Regional District of Okanagan-Similkameen

SCHEDULE OF MEETINGS

THURSDAY, JUNE 18, 2015
RDOS BOARDROOM

9:00 am	-	11:00 am	Community Services Committee
11:00 am	-	12:15 pm	Corporate Services Committee
12:15 pm	-	12:45 pm	Lunch
12:45 pm	-	1:30 pm	Planning and Development Committee
1:30 pm	-	2:00 pm	Environment and Infrastructure Committee
2:00 pm	-	4:00 pm	RDOS Regular Board Meeting

"Mark Pendergraft"

_____

Mark Pendergraft
RDOS Board Chair

Advance Notice of Meetings:

July 2	RDOS Board/Committee Meetings
July 16	RDOS/OSRHD Board/Committee Meetings
August 6	RDOS Board/Committee Meetings
August 20	RDOS/OSRHD Board/Committee Meetings
September 3	RDOS Board/Committee Meetings
September 17	RDOS/OSRHD Board/Committee Meetings
October 1	RDOS Board/Committee Meetings

June 18, 2015

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Community Services Committee
Thursday, June 18, 2015, 2015
9:00 am

REGULAR AGENDA

A. APPROVAL OF AGENDA

B. Heritage Plan

Consultants Denise Cook and James Burton will provide an update and facilitate a workshop on the Heritage Plan

Material to be distributed prior to Committee meeting.

C. ADJOURNMENT

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Corporate Services Committee
Thursday, June 18, 2015
11:00 a.m.

REGULAR AGENDA

A. APPROVAL OF AGENDA

B. Board Policy

- **a. Proclamations**
  - **i. Outdated Proclamation Policy (proposed to rescind)**
- **b. Terms of Reference – Select Committees**

RECOMMENDATION 1

1. **THAT the Board of Directors rescind outdated Proclamations policy - P0100-00.30 and adopt the proposed Proclamations Policy as presented at Committee June 18, 2015.**

2. **THAT the Board of Directors amend the Terms of Reference – Select Committee policy as presented at Committee June 18, 2015.**

C. UBCM Convention

- **a. Request for topics**

D. Lean Sensai

- **a. Grad Audits**

E. Performance Management Policy

- **a. Policy**

RECOMMENDATION 2

THAT the Board adopt the Exempt Employee Performance Planning and Review Policy.

F. ADJOURNMENT

ADMINISTRATIVE REPORT

TO: Corporate Services Committee

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Board Policy Review

Administrative Recommendation:

1. **THAT the Board of Directors rescind outdated Proclamations policy - P0100-00.30 and adopt the proposed Proclamations Policy as presented at Committee June 18, 2015.**

2. **THAT the Board of Directors amend the Terms of Reference – Select Committee policy as presented at Committee June 18, 2015.**

Reference:

Regional District of Okanagan-Similkameen Policy Manual
Outdated Proclamation Policy P0100-00.30 (to be rescinded)
Terms of Reference – Select Committee policy (Marked up showing changes)

History:

Goal 4.4 of the RDOS Business Plan is to develop a responsive, transparent, effective organization. One of the objectives of this goal is achieved by developing policy framework and ensuring current policy is current and represents the Boards intentions.

Analysis:

The Board requires clear policies and as such has instructed that a process to ensure the timely review and update of Board policy be implemented.

In order to achieve this objective, outdated policies will be brought forward for review at each Corporate Services Committee meeting and future review dates will be established. It is expected that this process will complete in the first quarter of 2016.

The intention is to create relevant, transparent policies which are easy for the public to access and that set out how the Board wants recurring issues to be addressed.

The Board may access the RDOS Board Policy manual at the referenced hyperlink to view the current policies and track progress of amendments as they occur.

The policies contained within this report include:

- **Proclamation Policy**
    - The new policy is in proper format, promoting corporate consistency in advising of the purpose and responsibilities as well as outlining the required procedures.

- **Terms of Reference – Select Committee**.
    - In recent past, most financial matters have been considered in Corporate Services committee. For better efficiency, the new policy recommends the removal of the Finance Committee, with all responsibilities being moved up to Corporate Services Committee.
    - The Corporate Services Committee also reflects the addition of First Nations and Communications functions, as well as property acquisition and disposal, GIS services (from Planning), and fleet services (from Environment and Infrastructure Committee)
    - The Planning & Development Committee reflects the addition of climate change (from Environment and Infrastructure Committee) and bylaw enforcement activities (from Protective Services Committee)
    - The Environment & Infrastructure Committee notes the addition of projects relating to the capital construction of waterworks and sewerage and distribution systems (from Planning & Development Committee)
    - The Community Services Committee shows the addition of public transit and transportation (from Environment & Infrastructure Committee) as well as Heritage as a new function
    - The addition of new subsections to Appointment of Chair/ Vice Chair

Respectfully submitted:

"Christy Malden"

_____

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: Proclamation Policy

AUTHORITY: Board Resolution dated _____.

