or equal to 2 ha
(i) Maximum <i>gross floor area</i> of an <i>home occupation</i>	Shall be in accordance with Section 3.17
(j) Minimum <i>setback</i> from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>rear parcel boundary</i> ▪ <i>rear parcel boundary</i> for an accessory building (excluding, <i>secondary dwelling unit</i> or <i>home occupation</i>) ▪ <i>interior side parcel boundary</i> ▪ <i>exterior side parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 5 m ▪ 3 m ▪ 2 m ▪ 5 m

.5 Site Specific Regulation

In this subsection, lands are described below by legal description and by map. In the event of any discrepancy between the legal; description of the lands and the map, the map governs.

- [illegible]

RR1

4.9 RR1 Rural Residential 1 Zone

.1 Intent

To accommodate single detached dwellings on smaller parcels.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the RR1 *zone* as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *single detached dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the RR 1 *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *agriculture, limited*
- (c) *bed and breakfast*
- (d) *childcare facility, in-home*
- (e) *home occupation*
- (f) *secondary dwelling unit*

.4 Regulations

On a *parcel* zoned RR 1, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations. All agricultural uses must have a *setback* of at least 5 m from any *parcel boundary* and be contained by a *fence*.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	1 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	20 m
(c) Maximum <i>parcel coverage</i>	25%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	One
(e) Maximum number of <i>secondary dwelling units</i> per <i>parcel</i> (subject to Section 3.16 of this <i>Bylaw</i>)	One
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 8 m
(g) Maximum <i>habitable floor space</i> of a <i>secondary dwelling unit</i>	90 m ²
(h) Maximum <i>gross floor area</i> of an <i>accessory building</i>	<ul style="list-style-type: none"> ▪ 150 m² on <i>parcels</i> less than or equal to 0.4 ha ▪ 200 m² on <i>parcels</i> greater than 0.4 ha, but less than or equal to 2 ha
(i) Maximum <i>gross floor area</i> of an <i>home occupation</i>	Shall be in accordance with Section 3.17
(j) Minimum <i>setback</i> from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>rear parcel boundary</i> ▪ <i>rear parcel boundary</i> for an <i>accessory building</i> or <i>structure</i> (excluding <i>secondary dwelling unit</i> or <i>home occupation</i>) ▪ <i>interior side parcel boundary</i> ▪ <i>exterior side parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 5 m ▪ 3 m ▪ 2 m ▪ 5 m

4.10 MHP1 Manufactured Home Park 1 Zone

MHP1

.1 Intent

To accommodate manufactured homes on individual pads or foundations within an un-subdivided manufactured home park.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the MPH1 *zone* as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *manufactured home park*
- (b) *single detached dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the MPH1 *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *home occupation*

.4 Regulations

On a *parcel* zoned MPH1, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations, and Part 7: Manufactured Home Park Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	2 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	50 m
(c) Maximum <i>parcel coverage</i>	40%
(d) Maximum number of caretaker dwellings per <i>parcel</i>	one
(e) Maximum <i>density</i> of <i>manufactured home spaces</i> per hectare <ul style="list-style-type: none"> where a <i>parcel</i> is serviced by water and sewer system that meets Provincial and Interior Health Authority requirements in all other cases 	<ul style="list-style-type: none"> 15 per ha 1 per ha
(f) Maximum number of <i>accessory buildings</i> per <i>manufactured home space</i>	one
(g) Maximum number of <i>accessory buildings</i> , accessory to the <i>manufactured home park</i>	one
(h) Maximum <i>gross floor area</i> of an <i>accessory building</i>	<ul style="list-style-type: none"> 20 m² (when accessory to a <i>manufactured home park space</i>) 150 m² (when accessory to the <i>manufactured home park</i>)
(i) Maximum <i>height</i> for: <ul style="list-style-type: none"> principal <i>buildings</i> and <i>structures</i> <i>accessory buildings</i> 	<ul style="list-style-type: none"> 10 m 3 m (when accessory to a <i>manufactured home park space</i>) 10 m (when accessory to the <i>manufactured home park</i>)
(j) Minimum <i>gross floor area</i> of <i>manufactured home</i>	<ul style="list-style-type: none"> 45 m²
(k) Maximum number of <i>home occupations</i> per <i>manufactured home space</i>	one
(l) Maximum <i>gross floor area</i> of an <i>home occupation</i>	Shall not exceed 25% of the <i>manufactured home</i>

<p>(m) Minimum <i>setback</i> from:</p> <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>rear parcel boundary</i> ▪ <i>rear parcel boundary</i> for an <i>accessory building</i> (excluding, <i>secondary dwelling unit</i> or <i>home occupation</i>) ▪ <i>interior side parcel boundary</i> ▪ <i>home occupation</i> ▪ <i>exterior side parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 5 m ▪ 3 m ▪ 3 m ▪ 5 m ▪ 5 m
<p>(n) Minimum separation distance between <i>manufactured homes</i></p>	<ul style="list-style-type: none"> ▪ 4 m

4.11 RM1 Multiple-Dwelling 1 Residential Zone

RM1

.1 Intent

To accommodate affordable market housing and subsidized housing in the form of medium density multiple-dwelling residential development in the Ranchero and Shaw Road areas.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the RM1 *zone* as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *duplex*
- (b) *multiple-dwelling*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the RM1 Residential *zone* as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *home occupation*

.4 Regulations

On a *parcel* zoned RM1, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	1 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	30 m
(c) Maximum <i>parcel coverage</i>	50%
(d) Maximum density of <i>dwelling units</i> per hectare <ul style="list-style-type: none"> ▪ where a <i>parcel</i> is serviced by both <i>community water and sewer</i> ▪ in all other cases 	<ul style="list-style-type: none"> ▪ 15 per ha ▪ 1 per ha
(e) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings and structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 3 m
(f) Maximum number of <i>accessory buildings</i> per <i>dwelling unit</i>	one
(g) Maximum size of <i>accessory buildings</i>	20 m ²
(h) Maximum <i>gross floor area</i> of an <i>home occupation</i>	Shall not exceed 25% of the <i>dwelling unit gross floor area</i>
(i) Minimum <i>setback</i> from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>rear parcel boundary</i> ▪ <i>rear parcel boundary</i> for an <i>accessory building</i> (excluding, <i>secondary dwelling unit</i> or <i>home occupation</i>) ▪ <i>interior side parcel boundary</i> ▪ <i>home occupation</i> ▪ <i>exterior side parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 5 m ▪ 3 m ▪ 2 m ▪ 5 m ▪ 5 m
(j) Maximum <i>gross floor area</i> of an <i>accessory building</i>	20 m ²



4.12 VR Vacation Rental Zone

.1 Intent

To accommodate single detached dwellings on smaller parcels with the potential for commercial accommodation in a residential unit.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the VR *zone* as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *single detached dwelling*
- (b) *vacation rental*

.3 Secondary Uses

The *use* stated in this subsection and no others are permitted in the VR *zone* as a *secondary use*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *childcare facility, in-home*
- (c) *home occupation*
- (d) *secondary dwelling unit*

.4 Regulations

On a *parcel* zoned VR, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	1 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	30 m
(c) Maximum <i>parcel coverage</i>	20%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	one
(e) Maximum <i>gross floor area</i> of an <i>accessory building</i>	200 m ² on <i>parcels</i> less than or equal to 2 ha
(f) Maximum number of <i>secondary dwelling units</i> per <i>parcel</i>	one
(g) Maximum <i>habitable floor space</i> of a <i>secondary dwelling unit</i>	90 m ²
(h) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 8 m
(i) Minimum <i>setback</i> from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>interior side parcel boundary</i> ▪ <i>exterior side parcel boundary</i> ▪ <i>rear parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 3 m ▪ 5 m ▪ 5 m

4.13 CDD1 Comprehensive Development D1 Zone

CDD1

.1 Intent

To accommodate a *Private Educational Camp Facility* (Gardom Lake Bible Camp).

.2 Connection to Approved Water and Sewer Systems

All development within CDD1 *zone* Development Area 1 shall be connected to a *sewer system* and *water system* that is approved by the province or local health authority. The maximum number of beds served by this system is 250.

Development Area 1 (10.5 ha)

.1 Principal Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 1 as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *private educational camp facility*
- (b) *outdoor recreation facility*
- (c) *single detached dwelling*

.2 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 1 as *secondary uses*, except as stated in Part 3 “General Regulations”:

- (a) *accessory use*

.3 Regulations

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	10.5 ha
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	30 m
(c) Maximum <i>parcel</i> coverage	20%
(d) Maximum number of <i>single detached dwellings</i>	one

(e) Combined maximum number of beds permitted in <i>buildings</i> and <i>structures</i> for overnight accommodation:	<ul style="list-style-type: none"> ▪ 250
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ gymnasium ▪ lodge ▪ cabins, office, <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 15 m ▪ 15 m ▪ 10 m
(g) Minimum <i>setback</i> from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>rear parcel boundary</i> ▪ <i>rear parcel boundary</i> for an <i>accessory building</i> ▪ <i>interior side parcel boundary</i> ▪ <i>exterior side parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 5 m ▪ 3 m ▪ 2 m ▪ 5 m

Development Area 2 (4.1 ha)

.1 Principal Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 2 as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *passive recreation*
- (b) *single detached dwelling*

.2 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 2 as *secondary uses*, except as stated in Part 3 “General Regulations”:

- (a) *accessory use*

.3 Regulations

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	4.1 ha
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	50 m
(c) Maximum <i>parcel</i> coverage	25%
(d) Maximum number of <i>single detached dwellings</i>	2

(e) Maximum <i>height</i> for:	
▪ <i>single detached dwelling</i>	▪ 11.5 m
▪ <i>accessory buildings</i>	▪ 10 m
(f) Minimum <i>setback</i> from:	
▪ <i>front parcel boundary</i>	▪ 5 m
▪ <i>rear parcel boundary</i>	▪ 5 m
▪ <i>rear parcel boundary</i> for an <i>accessory building</i>	▪ 3 m
▪ <i>interior side parcel boundary</i>	▪ 2 m
▪ <i>exterior side parcel boundary</i>	▪ 5 m

Development Area 3 (15.7 ha)

.1 Principal Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 3 as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *passive recreation*
- (b) *outdoor recreation facility*

.2 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the CDD1 *zone* Development Area 3 as *secondary uses*, except as stated in Part 3 “General Regulations”:

- (a) *accessory use*

.3 Regulations

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	15.7 ha
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	50 m
(c) Maximum <i>parcel</i> coverage	25%
(d) Maximum <i>height</i> for <i>accessory buildings</i>	10 m
(e) Minimum <i>setback</i> from:	
▪ <i>front parcel boundary</i>	▪ 5 m
▪ <i>rear parcel boundary</i>	▪ 5 m
▪ <i>rear parcel boundary</i> for an <i>accessory building</i>	▪ 3 m
▪ <i>interior side parcel boundary</i>	▪ 2 m
▪ <i>exterior side parcel boundary</i>	▪ 5 m

HC

4.14 HC Highway Commercial Zone

.1 Intent

To accommodate existing small-scale commercial services for the Ranchero neighbourhood and traveling public.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the HC *zone* as principal *uses*, except as stated in Part 3: General Regulations:

- (a) *commercial lodging*
- (b) *community care facility*
- (c) *eating and drinking establishment*
- (d) *farm and garden supply*
- (e) *financial institution, bank machine*
- (f) *health services facility*
- (g) *manufacturing*
- (h) *mini storage*
- (i) *office*
- (j) *outdoor sales*
- (k) *personal service*
- (l) *recycling drop-off facility*
- (m) *rental shop*
- (n) *retail store*
- (o) *service station*
- (p) *single detached dwelling*

.3 Secondary Uses

The *use* stated in this subsection and no others are permitted in the HC *zone* as a *secondary use*, except as stated in Part 3: General Regulations:

- (a) *accessory use*

.4 Regulations

On a *parcel* zoned HC, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i> <ul style="list-style-type: none"> ▪ where <i>parcel</i> is serviced by a <i>community water</i> and <i>sewer system</i> ▪ in all other cases 	<ul style="list-style-type: none"> ▪ 0.4 ha ▪ 1 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	20 m
(c) Maximum <i>parcel coverage</i>	40%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	one
(e) Combined maximum number of <i>commercial lodging</i> units per <i>parcel</i>	50
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(g) Minimum <i>setback</i> from all <i>parcel boundaries</i> :	▪ 5 m
(h) <i>Vehicle repair, and manufacturing</i>	shall be conducted entirely within a completely enclosed <i>building</i> and the <i>gross floor area</i> shall not exceed 300 m ²

.5 Screening

All outside commercial storage, including the storage of garbage, shall be completely contained within a *landscape screen* of not less than 2 m in height.

ID1

4.15 ID1 Industrial 1 Zone

.1 Intent

To accommodate existing small-scale light industrial activity.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the ID1 *zone* as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *aggregate sale*
- (b) *farm and garden supply*
- (c) *kennel*
- (d) *log building manufacturing*
- (e) *manufacturing*
- (f) *outdoor sales*
- (g) *outdoor storage*
- (h) *recycling drop-off facility*
- (i) *sawmill*
- (j) *single detached dwelling*
- (k) *vehicle wrecking*

.3 Secondary Uses

The *use* stated in this subsection and no others are permitted in the ID1 *zone* as a *secondary use*, except as stated in Part 3: General Regulations:

- (a) *accessory use*

.4 Regulations

On a *parcel* zoned ID1, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	1 ha
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	20 m
(c) Maximum <i>parcel coverage</i>	40%
(d) Maximum number of <i>single detached dwellings</i> per <i>parcel</i>	one
(e) Maximum number of <i>secondary dwelling</i> units per <i>parcel</i>	one
(f) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ <i>principal buildings and structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(g) Minimum <i>setback</i> from all <i>parcel boundaries</i> :	▪ 5 m
(h) <i>Kennel</i>	Permitted only on <i>parcels</i> 16 ha or greater. <i>Kennel buildings and structures</i> , including runs, must be a minimum of 100 m from a <i>parcel boundary</i> .

.5 Screening

All outside industrial storage, including the storage of refuse and recycling containers shall be completely contained within a *landscape screen* of not less than 2 m in height.



4.16 GC Golf Course Zone

.1 Intent

To accommodate private commercial golf courses and associated uses such as driving range and clubhouse.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the GC zone as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *agriculture*, permitted only on those *parcels* within the *Agricultural Land Reserve*
- (b) *golf course*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the GC zone as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*
- (b) *agri-tourism* (permitted only on those *parcels* within the *Agricultural Land Reserve*)
- (c) *clubhouse*

.4 Regulations

On a *parcel* zoned GC, no land shall be *used*; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	60 ha
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	20 m
(c) Maximum <i>parcel</i> coverage	25%

(d) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(e) Minimum <i>setback</i> from all <i>parcel boundaries</i> :	<ul style="list-style-type: none"> ▪ 5 m

.5 Screening

All outside industrial storage, including the storage of garbage, shall be completely contained within a *landscape screen* of not less than 2 m in height.

PI

4.17 PI Public and Institutional Zone

.1 Intent

To accommodate public and institutional uses such as schools, community halls and fire halls.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the PI zone as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *assisted living housing*
- (b) *child care facility*
- (c) *civic facility*
- (d) *community market*
- (e) *community care facility*
- (f) *community garden*
- (g) *community hall*
- (h) *educational facility*
- (i) *health services facility*
- (j) *park*
- (k) *public assembly facility*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the PI zone as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*

.4 Regulations

On a parcel zoned PI, no land shall be used; no building or structure shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	1 ha (unless otherwise stated in Section 3.9)
(b) Minimum <i>parcel width</i> created by <i>subdivision</i>	20 m
(c) Maximum <i>parcel</i> coverage	25%
(d) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ principal <i>buildings</i> and <i>structures</i> ▪ accessory <i>buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m
(e) Minimum setback from: <ul style="list-style-type: none"> ▪ <i>front parcel boundary</i> ▪ <i>interior side parcel boundary</i> ▪ <i>exterior side parcel boundary</i> ▪ <i>rear parcel boundary</i> 	<ul style="list-style-type: none"> ▪ 5 m ▪ 3 m ▪ 5 m ▪ 5 m

PK

4.18 PK Parks and Protected Areas Zone

.1 Intent

To accommodate parks and park related uses.