AMENDED: Board Resolution dated _____.

POLICY STATEMENT

A proclamation is a public or official announcement made by declaration of a public body. The Regional District of Okanagan-Similkameen does not have any statutory authority in accordance with the *Local Government Act* or the *Community Charter* for the issuance of proclamations.

PURPOSE

To provide direction that formalizes the resolution of the Board on handling proclamation requests and to eliminate unnecessary administration of proclamations where the Regional District of Okanagan-Similkameen has no statutory authority.

The Board of Directors may lend political support to community causes, organizations, and events by means other than proclamations.

PROCEDURES

All requests for the issuance of proclamations will be referred to the Manager of Legislative Services to acknowledge the request and advise the requesting individual or organization that the Regional District of Okanagan-Similkameen declines to issue proclamations in accordance with Board policy.

2001-04-03

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

P O L I C Y

POLICY NO: **P0100-00.33** **Page 1 of 1**

SUBJECT: **PROCLAMATION POLICY**

Effective Date	Amendment	Board Resolution	Administered By
November, 1998	-----	B610/98	Legislative Services/ Special Project Manager
	March 22, 2001 (Maintain)	B202/01A	

Staff are to advise interested parties that the Regional District does not issue proclamations.

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: TERMS OF REFERENCE-SELECT COMMITTEES

AUTHORITY: Board Resolution No. B281/09 dated May 21, 2009.

AMENDED: Board Resolution No. B374/09 dated July 16, 2009
Board Resolution No. B292/10 dated June 17, 2010

POLICY STATEMENT

The Regional District of Okanagan Similkameen promotes good decision-making through effective structure and information flow. A Select Committee system has been created to provide an opportunity for informal discussion between elected officials, administrative staff and the public on significant issues coming before the Board to assist in achieving the informed decision making model.

PURPOSE

1. To outline the duties of the Regional District Select Committees.
2. To establish procedures for the Select committees.
3. To establish membership for the Select committees.

RESPONSIBILITIES

In addition to any other duties referred to the Select Committees by the Regional District of Okanagan-Similkameen Board, the Select Committees duties are as follows:

1. Corporate Services Committee Terms of Reference
    a. Governance
    b. Human resources
    c. Legislation, bylaws and policy
    d. Litigation and risk management
    e. Information systems and technology
    f. Information and privacy legislation
    g. Intergovernmental relations, including First Nations
    h. Communications
    i. Finance
    j. Property acquisition or disposal
    k. Fleet Services

2. Finance Committee Terms of Reference
    a. Review Budget Schedule
    b. Budget Review
    c. Property Tax Exemptions
    d. Financial Controls

Comment [CM1]: See comment below in Finance Committee

Comment [CM2]: Moved from Planning & Development

Comment [GC3]: Moved from Environment and Infrastructure

e. Financial Reporting Procedures
f. Capital Tangible Assets
g. Risk Management
h. Grants
i. Salary and Union negotiations

Comment [CM4]: Proposed that the Finance Committee be removed and all duties be listed as Finance under Corporate Services

3. Planning & Development Committee Terms of Reference
   a. Official Community Plans and Land Use Bylaws
   b. All matters related to the development and administration of the Geographic Information Systems
   c. All matters related to the Sub-Regional Growth Strategy
   d. Matters of property acquisition or disposal
   e. All projects relating to the capital construction of waterworks and sewerage systems and distribution systems related thereto
   f. Bylaw enforcement activities, including Building bylaw
   g. Land development related matters
   h. Climate Change
   i. matters relating to critical habitat as related to local government land and local government jurisdiction

Comment [CM5]: Moved to Corporate – under Information Systems Technology

Comment [CM6]: Moved to Corporate Services

Comment [CM7]: Moved to Environment & Infrastructure

Comment [GC8]: Moved from Environment and Infrastructure

Comment [BN9]: Moved from Environment and Infrastructure

4. Environment & Infrastructure Committee Terms of Reference
   a. ~~All matters relating to the~~ capital construction and operation of waterworks and sewerage systems of the Regional District, the property and distribution and collections systems connected therewith
   b. ~~All~~ environmental , maintenance and construction matters pertaining to all streets, roads and highways in the electoral areas and liaison with the Ministry of Transportation and Infrastructure
   c. ~~All~~ matters pertaining to the solid waste collection service of the Regional District and the maintenance of the waste disposal grounds under the control of the Regional District
   d. ~~All matters relating to~~ air quality
   e. ~~All matters relating to climate change~~
   f. ~~All matters relating to~~ Water Quality & Quantity Governance
   g. ~~All matters relating to critical habitat as related to local government land and local government jurisdiction~~
   h. ~~All matters relating to~~ street lighting and traffic signs
   i. ~~All matters relating to fleet services and~~ public transportation
   j. ~~All matters relating to~~ RDOS building maintenance

Comment [CM10]: Moved from Planning & Development

Comment [CM11]: Moved to Planning & Development

Comment [BN12]: Moved to Planning and Development

Comment [CM13]: Moved Fleet Services to Corporate AND moved Public Transportation to Community Services

5. Community Services Committee Terms of Reference
   a. Liaison with all lay recreation and parks commissions
   b. Operation and control of all public parks, trails, public recreation grounds and facilities and to recommend the establishment of such parks and recreation grounds and facilities deemed necessary to carry on a comprehensive parks and recreation program
   c. Encouraging, initiating and supervising programs which will include physical, artistic, cultural and intellectual recreation while continually striving to meet the parks and recreation needs of the District

d. Co-operation with and encouragement of all organizations and institutions within the Regional District that are engaged in recreational or cultural pursuits or activities whether such organizations and institutions are public, private, civic, social or religious and to co-operation with provincial and national groups or organizations that support and promote parks and recreation
e. ~~To encourage and promote~~ economic development and tourism development with the Regional District
f. Public Transit and Transportation
g. Heritage

Comment [CM14]: Moved from Environment & Infrastructure

Comment [CM15]: New Function

6. Protective Services Committee Terms of Reference
   a. Prevention and suppression of fires
   b. Matters related to Ambulance Service
   c. ~~Policies relating to~~ crime prevention ~~and bylaw enforcement~~
   d. Bylaw enforcement activities, including Building bylaw
   e. ~~All matters relating to~~ Search and Rescue
   f. Emergency Planning
   g. Mitigation of Wildfire Risk

Comment [CM16]: Move to Planning & Development

PROCEDURES

The Select committees will conduct its business in accordance with the Regional District of Okanagan-Similkameen Procedure bylaw.

MEMBERSHIP

The Select committees consist of all members of the Regional District of Okanagan-Similkameen Board of Directors.

VOTING

All members are entitled to vote and have one vote on all recommendations to the Regional District of Okanagan-Similkameen Board.

APPOINTMENT OF CHAIR / VICE CHAIR

The Chair of the Board of Directors shall call for expressions of interest from Board members wishing to act as Chair or Vice Chair of a Committee and will make recommendations at the next Corporate Services meeting.

The Chair and Vice Chair of the Board of Directors will also be the Chair and Vice Chair (respectively) of the Corporate Services Committee.

Comment [GC17]: New section; current practice

Members should consider the potential for conflict of interest when submitting their name as Chair of a specific committee.

Comment [CM18]: New section

ADMINISTRATIVE REPORT

TO: Corporate Services Committee

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: UBCM - For Information Only

The 2015 UBCM Convention will be held at the Vancouver Convention Centre from September 21 through September 25, 2015. Accommodations have been booked at the Coast Coal Harbour, which is steps from the venue.

For those wishing to book meetings with either the Premier or one of the Cabinet Ministers on a specific issue during this year's convention, the online registration form will go live on June 15, 2015. As there is a significant demand for these face to face opportunities, the Ministers schedules often fill up quickly. With that in mind, Directors are encouraged to bring forward any specific requests for meetings as soon as possible.

Staff have compiled a list of those matters identified at the Board and suggest the following:

1. Physician Shortage in the Similkameen and South Okanagan
2. The "Crossing at Keremeos"
3. Healthy Communities Funding
4. Illegal camping on Crown land/ Rivers
5. Wildfire Mitigation Program
6. Water System Acquisition
7. Campbell Mountain Landfill / Gas Capture
8. Sage Mesa Water Funding
9. Zebra / Quagga Mussel Inspection Funding
10. Gravel Crushing / Blasting

Minister of Health

Minister of FLNRO

Minister of Environment

MoTI

Noted below are several of the topics of Minister and Staff meetings last year:

11. Establishment of South Okanagan Cycling Precinct
12. Grist Mill
13. Transients in Riparian Areas
14. Okanagan Falls Incorporation
15. Free Roaming Horses
16. Increased Policing Costs
17. Invasive Zebra and Quagga Mussels
18. Okanagan Falls Downtown Development Plan

The following resolutions were endorsed at the 2015 SILGA convention and have automatically been forwarded to the UBCM for consideration at convention in September:

19. Fortis BC Rates – Two Tier Rate System
20. Rural Business Licensing

Note: The Board has discussed approaching UBCM for support for the Invasive Zebra/Quagga Mussel border inspection, but no resolution has been received to date.