.2 Principal Uses

The *uses* stated in this subsection and no others are permitted in the PK zone as *principal uses*, except as stated in Part 3: General Regulations:

- (a) *park*
- (b) *passive recreation*

.3 Secondary Uses

The *uses* stated in this subsection and no others are permitted in the PK zone as *secondary uses*, except as stated in Part 3: General Regulations:

- (a) *accessory use*

.4 Regulations

On a *parcel* zoned PK, no land shall be used; no *building* or *structure* shall be constructed, located or altered; and no plan of *subdivision* approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) Minimum <i>parcel</i> size created by <i>subdivision</i>	no minimum
(b) Minimum <i>parcel</i> width created by <i>subdivision</i>	no minimum
(c) Maximum <i>parcel</i> coverage	25%
(d) Maximum <i>height</i> for: <ul style="list-style-type: none"> ▪ <i>principal buildings</i> and <i>structures</i> ▪ <i>accessory buildings</i> 	<ul style="list-style-type: none"> ▪ 11.5 m ▪ 10 m

<p>(e) Minimum setback from:</p> <ul style="list-style-type: none">▪ <i>front parcel boundary</i>▪ <i>interior side parcel boundary</i>▪ <i>exterior side parcel boundary</i>▪ <i>rear parcel boundary</i>	<ul style="list-style-type: none">▪ 5 m▪ 3 m▪ 3 m▪ 5 m
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4.19 FW Foreshore and Water Zone

.1 Intent

To accommodate passive recreation and navigation on lakes.

.2 Permitted Uses

The *uses* stated in this subsection and no others are permitted in the FW *zone* as permitted *uses*:

- (a) *navigation*
- (b) *park*
- (c) *passive recreation*

.3 Regulations

For clarity, the following *uses* are expressly prohibited in this *zone*:

- (a) *buildings* and other covered *structures*;
- (b) *residential use*;
- (c) all other *uses and structures* not expressly permitted in subsection 2 of this *zone*

FP

4.20 FP Foreshore Park Zone

.1 Intent

To accommodate park mooring and recreation facilities in the foreshore and water areas of Gardom Lake Community Park.

.2 Permitted Uses

The *uses* stated in this subsection and no others are permitted in the FP *zone* as permitted:

- (a) *buoy(s)* that is accessory to a *park use*
- (b) *floating dock*, including *removable walkway(s)*, that is accessory to a *park use*
- (c) *park*
- (d) *swimming platform*

.3 Regulations

For clarity, the following *uses* are expressly prohibited in this *zone*:

- (a) *buildings* and other covered *structures*;
- (b) *residential use*;
- (c) all other *uses and structures* not expressly permitted in subsection 2 of this *zone*

On a parcel zoned FP no land shall be used; no building or structure shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) <u>Size</u> of <i>dock</i> and <i>walkway</i> , and <i>swimming</i> <i>platform</i> :	<ul style="list-style-type: none"> ▪ Main <i>floating dock</i> at Gardom Lake Community Park must not exceed 125 m² in total upward facing surface area (not including <i>permanent</i> or <i>removable walkway</i>). ▪ All other <i>floating docks</i> in the FP zone must not exceed 24 m² in total upward facing surface area (not including <i>permanent</i> or <i>removable walkway</i>). ▪ <i>floating dock</i> surface must not exceed 3 m in width for any portion of the dock. ▪ <i>removable walkway</i> surface must not exceed 10 m² in total upward facing surface area. ▪ <i>removable walkway</i> surface must not exceed 1.5 m in width for any other portion of the walkway. ▪ <i>swimming platform</i> must not exceed 10 m² in total upward facing surface area
(b) <u>Location and Siting</u> of docks, <i>swimming</i> <i>platforms</i> , or buoys	<ul style="list-style-type: none"> ▪ The minimum setback of a <i>floating dock</i>, <i>swimming platform</i>, or buoy is as follows: ▪ 5 m from the side <i>parcel</i> boundaries of that <i>waterfront parcel</i>, projected onto the <i>foreshore</i> and water. ▪ Additional setbacks for buoys: <ul style="list-style-type: none"> ▪ 20 m from any existing <i>structures</i> on the foreshore or water ▪ 50 m from any <i>boat ramp</i>

FR1

4.21 FR1 Foreshore Residential Zone

.1 Intent

To accommodate one small floating dock per residential parcel adjacent to Gardom Lake.

.2 Permitted Uses

The *uses* stated in this subsection and no others are permitted in the FR1 *zone* as permitted *uses*:

- (a) *floating dock*, including *removable walkway*, that is *accessory* to a permitted *use* on an *adjacent waterfront parcel*;
- (b) navigation and *accessory uses* to navigation;
- (c) *passive recreation*;

.3 Regulations

For clarity, the following *uses* are expressly prohibited in this *zone*:

- (a) *buildings* and other covered *structures*;
- (b) *residential use*;
- (c) all other *uses and structures* not expressly permitted in subsection (2) of this *zone*.

On a parcel zoned FR1, no land shall be used; no building or structure shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) <u>Density</u> maximum number of docks	<ul style="list-style-type: none"> ▪ 1 <i>floating dock</i> per adjacent <i>waterfront parcel</i>.
(a) <u>Size</u> of <i>dock</i> and <i>walkway</i>	<ul style="list-style-type: none"> ▪ <i>floating dock</i> must not exceed 12 m² in total upward facing surface area (not including <i>permanent</i> or <i>removable walkway</i>). ▪ <i>floating dock</i> surface must not exceed 2.5 m in width for any portion of the dock. ▪ <i>removable walkway</i> surface must not exceed 10 m² in total upward facing surface area. ▪ <i>removable walkway</i> surface must not exceed 1.5 m in width for any other portion of the walkway.
(b) <u>Location and Siting</u> of dock	<ul style="list-style-type: none"> ▪ The minimum setback of a <i>floating dock</i>, accessory to an adjacent <i>waterfront parcel</i> is as follows: ▪ 5 m from the side <i>parcel</i> boundaries of that <i>waterfront parcel</i>, projected onto the <i>foreshore</i> and water. ▪ 6 m from a <i>foreshore park</i> or <i>park side parcel</i> boundaries projected onto the <i>foreshore</i> and water.

FM1

4.22 FM1 Foreshore Multiple-Dwelling 1 Zone

.1 Intent

To accommodate shared mooring for the properties within Strata Plan No. KAS 1568 (Gardom Lake Road).

.2 Permitted Uses

The *uses* stated in this subsection and no others are permitted in the Foreshore FM1 zone as permitted *uses*:

- (a) *floating dock*, including *removable walkway*, that is *accessory to a permitted use* on an adjacent *waterfront parcel*;
- (b) *navigation and accessory uses* to navigation;
- (c) *passive recreation*;

.3 Regulations

For clarity, the following *uses* are expressly prohibited in this *zone*:

- (a) *buildings* and other covered *structures*;
- (b) *residential use*;
- (c) all other *uses* and *structures* not expressly permitted in subsection (2) of this *zone*.

On a parcel zoned FM1, no land shall be used; no building or structure shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(a) <u>Density</u> maximum number of <i>floating docks</i>	<ul style="list-style-type: none"> For the surface of the lake adjacent to the common property shown on Strata Plan KAS 1568, Section 16, Township 19, Range 9, W6M, KDYD, the maximum number of <i>floating docks</i> is two (2).
(b) <u>Size</u> of <i>floating dock</i> and <i>walkway</i>	<ul style="list-style-type: none"> <i>floating dock</i> must not exceed 24 m² in total upward facing surface area (not including <i>permanent</i> or <i>removable walkway</i>). <i>floating dock</i> surface must not exceed 3 m in width for any portion of the dock. <i>removable walkway</i> surface must not exceed 10 m² in total upward facing surface area. <i>removable walkway</i> surface must not exceed 1.5 m in width for any other portion of the walkway.
(c) <u>Location and Siting</u> of <i>floating dock</i>	<ul style="list-style-type: none"> The minimum setback of a <i>floating dock</i>, accessory to an adjacent <i>waterfront parcel</i> is as follows: 5 m from the side <i>parcel</i> boundaries of that <i>waterfront parcel</i>, projected onto the <i>foreshore</i> and water. 6 m from a <i>foreshore park</i> or <i>park side parcel</i> boundaries projected onto the <i>foreshore</i> and water.

FG1

4.23 FG1 Foreshore General 1 Zone

.1 Intent

To accommodate one floating dock adjacent to the Gardom Lake Bible Camp and Royal Canadian Legion Veteran's Holiday Camp.

.2 Permitted Uses

The *uses* stated in this subsection and no others are permitted in the FG1 *zone* as permitted *uses*:

- (a) *floating dock*, including *removable walkway*, that is *accessory* to a permitted *use* on an adjacent *waterfront parcel*;
- (b) *navigation and accessory uses* to navigation;
- (c) *passive recreation*;

.3 Regulations

For clarity, the following *uses* are expressly prohibited in this *zone*:

- (a) *buildings* and other covered *structures*;
- (b) *residential use*;
- (c) all other *uses* and *structures* not expressly permitted in subsection (2) of this *zone*.

On a parcel zoned FG1, no land shall be used; no building or structure shall be constructed, located or altered; and no plan of subdivision approved; that contravenes the regulations stated in this subsection, except as stated in Part 3: General Regulations and Part 5: Parking and Loading Regulations.

COLUMN 1 MATTER REGULATED	COLUMN 2 REGULATION
(d) <u>Density</u> maximum number of <i>docks</i>	<ul style="list-style-type: none"> ▪ 1 <i>floating dock</i> per adjacent <i>waterfront parcel</i>.
(e) <u>Size</u> of <i>dock</i> and <i>walkway</i>	<ul style="list-style-type: none"> ▪ <i>floating dock</i> must not exceed 24 m² in total upward facing surface area (not including <i>permanent</i> or <i>removable walkway</i>). ▪ <i>floating dock</i> surface must not exceed 3 m in width for any portion of the dock. ▪ <i>removable walkway</i> surface must not exceed 10 m² in total upward facing surface area. ▪ <i>removable walkway</i> surface must not exceed 1.5 m in width for any other portion of the walkway.
(f) <u>Location and Siting</u> of <i>dock</i>	<ul style="list-style-type: none"> ▪ The minimum setback of a <i>floating dock</i>, accessory to an adjacent <i>waterfront parcel</i> is as follows: ▪ 5 m from the side <i>parcel boundaries</i> of that <i>waterfront parcel</i>, projected onto the <i>foreshore</i> and water. ▪ 6 m from a <i>foreshore park</i> or <i>park side parcel boundaries</i> projected onto the <i>foreshore</i> and water.

Part 5. Parking and Loading Regulations

5.1 Number of Parking and Loading spaces

- .1 The number of vehicle *parking spaces* and *loading spaces* required for each *use* is set out in Table 1 Required Parking Spaces and *Loading spaces*.
- .2 Where the calculation of the required number of vehicle *parking spaces* and *loading spaces* results in a fraction, round up to a whole number.
- .3 Where seating is the basis for calculating the number of vehicle *parking spaces* and *loading spaces*, each 0.5 m of width on a bench, pew, booth or similar seating type, is one seat.
- .4 Where more than one *use* is located on a *parcel*, the total number of *parking spaces* and *loading spaces* required is the total of the requirements for each *use*.
- .5 Where more than one requirement applies to a *use*, the more stringent requirement applies.

5.2 Parking Space

A *parking space* must be a minimum of 16.5 m² in area, 3 m wide, 5.5 m long, have 2.2 m overhead clearance and have a regular surface with a maximum slope of 8%. The maximum slope of 8% does not apply to a *single detached dwelling* or *guest accommodation*.

5.3 Loading space

A *loading space* must be a minimum of 3.7 m wide, 9 m long, have 3.7 m overhead clearance, have a regular surface with a maximum slope of 8%, and not be used as a *parking space*.

5.4 Average Area of Parking Spaces

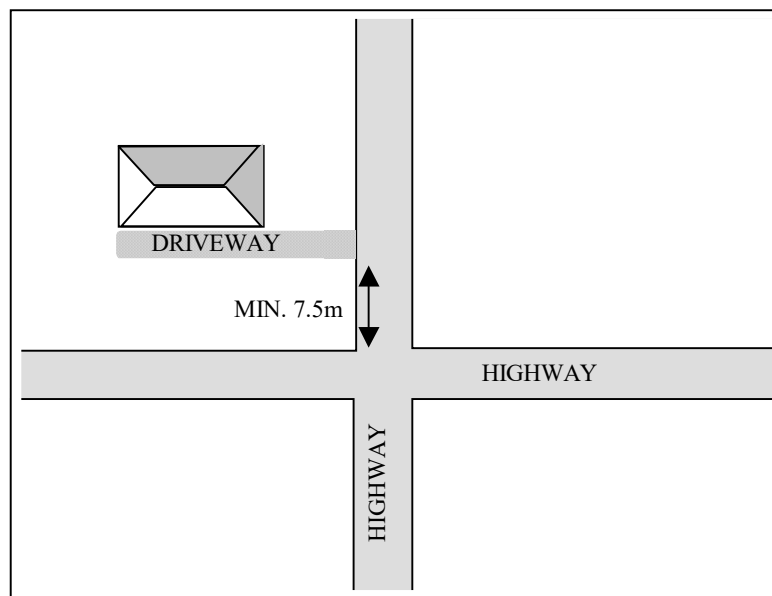
The area of a *parking space* may be reduced by a maximum of 20% provided the average area of all *parking spaces* on the *parcel* is equal to or greater than the minimum *parking space* area requirement.

5.5 Access to Parking and Loading space

- .1 A *parking space* and *loading space* must be accessible from a driveway or other internal roadway which is connected to a *highway*.
- .2 A *parking space* and a *loading space* must be constructed so as to permit unobstructed access to and egress from each space at all times without the need to move other vehicles (except a *parking space* for a *single detached dwelling*, and *guest accommodation*).

5.6 Location of Parking and Loading space

- .1 A *parking space* or *loading space* must be located on the same *parcel* as the *use* to which it is required.
- .2 A *parking space* or loading area must not be within the front *setback*.
- .3 Access from a *highway* to a *parking area* or loading area must not be closer than 7.5 m to the nearest point of intersection of two or more *highways* as shown in the figure below:



Distance from a highway to a parking space

5.7 Bicycle Parking

- .1 Bicycle *parking spaces* shall be provided in addition to vehicle parking for each *use* as specified in Table 3.
- .2 Design and Standards:
 - (a) Bicycle *parking spaces* shall be a minimum of 0.6 m in width and a minimum of 1.8 m in length, shall have a vertical clearance of at least 1.9 m, and shall be situated on a hard surface.
 - (b) Aisles between parked bicycles should be a minimum 1.2 m in width.
 - (c) Bicycle racks shall be located in a convenient, well-lit location that is easily located by visitors and subject to visual surveillance by occupants of the *building* served by the rack.
 - (d) Bicycle racks shall:
 - (i) be constructed of theft-resistant material;
 - (ii) be securely anchored to the floor or ground;
 - (iii) support the bicycle frame above the centre of gravity; and

- (iv) enable the bicycle frame and front wheel to be locked with a U-style lock that is CSA compliant.