Respectfully submitted:

C. Malden, Manager of Legislative Services

ADMINISTRATIVE REPORT

TO: Corporate Services Committee

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: UBCM – Electoral Area Directors' Forum – For Information Only

Electoral Area Directors' Forum 2015 - Request for Topics

Jun 10, 2015

With the 2015 UBCM Convention quickly approaching, UBCM would like to get your input on discussion topics for the Electoral Area Directors' Forum. This forum will be held on Tuesday, September 22 from 9am to 12noon at the Vancouver Convention Center in Vancouver, BC.

We will primarily address policy topics in the session this year. Therefore, we are seeking your ideas for policy topics for discussion.

Your direct involvement makes the Forum an annual success. We encourage you to send your feedback to Marylyn Chiang, Senior Policy Analyst by Aug 4, 2015.

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: Bill Newell, CAO

DATE: 18 June 2015

RE: Lean Management – For Information Only

REFERENCE:

2015 Budget

HISTORY:

Cultural Transformation Program

The Regional District of Okanagan Similkameen is always interested in improving the customer experience and in 2008 we formalized a program to help us plan, implement and sustain an organizational transformation. The program was based on identifying the characteristics of high performing organizations, explaining these 8 characteristics to our employees, measuring our organization against current state, developing a committee to make an intervention into the organization over the next calendar year based on the lowest rated criteria and then measuring again. The program was dynamic and continued from year-to-year. This was based on a training program developed by Tom Peters and Bob Waterman back in the 1980's when they were both working for McKinsey Consulting. It was transformed for the public sector by the International City/County Manager's Association.

Lean Management

At the 2015 Budget Committee, the Board was introduced to a program called "Lean Management", a program that can be adapted to help the service sector improve performance and cut costs. It's all about improving service and efficiency, without spending more money, using management practices developed in leading private companies and public sector institutions. Processes are improved, decisions are streamlined and employees are more engaged. Service gets faster and better.

Lean Management creates more systemic impact by changing how managers manage and workers work. Changes have proven more sustainable when employees in the organization feel fully accountable, have the tools and are trained in Lean Management techniques. Lean Management addresses the systems and management practices critical to continuous improvement.

Lean Government organizations teach their employees to look at themselves from the perspective of their customers and stop doing what customers and taxpayers do not value, including:

- Eliminating unnecessary touch points and wait times from the beginning of the process to the end
- Improving coordination across functional areas
- Standardizing work to reduce variations in process and performance
- Creating a culture of continuous improvement by exposing problems and their causes for all to see and act on.

RDOS

During the 2015 Budget committee, the Board received a presentation from Loree Gray, a First West Black Belt on Lean Management, but from a program that First West had entered into offered by "Lean Sensei International" (LSI) one of the Lean Management providers. LSI is more a "train the trainer" program rather than a consulting firm. Ms. Gray explained the First West Lean Program and the results that they had experienced in production and efficiency. 85% of First West employees have now had introduction to Lean.

LSI offers a Lean Management training and certification program, and the Executive Lean Certification is recognized in the Lean Management field much like the Project Management Professional (PMP) designation is recognized for Project Managers. The CAO and Manager of Human Resources attended a 3-day Executive Lean Problem Solving Course in May at BCIT in Burnaby. This was the concluding module for a cohort of Lean Black-Belts and we were allowed to ride-along as they implemented what they had learned to facilitate the resolution of two problem programs that BCIT had identified.

ANALYSIS:

It was clear from the LSI training course that most participants in the program are from large, private sector firms. Nevertheless, it seems a program that can also lend itself to government or service agencies. BCIT, First West and the Winnipeg Police Department are known proponents.

Whereas larger firms are able to commit significant training dollars and create a Lean Management Office, others are able to train staff that can work off the side of their desk. RDOS has identified the Zoning Bylaw Amendment Process for a pilot in the Fall. We'll be prepared to respond back to the Board as to the cost/benefit of maintaining or increasing the program at that time.

LEAN SENSEI

Grad Audit Process

GO TRANSFORM THE WORLD

Who Are We?

The Grad Lads

LEAN SENSEI

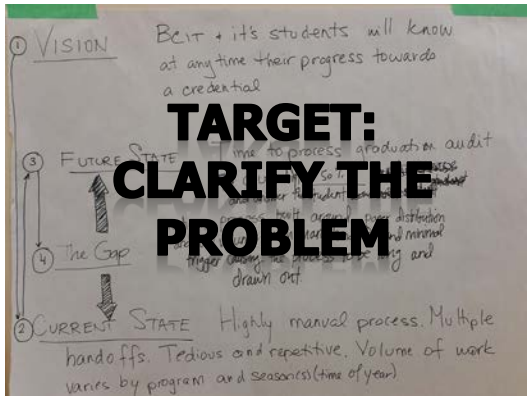
Our Approach
(Lean Methodology)

LEAN PROBLEM SOLVING

= TRANSFORM =

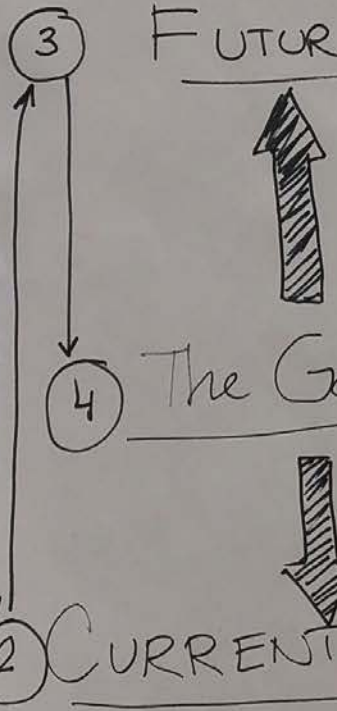
Background

On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.



Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation

1. **VISION** — BCIT & it's students will know at any time their progress towards a credential



3. **FUTURE STATE** — Time to process graduation audit cut by 50% and answer the student sooner.

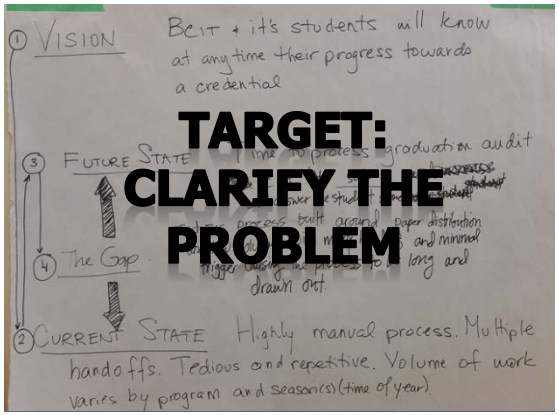
4. **The Gap** — Tedious process built around paper distribution and low volume with many handoffs and minimal trigger causing the process to be long and drawn out.

2. **CURRENT STATE** — Highly manual process. Multiple handoffs. Tedious and repetitive. Volume of work varies by program and season(s) (time of year).

A3 REPORT

Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation

Background
On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.



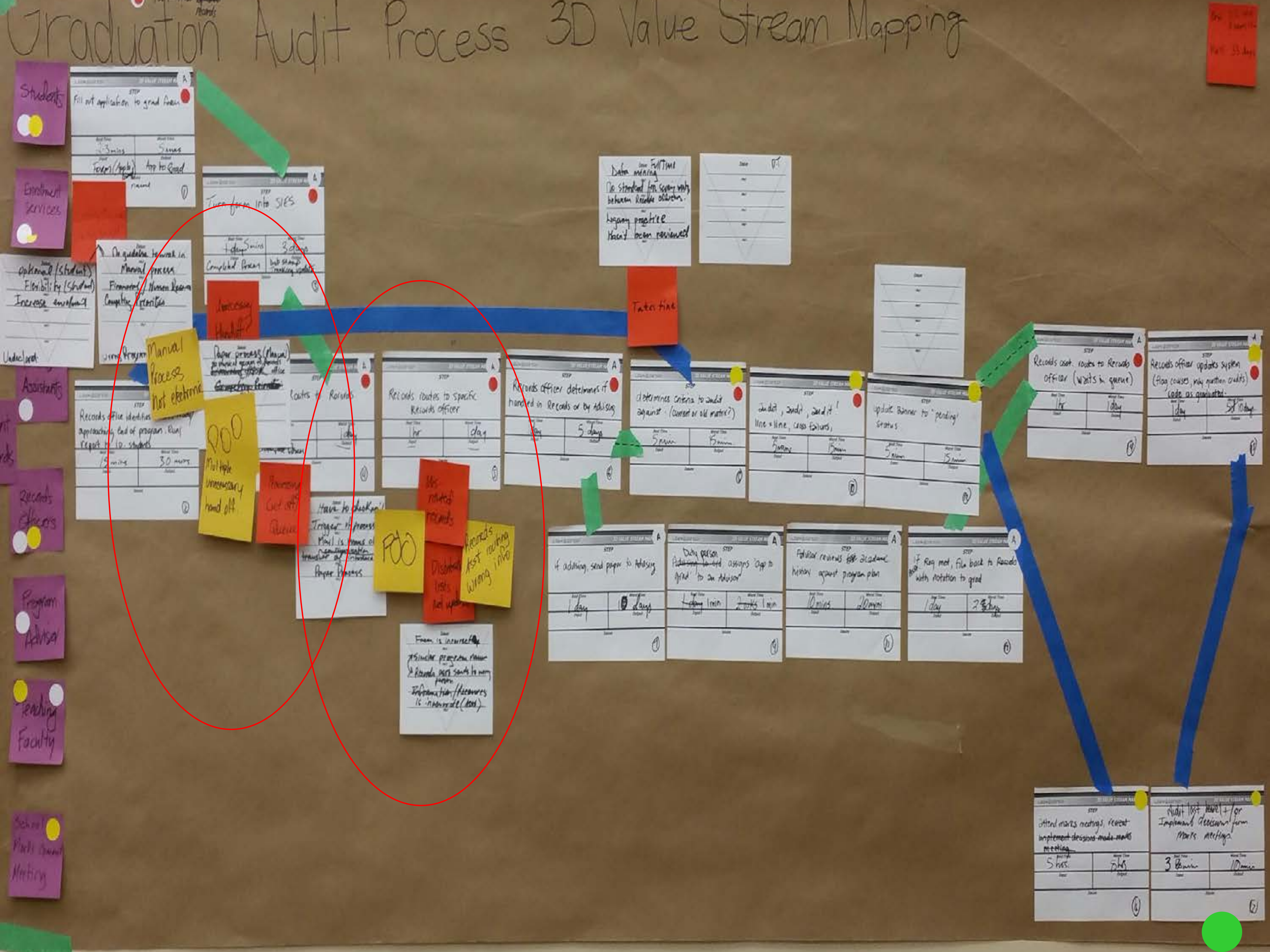
Root Cause Analysis (why?)