Table 2 Required Parking Spaces and Loading Spaces

Use	Minimum Required Number Of Parking Spaces	Minimum Required Number of Loading spaces
<i>aggregate sale</i>	4	1
<i>assisted living housing</i>	1 space per unit	
<i>bed and breakfast</i>	1 per guest room	1
<i>campground</i>	1 for each <i>camping space</i> plus one visitor <i>parking space</i> per 10 <i>camping spaces</i>	
<i>cannabis production facility</i>	1 per 100 m ² of <i>gross floor area</i>	2
<i>child care facility, community care facility</i>	1 for each 20 m ² of <i>floor area</i>	
<i>civic facility</i>	1 for each 25 m ² of <i>gross floor area</i>	1
<i>commercial lodging</i>	two plus one per <i>temporary sleeping unit</i>	1
<i>dwelling unit</i>	2 per <i>dwelling unit</i>	
<i>eating and drinking establishments</i>	3 plus one for each 10 m ² of <i>gross floor area</i>	one where the <i>gross floor area</i> is greater than 500 m ²
<i>eating and drinking establishments (drive-in only)</i>	1 per 4 seats	
<i>educational facility</i>	<ul style="list-style-type: none"> ▪ 1 for each 10 m² of <i>gross floor area</i> ▪ one for each 50 m² of <i>gross floor area</i> for distance learning schools 	
electrical, plumbing, welding, machining, mechanical repair	1 per 100 m ² of <i>gross floor area</i>	
<i>farm and garden supply</i>	1 per 100 m ² of sales, storage or display area	
financial institution	1 per 30 m ² of <i>gross floor area</i>	
fire hall	3 per bay	1
<i>golf course</i>	6 per hole	1
<i>health services centre</i>	1 per 30 m ² of <i>gross floor area</i>	
<i>home occupation</i>	1, plus one for each employee	
<i>kennel</i>	1 plus 1 for each 30 m ² of <i>gross floor area</i>	

Use	Minimum Required Number Of Parking Spaces	Minimum Required Number of Loading spaces
log building manufacturing, log milling	1 per 500 m ² of manufacturing, processing, sales, administration or display area	1
<i>manufactured home park space</i>	2 per space	
<i>manufacturing, fabricating and processing</i>	1 per 50 m ² of manufacturing area	1 per 50 m ² of manufacturing area
<i>mini storage</i>	4	
<i>multiple-family dwelling</i>	2 per <i>dwelling unit</i>	
museum	4	
<i>office</i>	1 per 30 m ² of <i>gross floor area</i>	
<i>outdoor sales</i>	1 per 250 m ² of sales, storage or display area	1
<i>personal service</i>	1 for each 25 m ² of <i>gross floor area</i>	
<i>private educational facility</i>	50	
<i>public assembly facility</i>	1 for each 10 m ² of <i>gross floor area</i>	
<i>public utility, public works yard</i>	3 for each <i>use</i>	
<i>recycling drop off facility</i>	4	1
<i>retail store, rental shop</i>	1 per 30 m ² of <i>gross floor area</i>	1 where the <i>gross floor area</i> is greater than 500 m ²
<i>secondary dwelling unit</i>	1 in addition to spaces required for the <i>principal dwelling unit</i>	
<i>single detached dwelling</i>	2	
<i>service station, vehicle repair, vehicle wrecking</i>	4 spaces in addition to spaces required for vehicle fueling	1
<i>vacation rental</i>	1 per bedroom	

Table 3 Bicycle Parking Requirements

Use	Requirements
<i>bed and breakfast</i> <i>commercial lodging</i> <i>institutional use (except school)</i> <i>eating and drinking establishment</i> <i>retail store</i> <i>civic facility</i>	4 where the <i>gross floor area</i> is less than 500 m ² , eight where the <i>floor area</i> is 500 m ² or greater.
<i>educational facility</i>	20% of the number of students, plus 5% of the number of staff.

Part 6. Signage Regulations

- .1 *Signs* are only permitted in the *zones* specified in Part 4 of this *Bylaw*. The type, maximum number, maximum area, and maximum *height* of *signs* permitted is outlined in Table 4 below:

Table 4 Signage Regulations

	Zone	Regulations
(a)	RSC, RH, MH, RR1, MHP1, RM1, and VR	<ul style="list-style-type: none"> 1 <i>freestanding sign</i> per <i>parcel</i> <i>sign face area</i>: 1 m² <i>sign height</i>: 2.5 m
(b)	CDD1, AG1 and PI	<ul style="list-style-type: none"> 2 <i>freestanding signs</i> per <i>parcel</i> <i>sign face area</i>: 3 m² <i>sign height</i>: 3 m
(c)	HC, GC, and ID	<ul style="list-style-type: none"> 2 <i>freestanding signs</i> per <i>parcel</i> 2 <i>facia signs</i> per <i>parcel</i> <i>sign face area</i>: 10 m² <i>sign height</i>: 8 m

- .2 No part of any *sign* must be located within 1 m of any *parcel boundary*.
- .3 Internal and external illumination of *signs* shall only be permitted provided that the light source does not cause undue glare to adjacent properties or persons travelling on adjacent public *highways* or in any way obstruct or interfere with the function of a traffic signal light or *sign*. *Illuminated signs* are permitted only within the HC, ID, GC, PI, and CDD1 *zones*.
- .4 The following types of *signs* are exempt from the signage regulations in Table 4:
- real estate advertising *signs* provided they are:
 - located on the property for sale;
 - limited to one (1) *sign* per *parcel*
 - limited to a *sign face area* no larger than 1 m²;
 - limited to a *sign height* of 2.5 m;
 - displayed for a maximum of 24 consecutive months and removed within one (1) week after a final sale is achieved.
 - window *signs* located on the same premises as the business to which attention is being directed;
 - bus stop/shelter *signs*;
 - address *signs*, hours of operation *signs*, and alarm company *signs*;

- (e) governmental *signs*;
- (f) construction project *signs* provided they are removed within one (1) week after the project construction is completed;
- (g) garage sale *signs* with a *sign* face area no larger than 0.3 m² provided they are removed within 2 days after end of the garage sale that it advertised;
- (h) election campaign *signs* provided that such *signs* are removed within five (5) days after the election or referendum;
- (i) directional *signs*, provided that the *sign* does not include advertising content and does not exceed a *sign* face area of 0.3 m²
- (j) any *signs* displayed under the authority of an enactment (e.g.; notices of development, ALR applications);
- (k) heritage designation plaques.

.5 All *signs* placed on a *parcel* must be *accessory* to a *principal use* on that same *parcel* (i.e.; no "third-party" signage) with the exception of:

- (a) *signs* which promote or advertise a political party or candidate; displayed from the date of the election call to five days after the election or referendum; and
- (b) directional *signs*, intended to direct the travelling public.

Part 7. Manufactured Home Park Regulations

.1 Manufactured Home Space

- (a) All *manufactured home spaces* shall be clearly identified by permanent markers or other suitable means;
- (b) All *manufactured home spaces* shall:
 - (i) be drained to a storm sewer or other system constructed in accordance with accepted engineering practice;
 - (ii) be clearly numbered; and
 - (iii) be constructed in compliance with the BC Building Code.

.2 Manufactured Homes

- (a) All *manufactured homes* shall meet or exceed the Canadian Standards Association Standard Z240, Z241 or A277, as the case may be;
- (b) All *manufactured homes* shall be constructed in compliance with the BC Building Code, and any other applicable provincial acts as the case may be; and
- (c) *Skirtings* shall be installed within 60 days of installation of a *manufactured home* on a *manufactured home space*, and shall have two (2) easily removable access panels of a minimum width of 1.2 m. One (1) panel shall provide direct access to the area enclosed by the *skirting* for inspection or servicing the service connections to the *manufactured home*, and the other providing access to the area enclosed by the *skirting* for storage.

.3 Recreation Areas

- (a) Not less than 5% of the gross site area of the *manufactured home park* shall be devoted to tenants' recreational uses, and shall be provided in a convenient and accessible location. For the purpose of calculating recreational space requirements, any indoor recreational space provided shall be counted as double its actual area;
- (b) The recreation areas shall not include yard areas, *parking areas*, ancillary *buildings*, *manufactured home spaces*, driveways and storage areas;
- (c) In *manufactured home parks* where more than 1,000 m² of recreation space is required, two (2) or more recreational areas may be provided; and
- (d) Recreation areas in the *manufactured home park*, except indoor recreation facilities, shall be of a grass, concrete or asphaltic.

.4 Setbacks

- (a) Every *manufactured home park* shall comply with the *setback* requirements in section 4.10 of this *Bylaw*;
- (b) The only roads permitted in the setback area are those which cross it as close to right angles as practical and connect directly with the road system contained within the

remainder of the *manufactured home park*. No road shall traverse a setback area and give direct access from a public *highway* to a *manufactured home park*.

.5 Access

- (a) A second access from a public *highway* separated by at least 60 m from the first access, shall be provided to each *manufactured home park* containing 50 or more *manufactured home spaces*, up to a maximum of three (3) accesses.

.6 Roadways and Walkways

- (a) All *manufactured home spaces*, owner's residential plot, storage areas, and service *buildings* as well as other facilities where access is required shall have access by internal street systems rather than direct access from a *highway*;
- (b) Minimum roadway width requirements shall be as follows:
 - (i) Roads shall have a minimum paved width of 7 m and a right-of-way of 15 m;
 - (ii) One-way roads shall not exceed 150 m in length;
 - (iii) Dead-end cul-de-sacs shall not exceed 150 m in length; and
 - (iv) Dead-end roads and cul-de-sacs shall have a turning circle right-of-way at the dead-end with a radius of at least 15 m.
- (c) Roads shall be adapted to the topography, and shall have suitable gradient for safety of traffic that shall not exceed a grade of 12%;
- (d) Minimum speed for road design shall be 15 km/h;
- (e) Pedestrian walkways shall provide safe, convenient, all season pedestrian access. They shall be of adequate width for intended *use* and shall be durable and convenient to maintain;
- (f) Pedestrian walkways shall be located in areas where pedestrian traffic is concentrated; e.g., the *park* entrance, *park office*, and other important facilities. Pedestrian walkways should preferably be through interior areas removed from the vicinity of streets;
- (g) Alignment and gradient of walkways shall be appropriate for safety, convenience, and appearance, and shall be suitable for use both by pedestrians and for the circulation of small wheeled vehicles such as baby carriages, service carts and wheelchairs;
- (h) Width of pedestrian walkways shall generally be at least 2 m; and
- (i) Individual walkways shall provide access to each *manufactured home space* from a street or *parking space* connected to the street.

.7 Drainage

- (a) All *manufactured home parks* shall be provided with a storm water drainage system installed according to a design by an appropriately registered professional to contain runoff on site, or discharge it to a storm runoff system in accordance with relevant provincial guidelines.

.8 Water System

- (a) All *manufactured home parks* shall be connected to a *community water system* or a system that is approved by the province or local health authority.

The *community water system* shall be designed, fabricated and installed in accordance with good engineering practice and to the standards as set by the CSRD. The design and installation of a *community water system* shall be subject to the approval of the CSRD and the applicable provincial agency.

.9 Sewage Treatment and Disposal Systems

- (a) All *manufactured home parks* shall be connected to a *community sewer system* or a system that is approved by the province or local health authority.

The *community sewer system* shall be designed, fabricated and installed in accordance with good engineering practice and to the sewer standards as set by the CSRD. The design and installation of a *community sewer system* shall be subject to the approval of the CSRD and the applicable provincial agency;

.10 Garbage Disposal

- (a) The owner of a *manufactured home park* shall dispose or arrange for disposal of garbage or refuse.
- (b) If the owner of a *manufactured home park* establishes one (1) or more garbage disposal areas within the park for the collection of garbage and refuse, he or she shall:
- (i) provide a secure and adequate number of containers;
 - (ii) maintain the containers so that they shall not become foul-smelling, unsightly, or a breeding place for flies;
 - (iii) screen the depot with shrubs, trees or fencing from adjacent *manufactured home spaces*.

Part 8. Beekeeping Regulations

Beekeeping is permitted in all *zones* except MHP1, RM1, HC, PK, and all Foreshore *zones*, subject to the following regulations:

- .1 Where permitted, hives should be located a minimum distance of 8 m from any *parcel boundary*, unless the beehive is situated either 2.5 m above the adjacent ground level or, less than 2 m above the adjacent ground level and behind a solid *fence* or landscape screen more than 2 m in height, running parallel to any *parcel boundary* and extending at least 6 m beyond the hive in both directions;
- .2 The number of colonies permitted in an apiary depends upon the size of the *parcel* as shown in Table 5 below:

Table 5 Beekeeping Regulations

Parcel Size	Maximum Number of Honeybee Colonies
Less than or equal to 0.2 ha	four (4) colonies and four (4) <i>nucleus colonies</i>
Greater than 0.2 ha, but less than or equal to 0.4 ha	six (6) colonies and six (6) <i>nucleus colonies</i>
Each additional 0.4 ha for properties over 0.4 ha in size	six (6) additional colonies and six (6) additional <i>nucleus colonies</i>

(Note: The above regulations in the table do not apply to properties located within the ALR or which have farm status.)

- .3 Bees must not be located within 5 m of *parcel boundary* fronting a *highway* or road, and, to prevent potential human-wildlife conflicts, hives must be located so that they can be seen from a safe distance in any direction;
- .4 All beehive and *nucleus colonies* must be registered with the Ministry of Agriculture; and
- .5 All beehives and *nucleus colonies* shall be :
 - (a) maintained in such a condition so as to reasonably prevent undue swarming or aggressive behavior by bees; and
 - (b) requeened if they are subject to undue swarming or aggressive behavior.

THE FOLLOWING INFORMATION IS NOT PART OF

RANCHERO / DEEP CREEK ZONING BYLAW NO. 751

Further Information About Development And Subdivision Within Ranchero / Deep Creek Zoning Bylaw Area In Addition To Ranchero/Deep Creek Zoning Bylaw No. 751

The following information is provided for the information and convenience of the reader and is not part of this Bylaw. It may be used as a guide to investigate which agencies to contact for further information or requirements where development or subdivision is proposed. The information may not be complete and should be used only as a guide.

Please note that more than one agency may regulate an activity or development. All regulations and bylaws in force must be complied with.

Zoning Bylaw Inspections

Section 1.7 of the Bylaw provides for inspections to determine whether or not the Bylaw is being complied with. Usually the CSRD's Bylaw Enforcement Officer is the person who would conduct these inspections, however, inspections can also be carried out by the Chief Administrative Officer or Manager of Development Services. The general inspection procedure is established by the CSRD's Bylaw Enforcement Policy as amended from time to time. Inspection staff also recognize the need to respect biosecurity measures when inspecting livestock or green house farm operations.

Site Specific Regulations or Special Regulations

In Schedule A of the Bylaw, the text part, there are a number of site specific regulations. These regulations describe a parcel by legal description and a map. If the legal description of the parcel or its boundaries as shown on the map are changed, then the regulation will no longer have effect because the parcel it applies to no longer exists.

Penalties for Contravention of Zoning Bylaw

In a conviction for an offence against a zoning bylaw a court may currently impose a fine of not more than \$10,000, or imprisonment for not more than six (6) months, or both. The provincial government may change the penalties from time to time. In addition to this the costs of prosecution may be awarded. A local government may also apply for an injunction to restrain the contravention of a zoning bylaw.

Development Variance Permits

The CSRD Board in response to an application from a property owner may issue a development variance permit. A development variance permit may vary the provisions of the zoning bylaw; however it must not vary the use or density of land or a flood plain regulation (excepting setbacks from natural boundaries) from that specified in the zoning bylaw.

Bylaws Amending a Zoning Bylaw

Applications to amend a zoning bylaw may be made to the CSRD in accordance with current Development Services Procedures Bylaw. Additional information is available from the CSRD, Development Services Department.

Non-conforming Uses and Siting

The Local Government Act sets out provisions for non-conforming uses and siting. Generally, if land, a building or a structure is lawfully used at the time a bylaw was adopted, and the use does not conform to the Bylaw, then the use may be continued. If the use and density of buildings and structures conform to the Bylaw but the siting, size or dimensions of a building or structure constructed before the Bylaw was adopted do not, then it may be maintained, extended or altered in the manner stated in the Act. The Local Government Act, Division 4 is more detailed than is stated here and additional limitations apply.



Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule B Land Use
Overview Map

Legend

- Wetland
- Highways & Roads
- Unsurveyed Roads
- Electoral Areas Boundary
- Bylaw Boundary
- Parcel Boundary
- Stream
- Zoning**

RSC - Rural and Resource

RH - Rural Holdings

AG1 - Agriculture 1

MH - Medium Holdings

RR1 - Rural Residential 1

RM1 - Multi-Dwelling 1

MHP1 - Manufactured Home Park 1

CDD1 - Comprehensive Development D1

HC - Highway Commercial

VR - Vacation Rental

ID1 - Industrial 1

GC - Golf Course

PI - Public and Institutional

PK - Parks and Protected Areas

FW - Foreshore Water
- Gardom Lake Foreshore Zone**

FG1 - Foreshore General 1

FG2 - Foreshore General 2

FR1 - Foreshore Residential 1

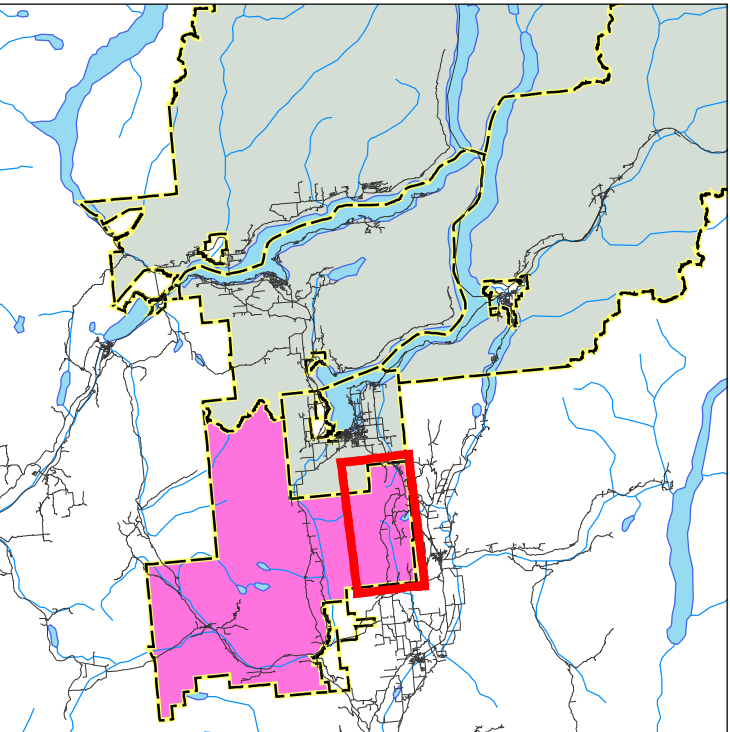
FM1 - Foreshore Multifamily 1

FP - Foreshore Park

FW - Foreshore Water

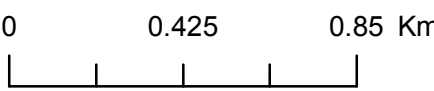
* Please refer to enlarged maps for
identification of Zoning boundaries.

Overview Maps



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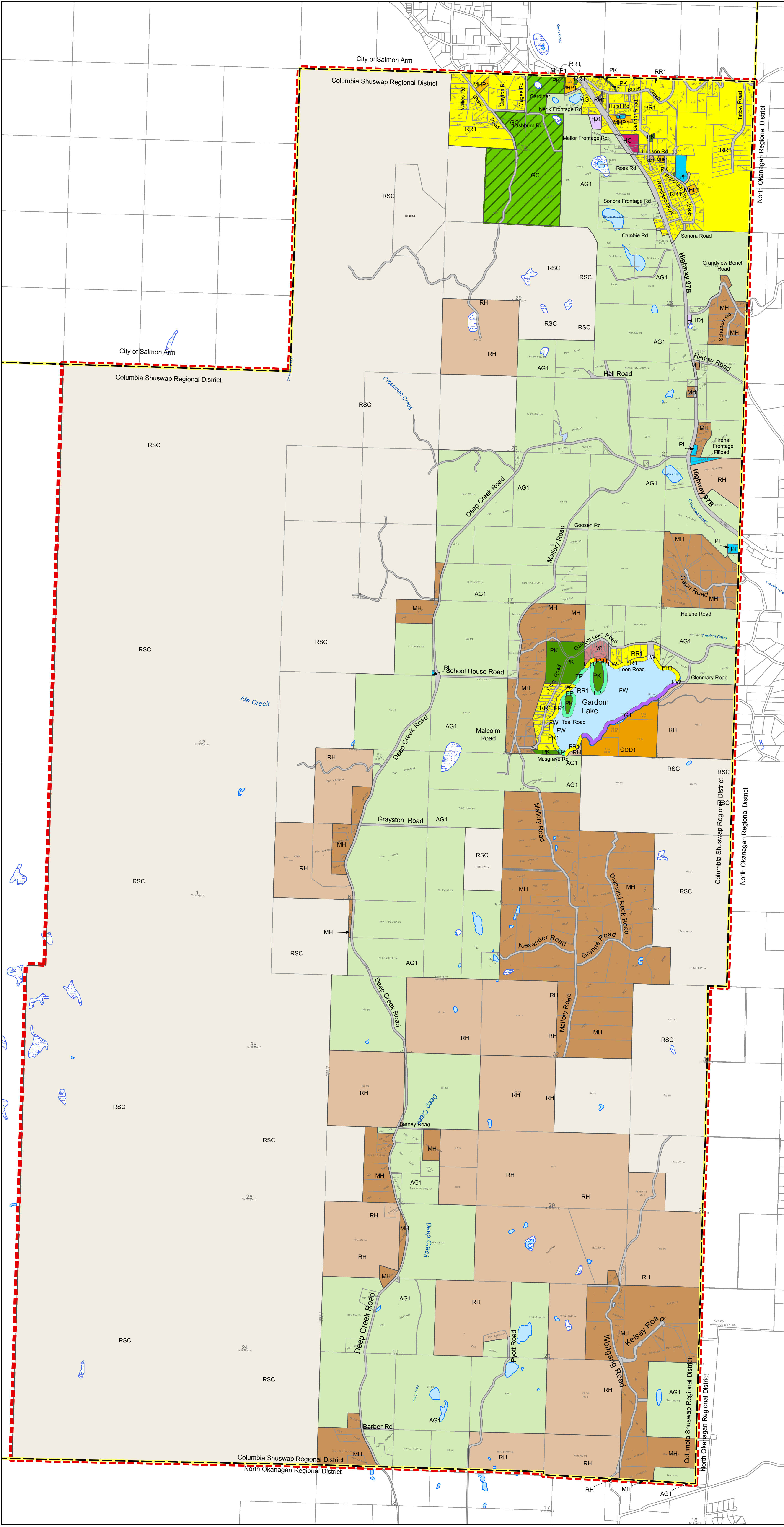
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File: Zoning_AreaD_BL751.mxd

Date: 2018-Feb-13





**Ranchero / Deep Creek
Zoning Bylaw No. 751**

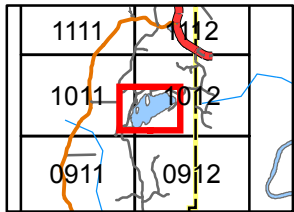
**Schedule B Land Use
Gardom Lake Inset Map**

- CSRD Mapsheets
- Parcel Boundary
- Rivers & Streams
- Lake
- Lake Boundary
- Highways & Roads
- Unsurveyed Road

Gardom Lake Foreshore Zoning

- FG1 - Foreshore General 1
- FM1 - Foreshore Multi-Family 1
- FR1 - Foreshore Residential 1
- FP - Foreshore Park
- FW - Foreshore Water
- CDD1 - Comprehensive Development D1

CSRD Mapsheets



Mapsheet

Nad 83 CNT Datum
UTM Zone 11 Projection

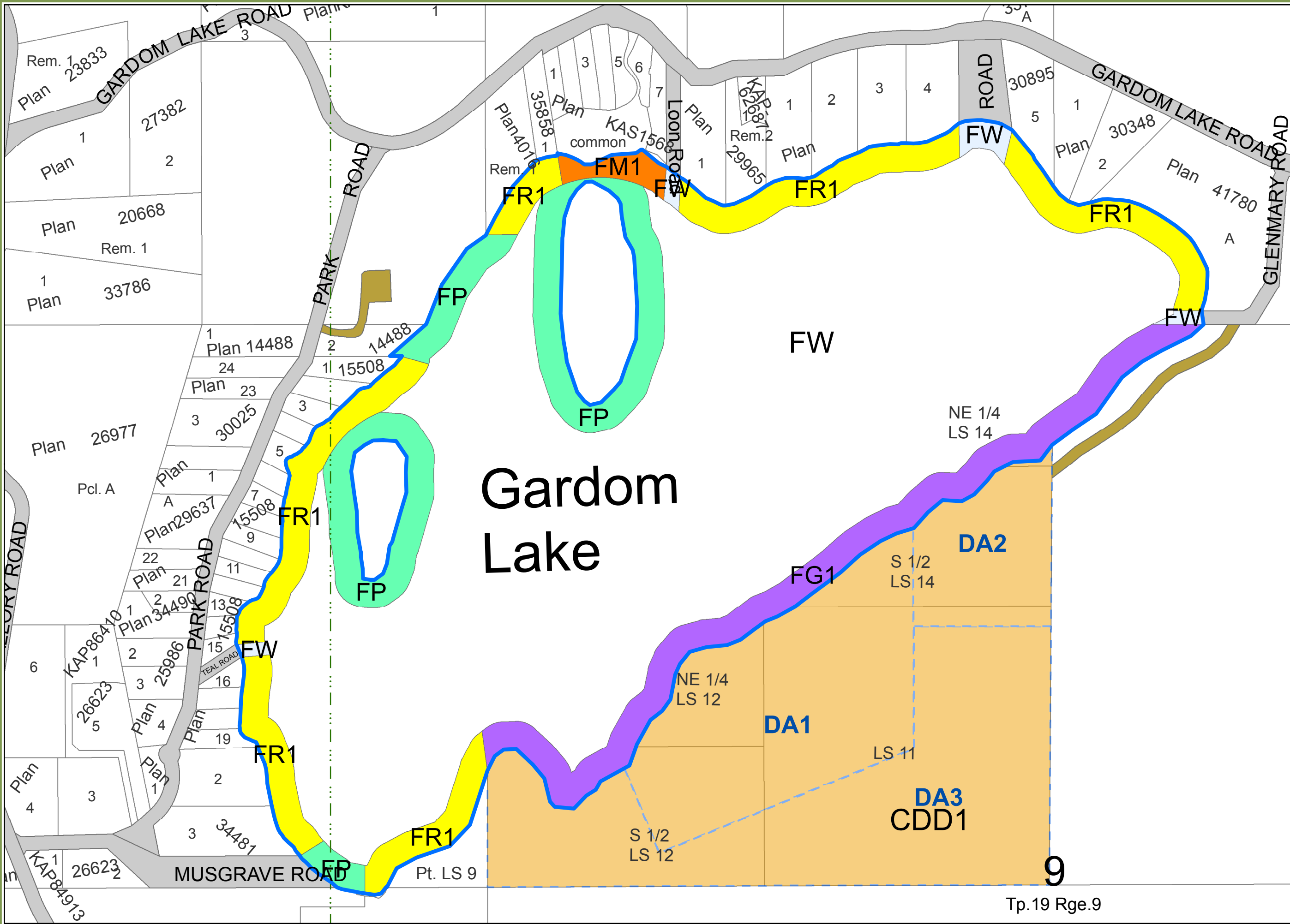
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555 Harbour Front Drive NE, Salmon Arm, BC V1E 4P1
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Date: November 2, 2017

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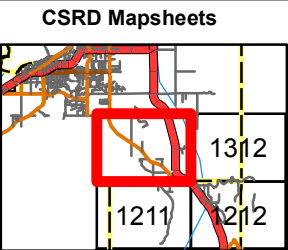


**Ranchero / Deep Creek
Zoning Bylaw No. 751**

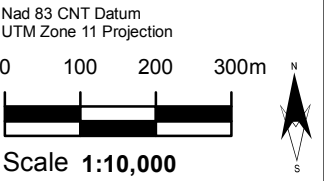
Schedule C

D 1311
Mapsheet 1 of 16

- Electoral Areas Boundary
 - Bylaw Boundary
 - CSRD Mapsheets
 - Parcel Boundary
 - Rivers & Streams
 - Lake
 - Highways & Roads
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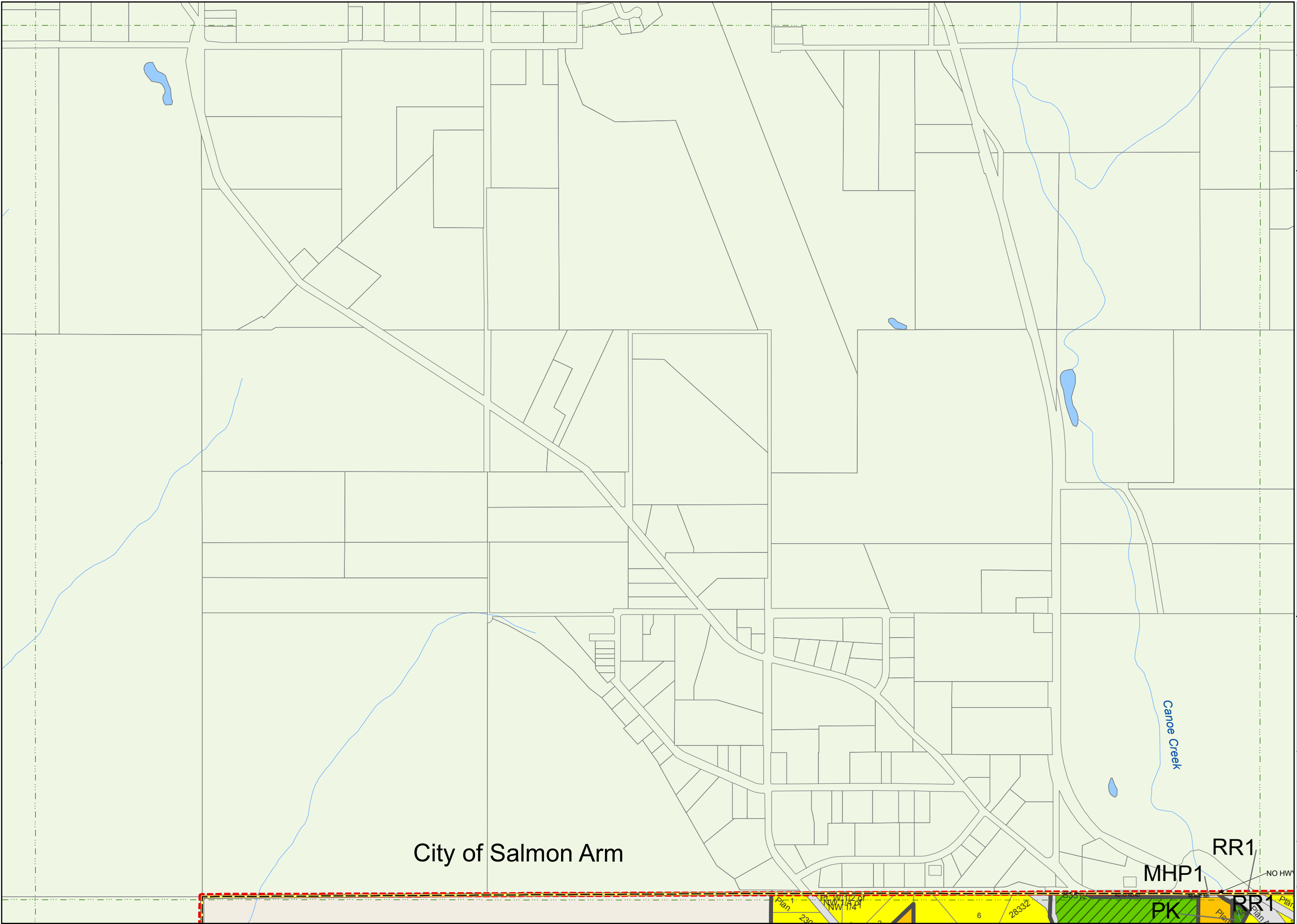


Mapsheet 1311



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Date: Dec 21, 2017

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Zoning Bylaw 751 -- D --

1311



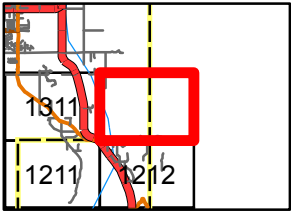
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

D 1312
Mapsheet 2 of 16

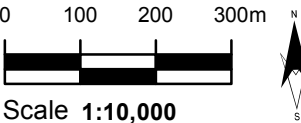
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CSR D Mapsheets