Develop Countermeasures

Countermeasure Implementation

Confirm Results and Process

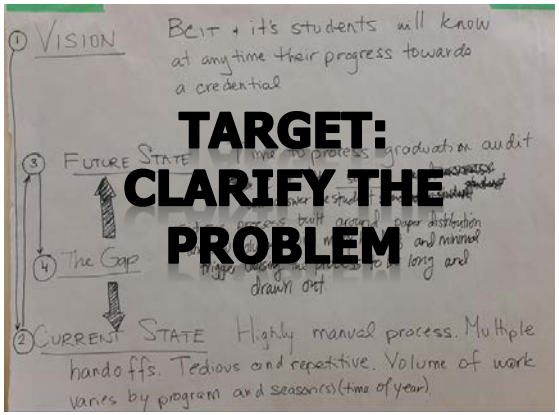
Normalize & Yokoten

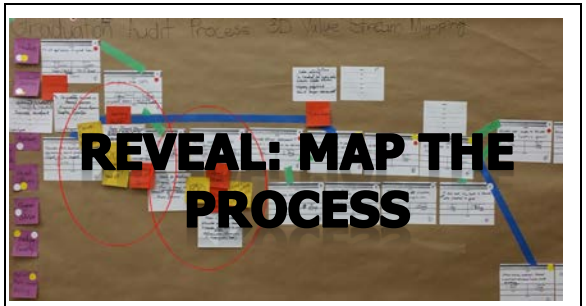

Graduation Audit Process 3D Value Stream Mapping
Students
Enrollment Services
Assistants
Records Officers
Program Advisor
Teaching Faculty
Fill out application to grad form
Type form info SIS
Manual Process not electronic
Multiple unnecessary hand off
Take time
Records officer determines if handled in Records or by Advising
Records routes to specific Records officer
Update Banner to 'pending' status
If advising, send paper to Advising
Advisor reviews academic history against program plan
Records officer updates system
Audit, audit, audit!

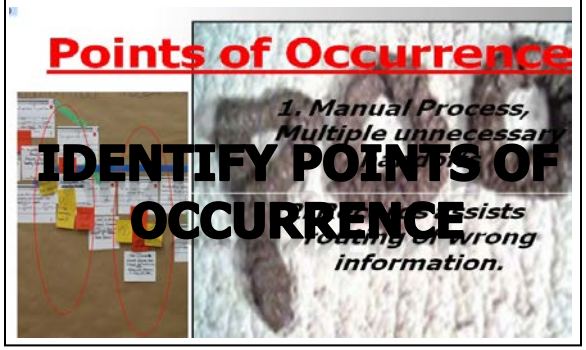
Client Order Processing	
Best Time ? Minutes	Worst time ? Minutes
Input Client Input	Output Completed Order
Issues	

Background

On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.