Mapsheet 1312

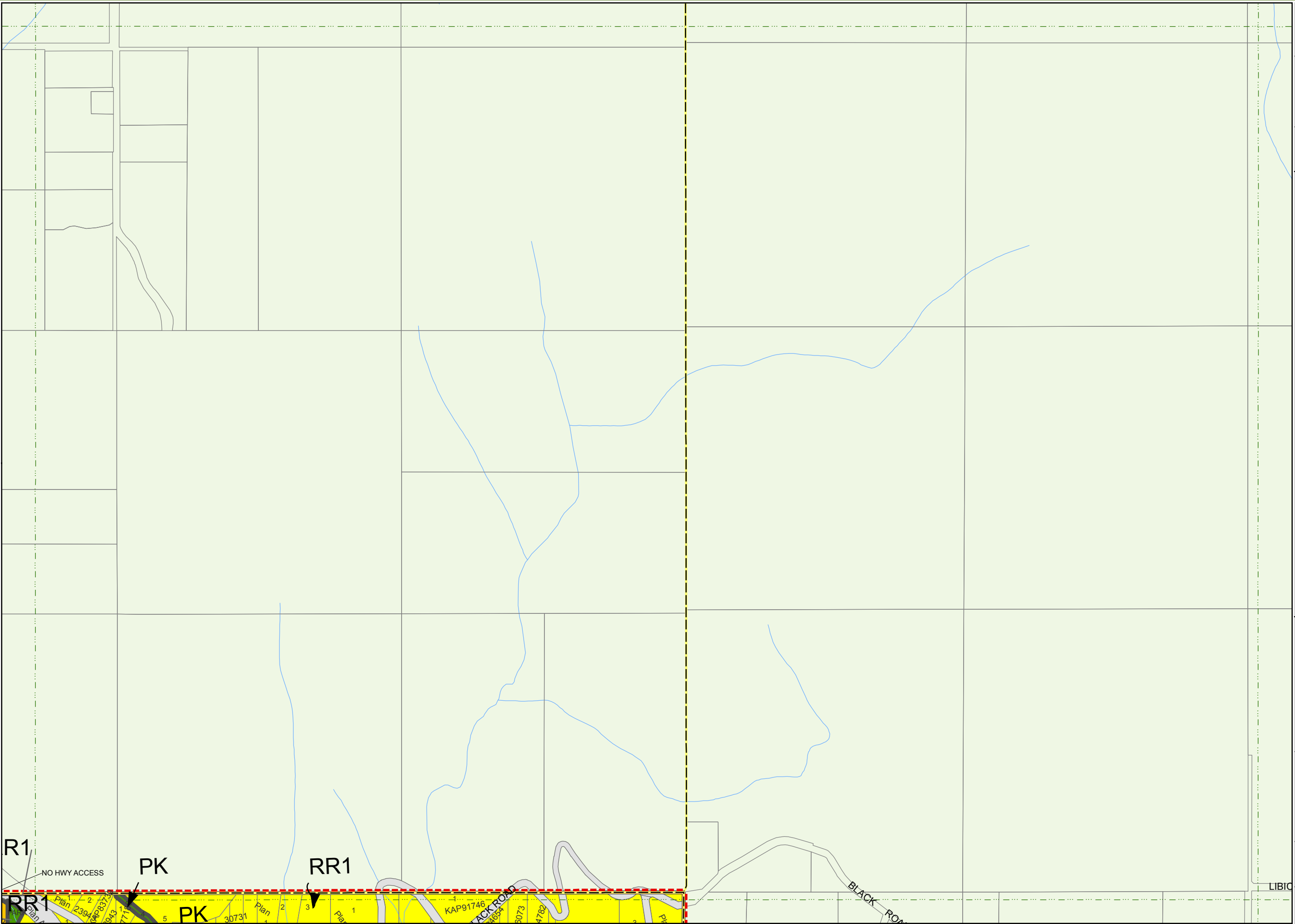
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Scale 1:10,000

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Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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- Electoral Areas Boundary
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- CSR Mapsheet
- Parcel Boundary
- Rivers & Streams
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- Highways & Roads
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FG1 - Foreshore General 1

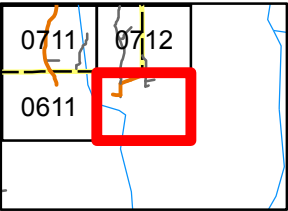
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FR1 - Foreshore Residential 1

FM1 - Foreshore Multi-Family 1

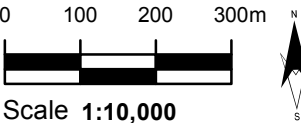
FW - Foreshore Water

CSR Mapsheets



Mapsheet 0612

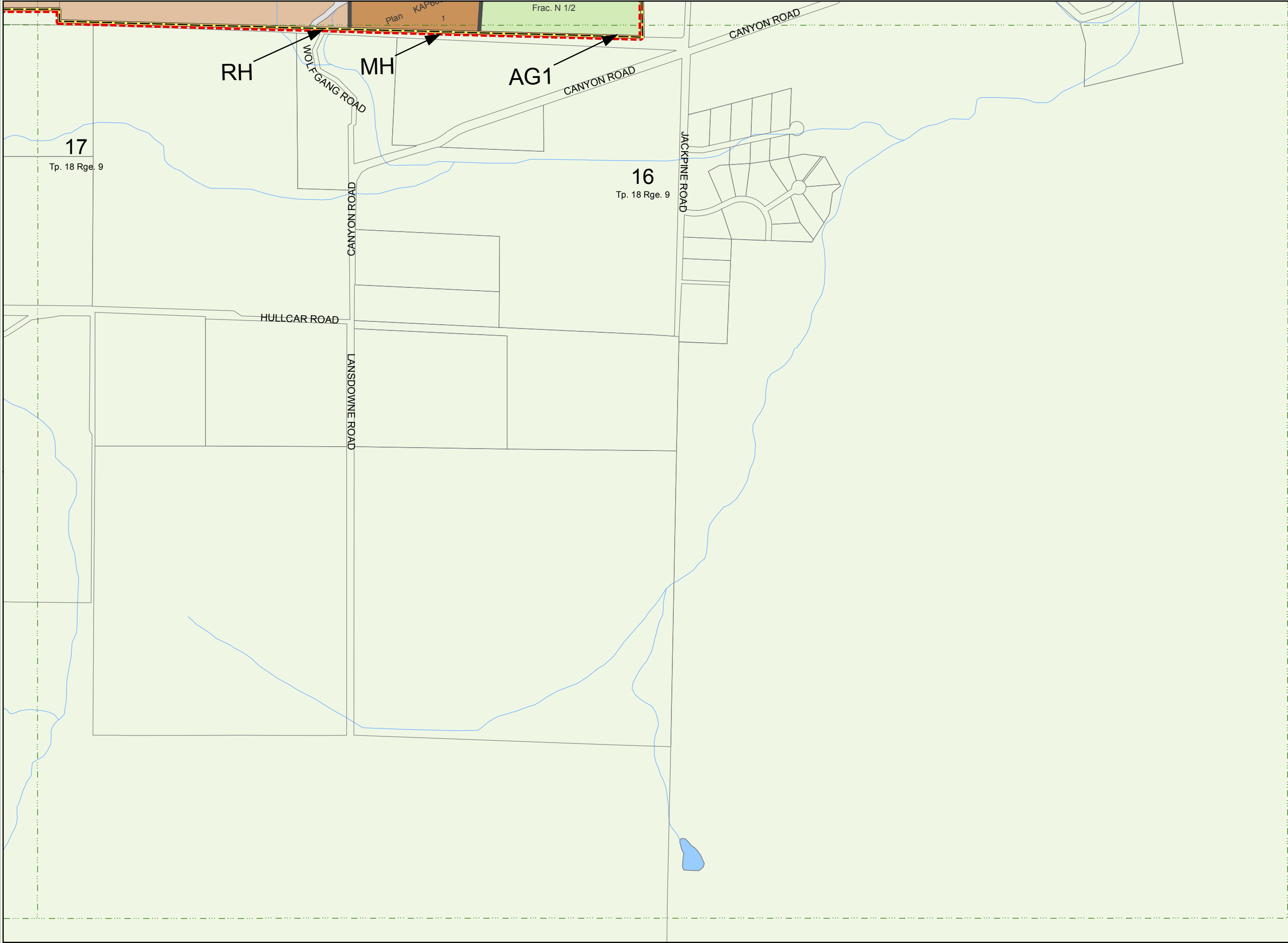
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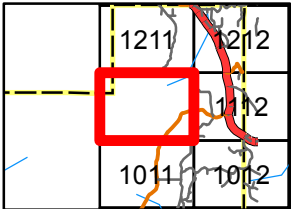
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

D 1111
Mapsheet 4 of 16

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CSRD Mapsheets



Mapsheet 1111

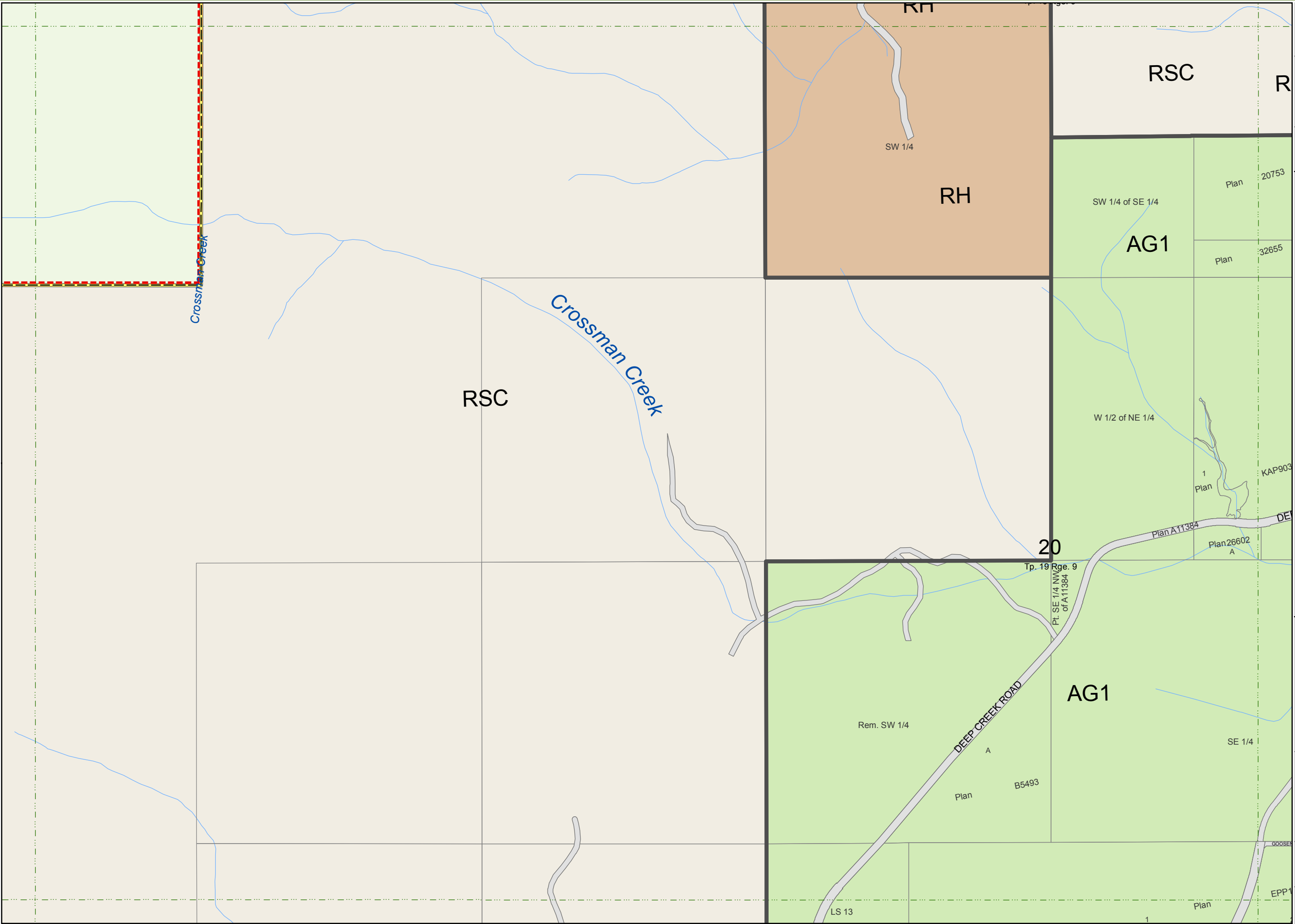
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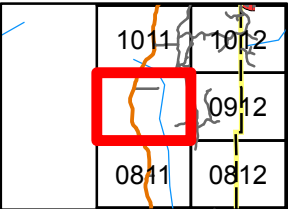
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

D 0911
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CSR D Mapsheets



Mapsheet 0911

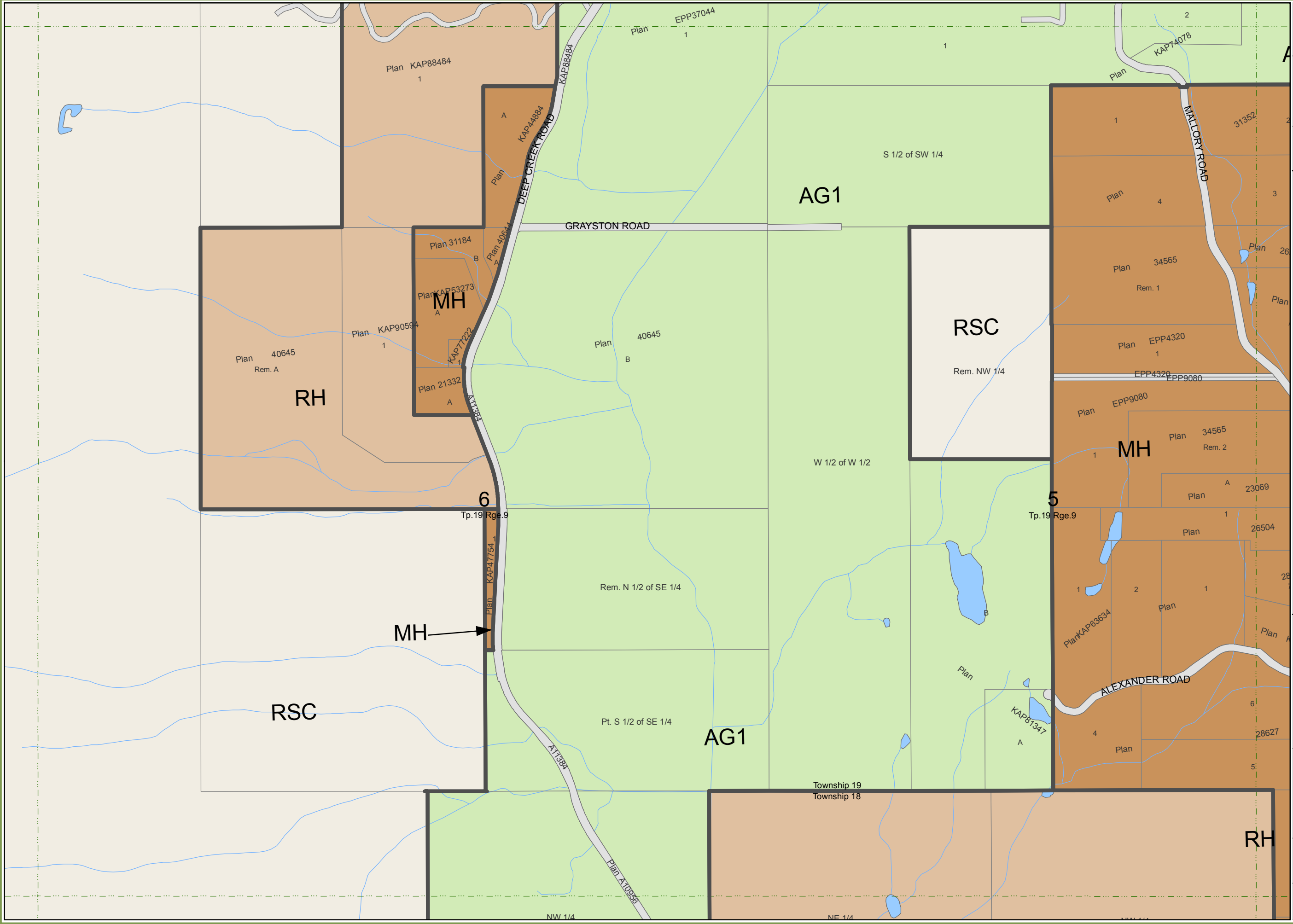
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Zoning Bylaw 751 -- D --

0911



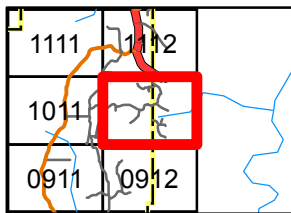
**Ranchero / Deep Creek
Zoning Bylaw No. 751**

Schedule C

D 1012
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CSRD Mapsheets



Mapsheet 1012

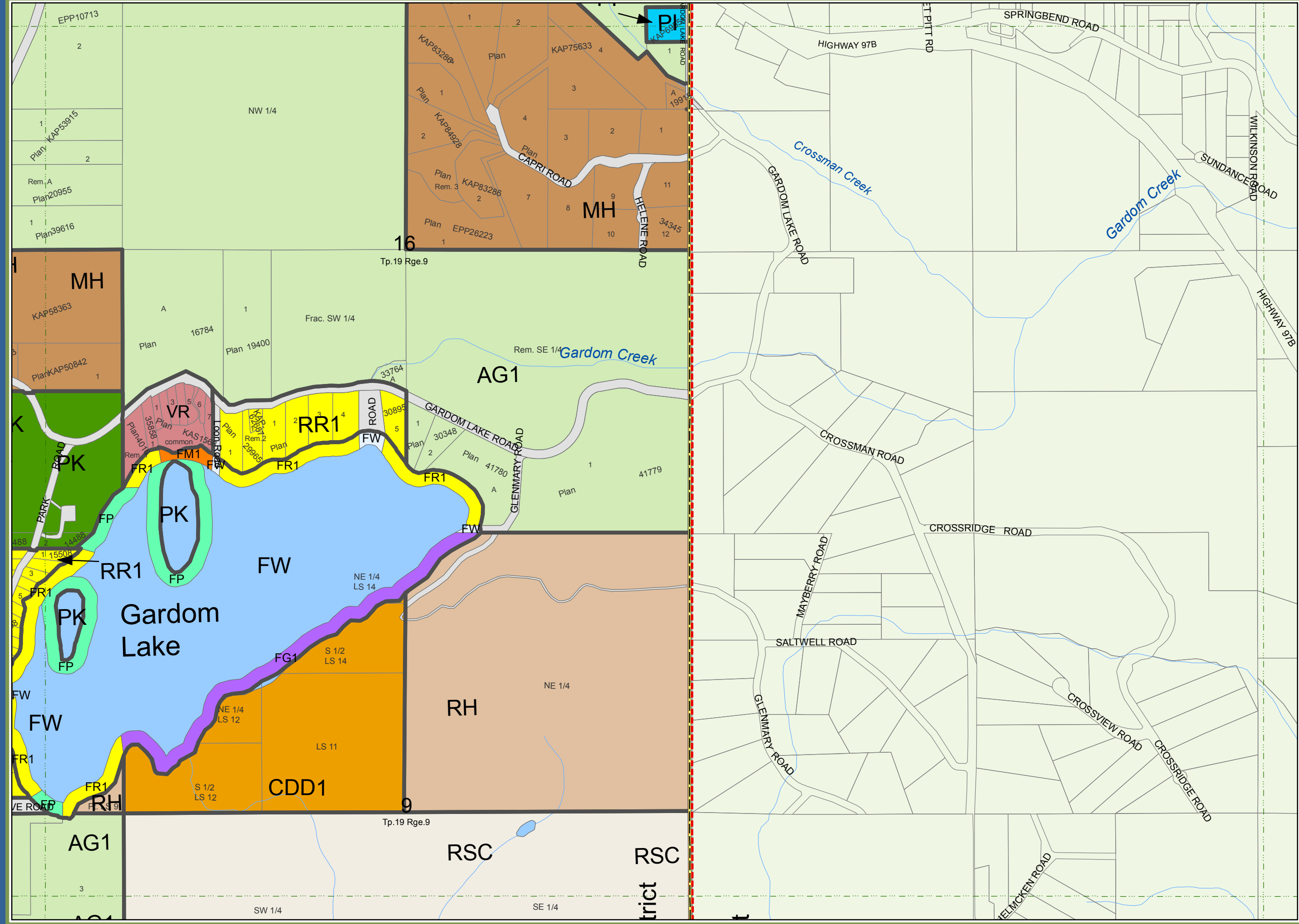
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1012



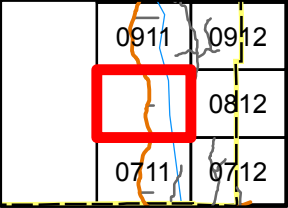
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

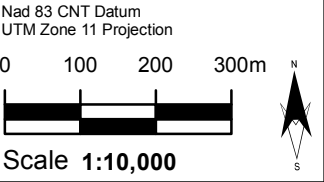
D 0811
Mapsheet 7 of 16

- Electoral Areas Boundary
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CSR D Mapsheets



Mapsheet 0811

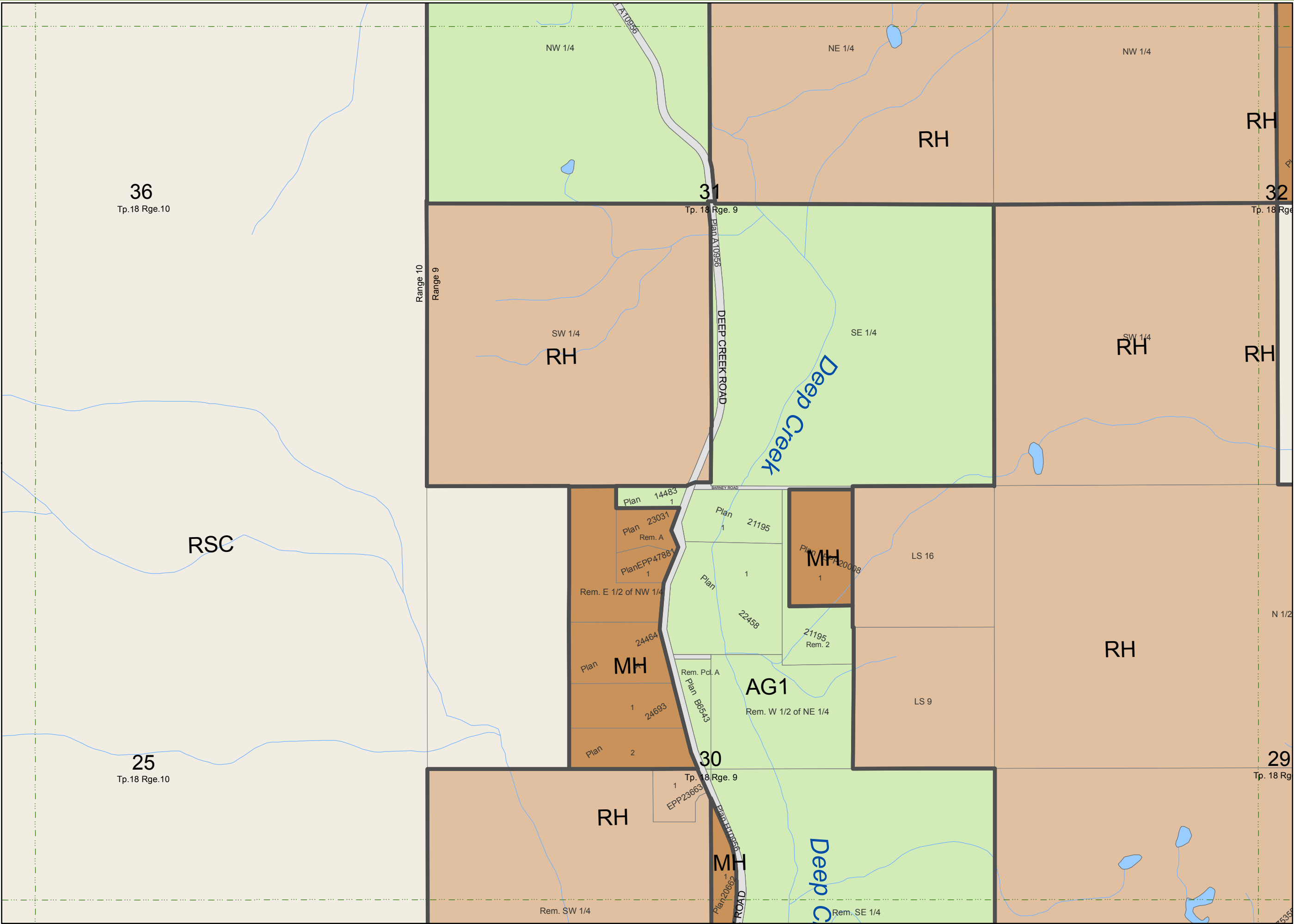


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Zoning Bylaw 751 -- D --

0811





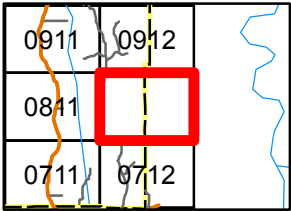
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

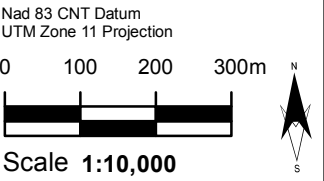
D 0812
Mapsheet 8 of 16

- Electoral Areas Boundary
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CSRD Mapsheets

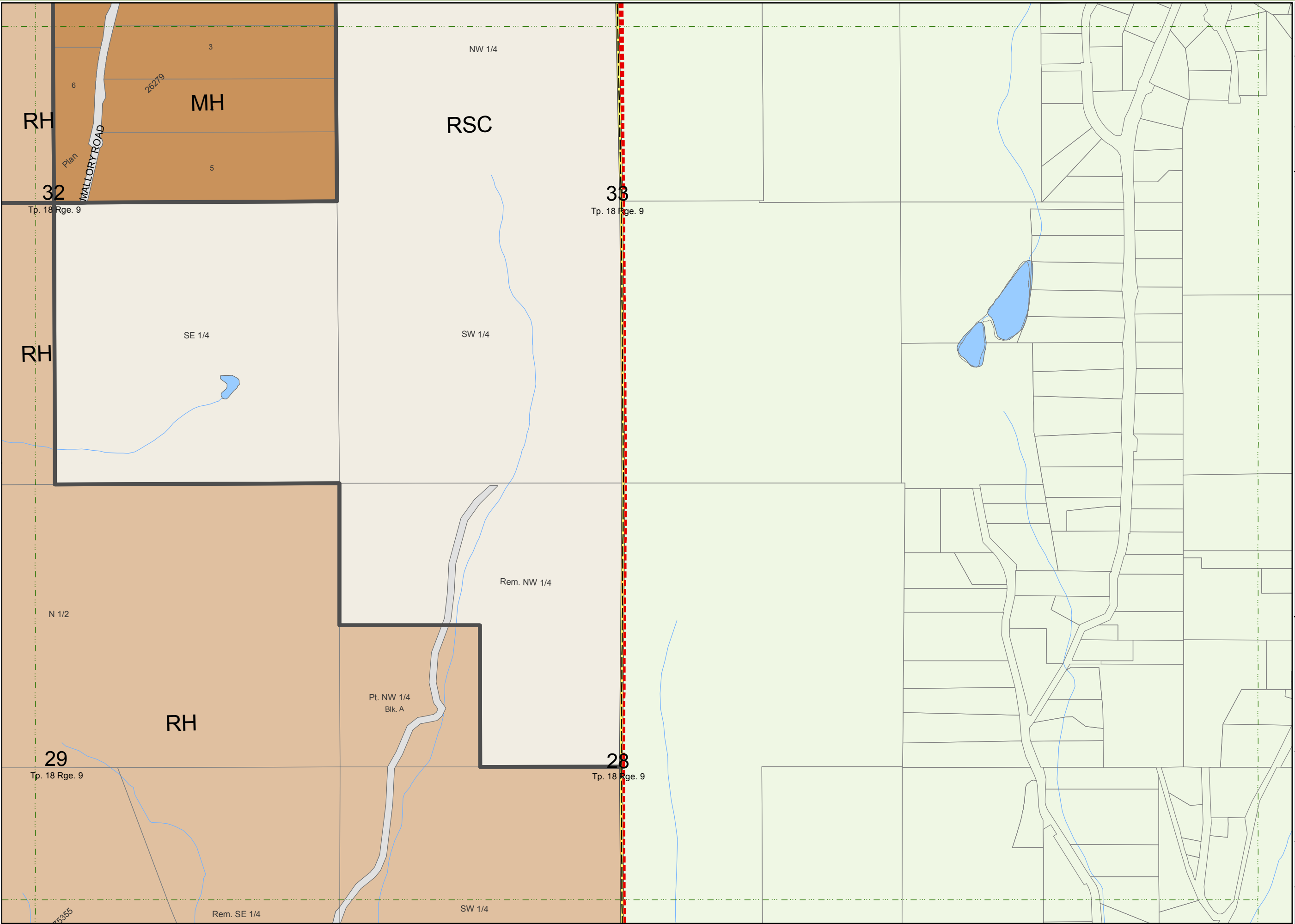


Mapsheet 0812



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Zoning Bylaw 751 -- D --

0812



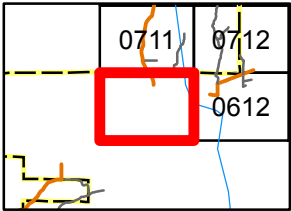
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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Mapsheet 9 of 16

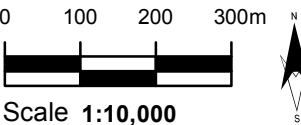
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CSR D Mapsheets