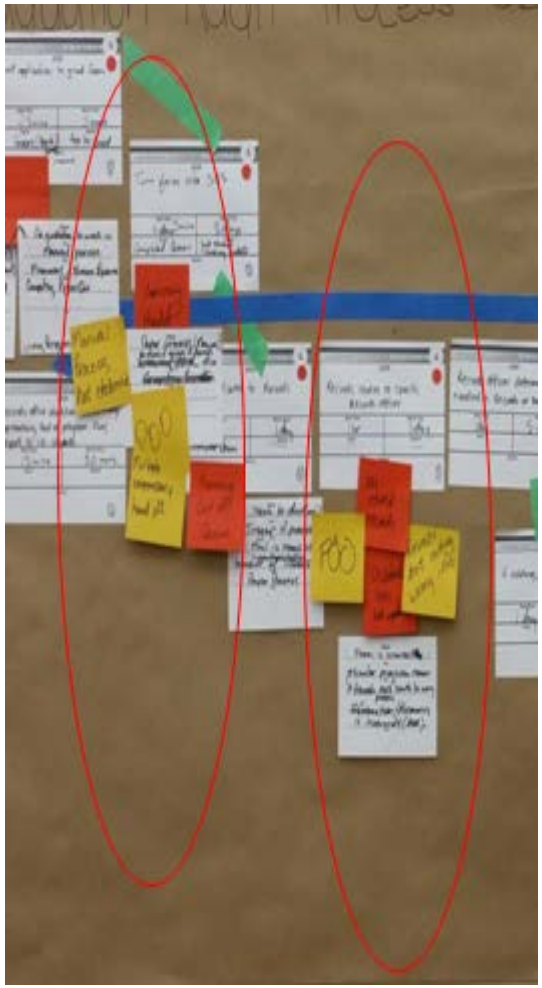




Root Cause Analysis (why?)

Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation

Points of Occurrence

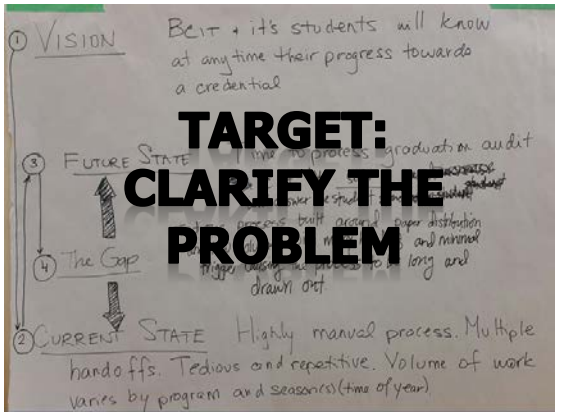


1. *Manual Process, Multiple unnecessary handoffs*

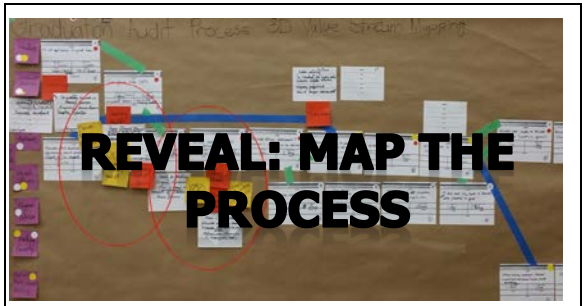
2. *Records assistants incorrectly routing grad audits*

Background

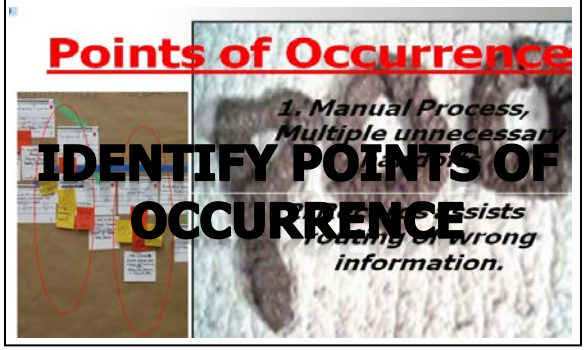
On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.