Mapsheet 0611

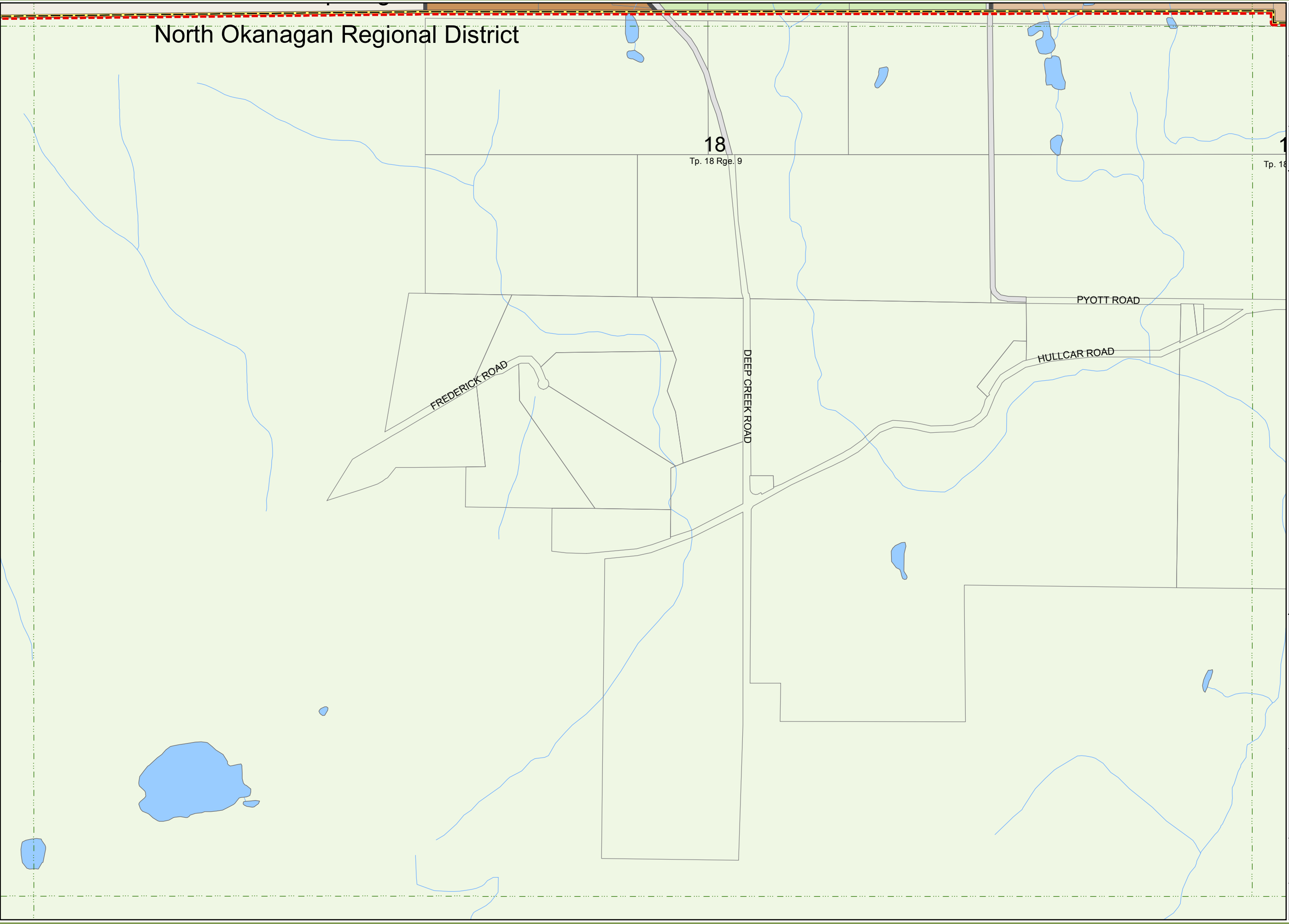
Nad 83 CNT Datum
UTM Zone 11 Projection



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Columbia Shuswap Regional District
555 Harbour Front Drive NE, Salmon Arm, BC V1E 4P1
File: Mapbook_ZoningD_bl751.mxd
Date: Dec 21, 2017

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North Okanagan Regional District





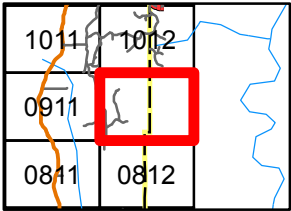
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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Mapsheet 10 of 16

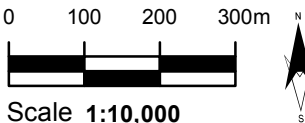
- Electoral Areas Boundary**
Bylaw Boundary
CSR Mapsheets
Parcel Boundary
Rivers & Streams
Lake
Highways & Roads
Unsurveyed Road
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CSR Mapsheets



Mapsheet 0912

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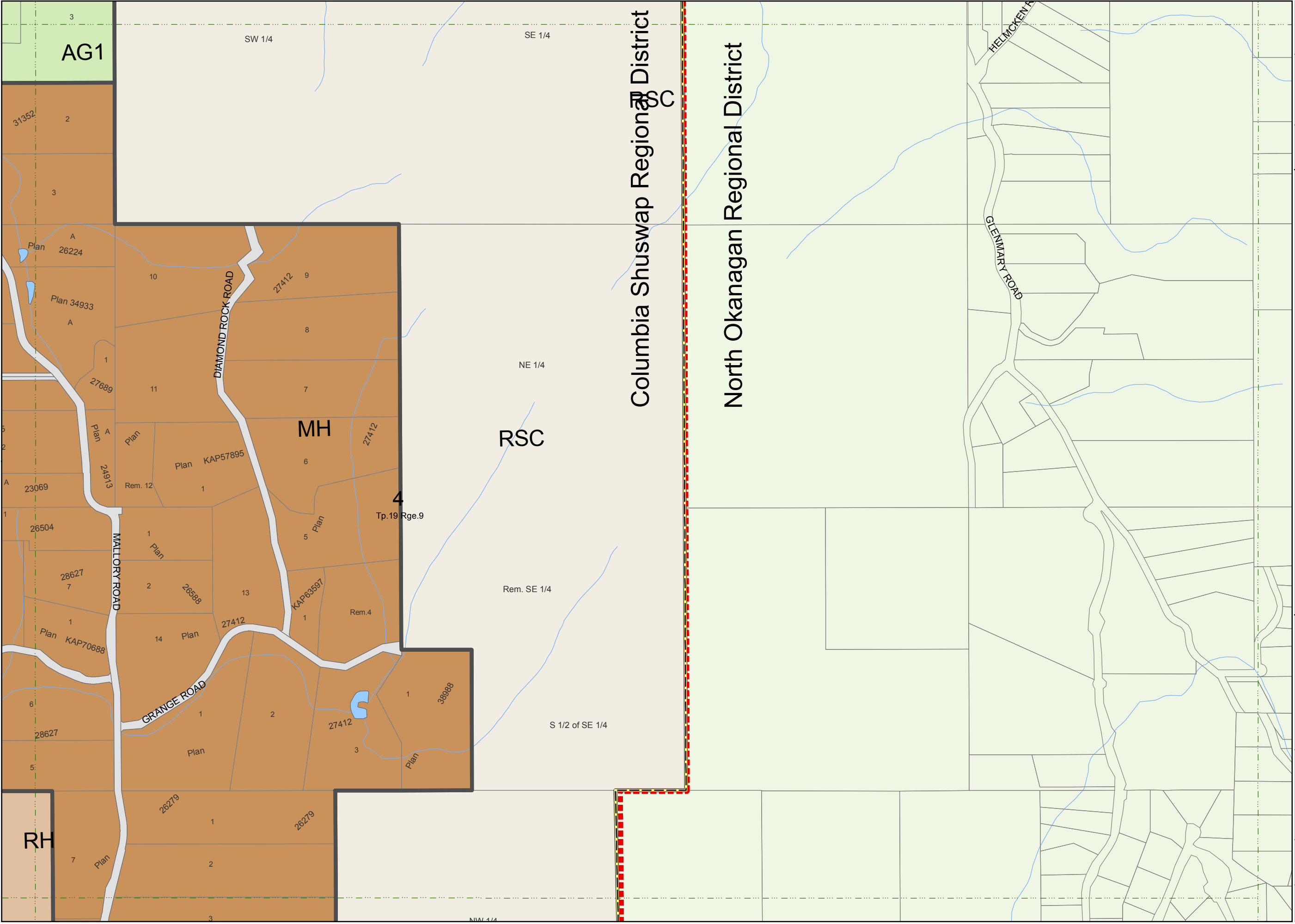
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Zoning Bylaw 751 -- D --

0912





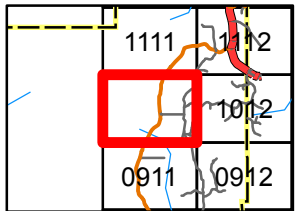
**Ranchero / Deep Creek
Zoning Bylaw No. 751**

Schedule C

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- Electoral Areas Boundary
 Bylaw Boundary
 CSRD Mapsheets
 Parcel Boundary
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CSRD Mapsheets



Mapsheet 1011

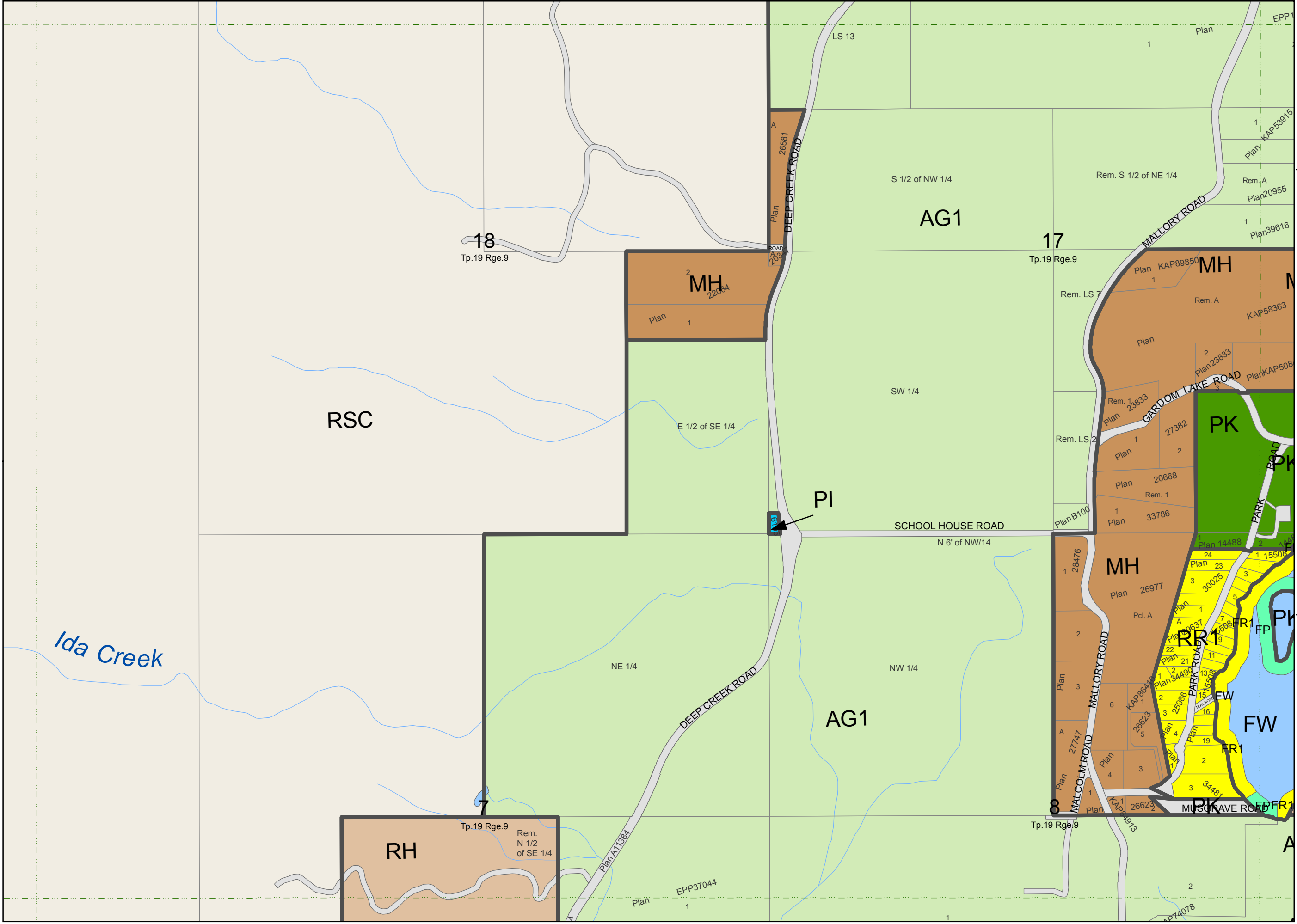
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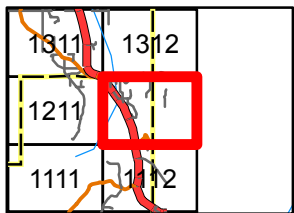
**Ranchero / Deep Creek
Zoning Bylaw No. 751**

Schedule C

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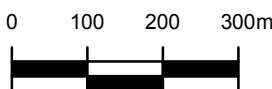
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CSRD Mapsheets



Mapsheet 1212

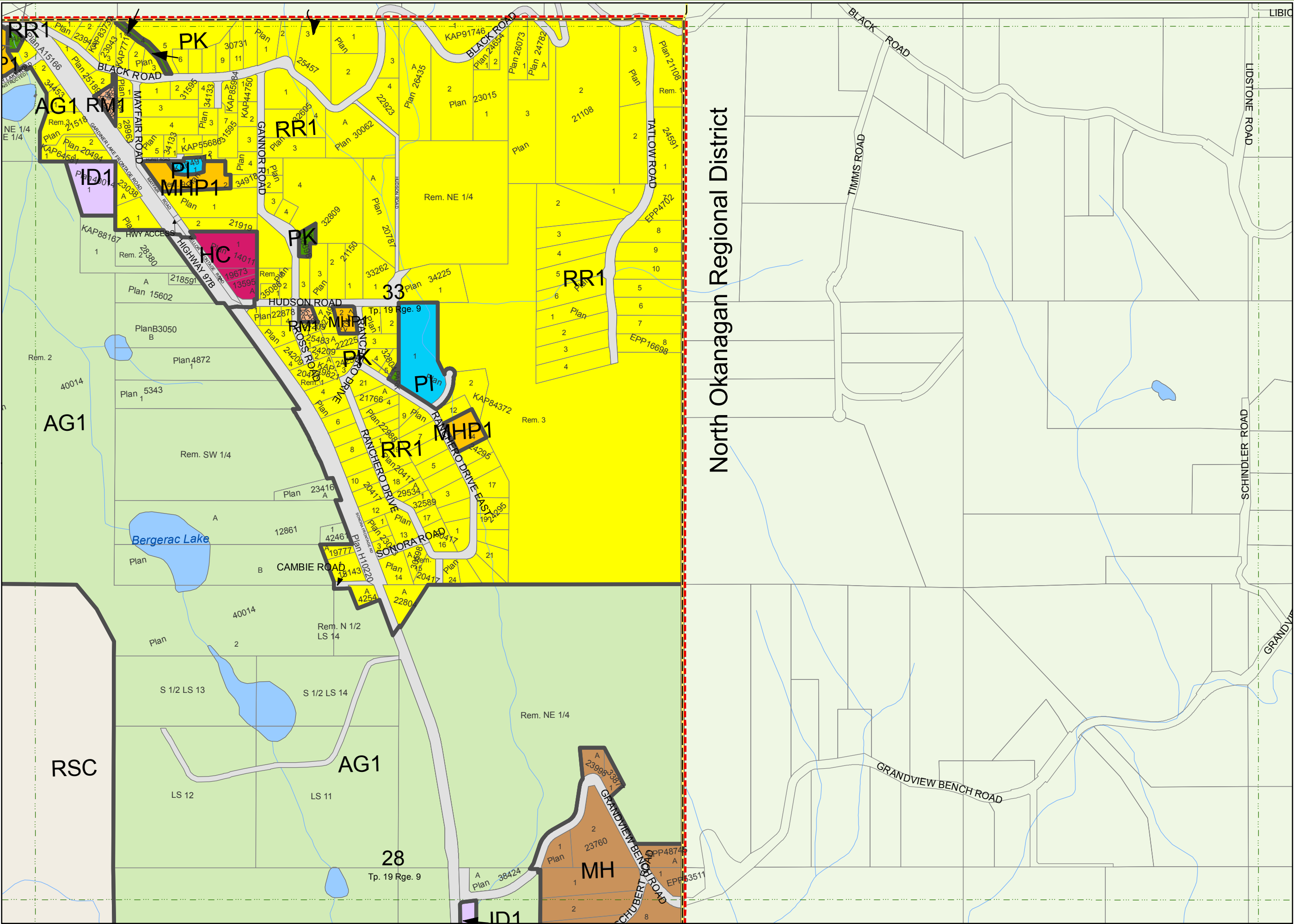
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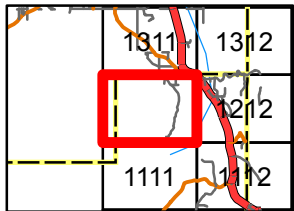
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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CSR Mapsheets



Mapsheet 1211

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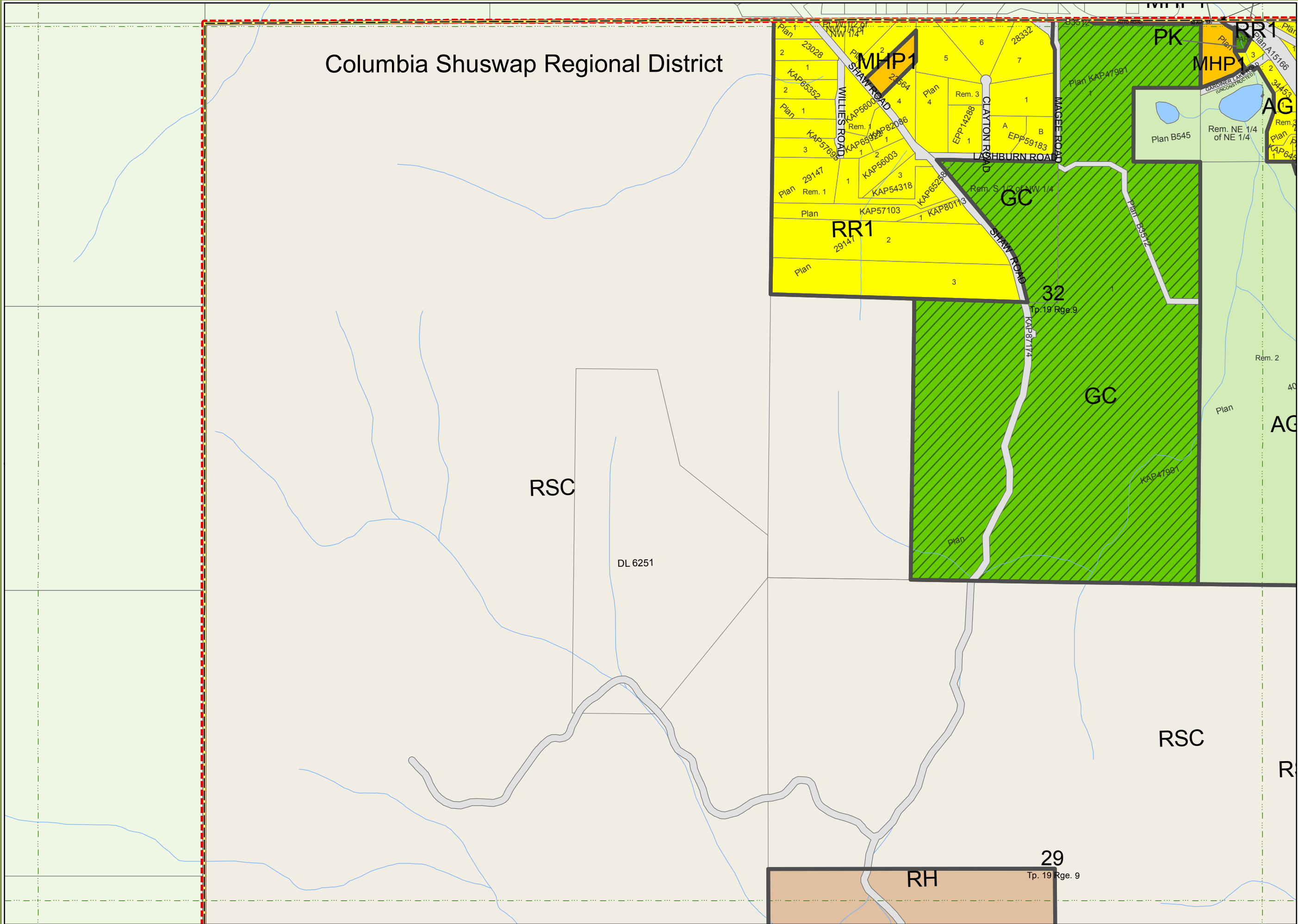


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Columbia Shuswap Regional District



Zoning Bylaw 751 -- D --

1211



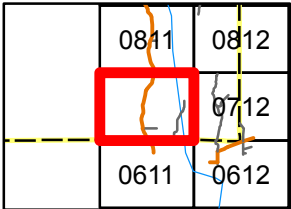
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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- Electoral Areas Boundary
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CSR D Mapsheets



Mapsheet 0711

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Zoning Bylaw 751 -- D --

0711

Columbia Shuswap Regional District

North Okanagan Regional District



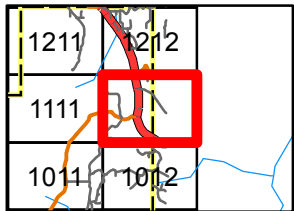
Ranchero / Deep Creek
Zoning Bylaw No. 751

Schedule C

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Mapsheet 15 of 16

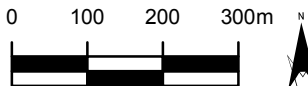
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CSRD Mapsheets



Mapsheet 1112

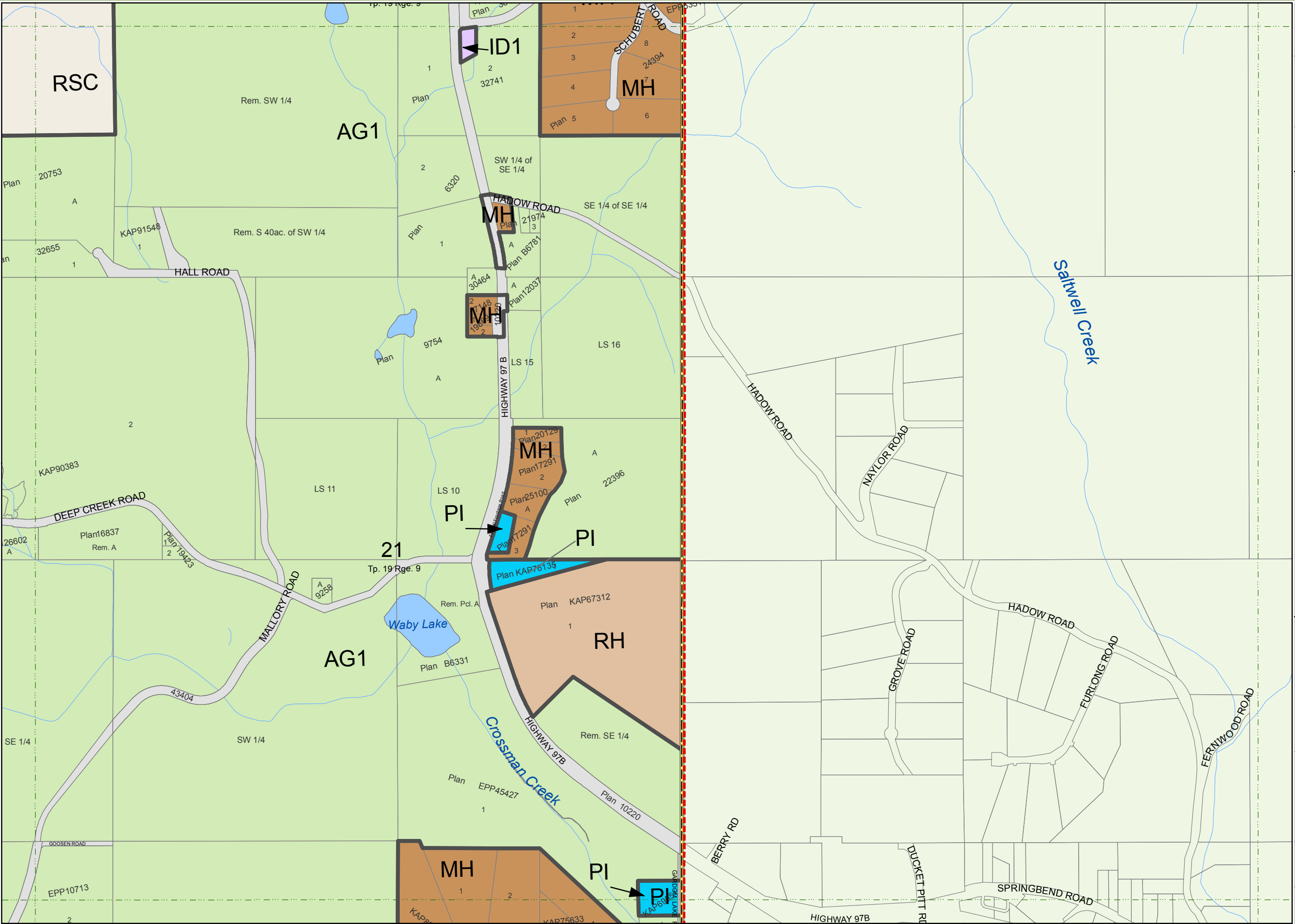
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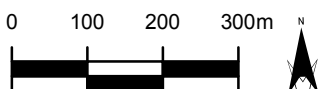
Zoning Bylaw 751 -- D --

1112

Schedule C

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	Bylaw Boundary
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	Parcel Boundary
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Zoning Bylaw 751 -- D --

0712



BOARD REPORT

TO: Chair and Directors

File No: BL 751 & BL 750-02
PL20160012

SUBJECT: Electoral Area D: Ranchero / Deep Creek Official Community Plan
Bylaw Amendment (CSR D) No. 750-02 & Ranchero / Deep Creek
Zoning Bylaw No. 751

DESCRIPTION: Report from Jan Thingsted, Planner, dated November 2, 2017.
Ranchero/Deep Creek

RECOMMENDATION #1: THAT: "Ranchero / Deep Creek Official Community Plan Amendment (CSR D) Bylaw No. 750-02" be read a second time, as amended, this 16th day of November, 2017.

RECOMMENDATION #2: THAT: "Ranchero / Deep Creek Zoning Bylaw No. 751" be read a second time, as amended, this 16th day of November, 2017.

RECOMMENDATION #3: THAT: the Board direct staff to hold an open house to present Bylaw No. 750-02 and Bylaw No. 751

SHORT SUMMARY:

Ranchero / Deep Creek Zoning Bylaw No. 751 is a follow up to the Ranchero / Deep Creek Official Community Plan (OCP) Bylaw No 750. Bylaw No. 751 will provide land use regulations for the portion of Electoral Area 'D' covered by the OCP and will repeal and replace Ranchero / Deep Creek Land Use Bylaw No. 2100.

VOTING:	Unweighted Corporate	<input type="checkbox"/>	LGA Part 14 (Unweighted)	<input checked="" type="checkbox"/>	Weighted Corporate	<input type="checkbox"/>	Stakeholder (Weighted)	<input type="checkbox"/>
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BACKGROUND:

Zoning has been in place for the Ranchero / Deep Creek area since 1978, with the most current zoning bylaw adopted in September 1987, 30 years ago. Bylaw No. 2100 is one of the oldest land use bylaws in the CSR D and contains many references to outdated legislation. The Ranchero / Deep Creek OCP, adopted in November 2011, recommends that the current land use bylaw be replaced with a bylaw that generally reflects the status quo in terms of density and land use as well as the goals and policies of the OCP.

The process of preparing Bylaw No. 751 began in the summer of 2012, with planning students conducting a field survey to verify current land uses on all parcels in the bylaw area. Additional land use inventory work was conducted in 2014 and 2015. Drafting of the bylaw text and maps was carried out between 2014 and 2015. Bylaw No. 750-02 was given first reading in March 2016 and Bylaw No. 751 was given first reading in January 2016.

POLICY:

Section 478(2) of the Local Government Act requires that all zoning bylaws adopted after an OCP must be consistent with that plan. Bylaw No. 751 proposes to introduce several land use zones which are currently not identified in the OCP. Ranchero / Deep Creek Official Community Plan Amendment (CSRDA) Bylaw No. 750-02 is, therefore, required to create designations and policies that complement the new zones and ensure consistency between the two bylaws. For example, the proposed foreshore zones require corresponding foreshore designations and policy statements in the OCP.

FINANCIAL:

\$10,000 was allocated for 2017 to complete Bylaw No. 750-02 and Bylaw No. 751. This amount takes into consideration the cost of public open houses, public hearings, advertising, and legal counsel review. Any monies remaining from 2017 are proposed to be rolled-over into the 2018 budget to allow the completion of the project.

KEY ISSUES/CONCEPTS:

The intent of Bylaw No. 751 is to repeal and replace Bylaw No. 2100 with an up-to-date bylaw that reflects current legislation and is consistent with the OCP. The intent of Bylaw No. 750-02 is to ensure that the new zoning bylaw and current OCP are consistent with each other.

SUMMARY:

A summary of Bylaw No. 750-02 and Bylaw No. 751 was provided in a previous Board report at the time of consideration of first reading. Since that time, numerous changes have been made to these bylaws. A summary of key changes is provided below:

Key updates to Bylaw No. 750-02 since first reading:

- Updates to demographic information (new data from the 2016 census)

Key updates to Bylaw No. 751 regulation since first reading:

- Updated Definitions
- Home Occupations – more clarity on home occupation total area allowance in relation to parcel size.
- Secondary Dwelling Unit – more clarity on maximum size allowance.
- Shipping Containers – to be permitted temporarily for 6 months.
- New “limited agriculture” provisions for MH and RR1 zones.
- Cannabis Production Facilities – deletion of "Special Industrial" Zone. Cannabis Production Facilities to only be permitted on ALR land.
- Private Campgrounds - new definitions and regulations better reflect existing operations.
- Signage – new definitions.

Based on the positive input received from referral agencies and Electoral Area D APC, staff is recommending at this time that the bylaws be given second reading as amended.

IMPLEMENTATION:

Complex Consultation Process

If Bylaw No. 751 and Bylaw Amendment No. 750-02 receive second reading as amended, the bylaws will be presented at an open house to obtain public feedback. Once final edits have been made to the

bylaws, they will be sent to legal counsel for review and brought back again to the Board for consideration of any further amendments needed at second reading, along with a recommendation to delegate a public hearing.

COMMUNICATIONS:

Property owners and residents will be able to view the proposed bylaws on the CSRD website and obtain hard copies from the CSRD office. Advertisements will be placed in local newspapers to provide notice of the public open house and public hearing. Comments received from the public on this bylaw will be presented to the Board prior to third reading.

Bylaw No. 750-02 and Bylaw No. 751 were sent out to the following referral agencies listed below. Agency comments are noted in the right column.

Agricultural Land Commission	Provided comments to ensure consistency with ALC Act and regulations of the ALC – home site severances and provisions for additional dwellings
First Nations Bands and Councils	No response
Ministry of Forests, Lands and Natural Resource Operations - Archaeology Branch	No response
City of Salmon Arm	No objections
CSRD Financial Services	Interests unaffected
CSRD Operations Management	No concerns
Electoral Area D Advisory Planning Commission	Provided a motion recommending approval of 750-02 and Bylaw No. 751 as presented
Fisheries and Oceans Canada - Habitat Enhancement	No response
Interior Health Authority	No response
The Managed Forest Council	No response
Ministry of Agriculture	No response
Ministry of Community, Sport and Cultural Development	No concerns
Ministry of Energy and Mines	No response
Ministry of Environment	No response
Ministry of Forests, Lands and Natural Resource Operations	No objections
Ministry of Transportation and Infrastructure	No formal response but provided feedback on the proposed Hwy 97B setback
NAV Canada - Land Use Office	No response
Regional District of North Okanagan	Interests unaffected
School District #83	No response
Township of Spallumcheen	No comment or concerns
Transport Canada	No response

DESIRED OUTCOMES:

That the Board endorse staff recommendations.

BOARD'S OPTIONS:

1. *Endorse the Recommendations.*
2. *Deny the Recommendation.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

- Ranchero / Deep Creek Official Community Plan Bylaw No. 750
- Previous Board Reports

Report Approval Details

Document Title:	2017-11-16_Board_DS_BL751_BL750-02_CSRD.docx
Attachments:	<ul style="list-style-type: none"> - BL750-02_second_amended.pdf - BL750-02_Schedule_A_second_amended.pdf - BL750-02_Schedule_B_second_amended.pdf - BL751_second_amended.pdf - BL751_Schedule_A_second_amended.pdf - BL751_Schedule_B_second_amended.pdf - BL751_Schedule_C_second_amended.pdf
Final Approval Date:	Nov 6, 2017

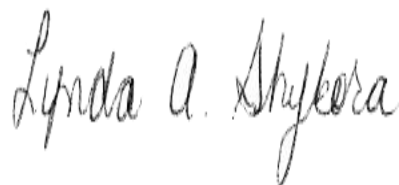
This report and all of its attachments were approved and signed as outlined below:



Corey Paiement - Nov 3, 2017 - 12:15 PM



Gerald Christie - Nov 3, 2017 - 2:08 PM



Lynda Shykora - Nov 6, 2017 - 1:30 PM



Charles Hamilton - Nov 6, 2017 - 1:43 PM