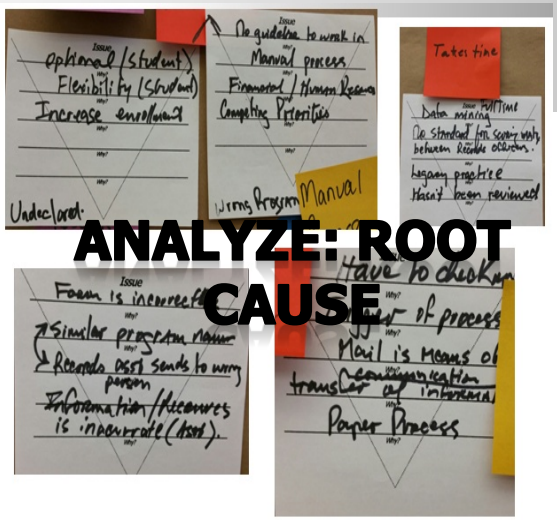
TARGET: CLARIFY THE PROBLEM



REVEAL: MAP THE PROCESS



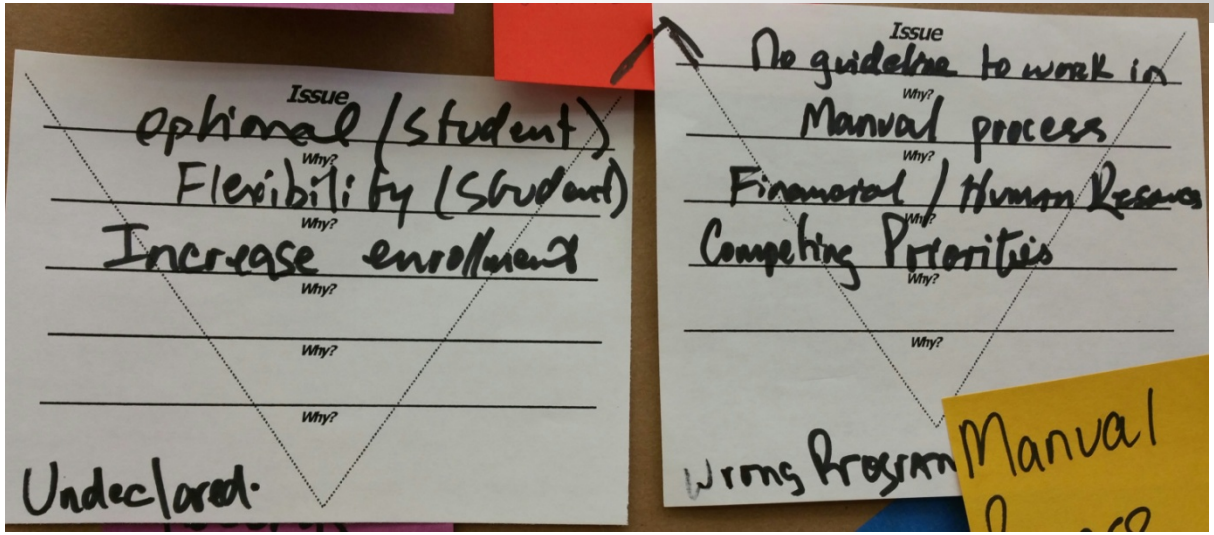
IDENTIFY POINTS OF OCCURRENCE

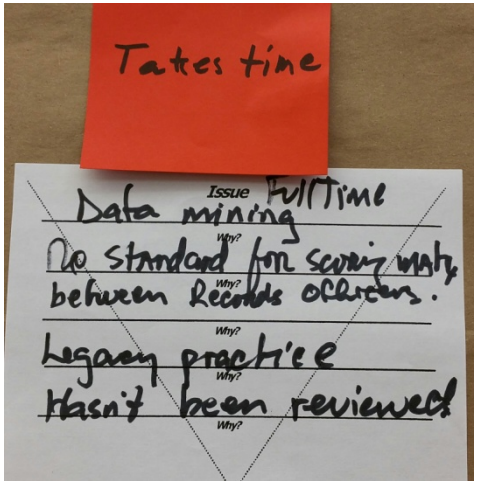


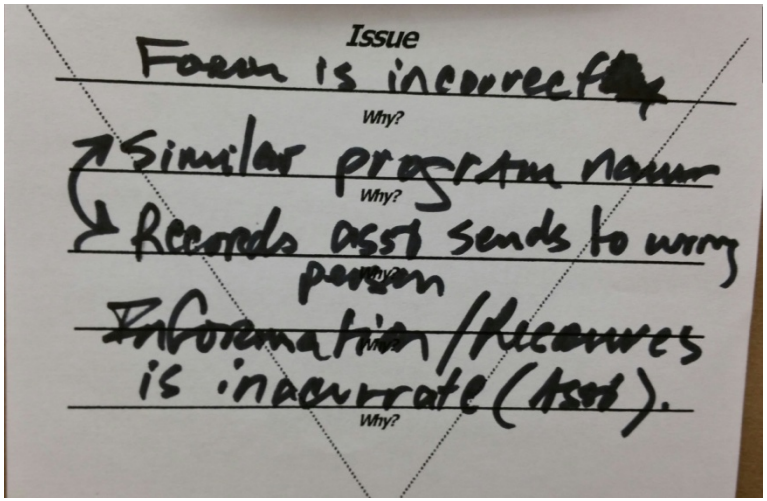
ANALYZE: ROOT CAUSE

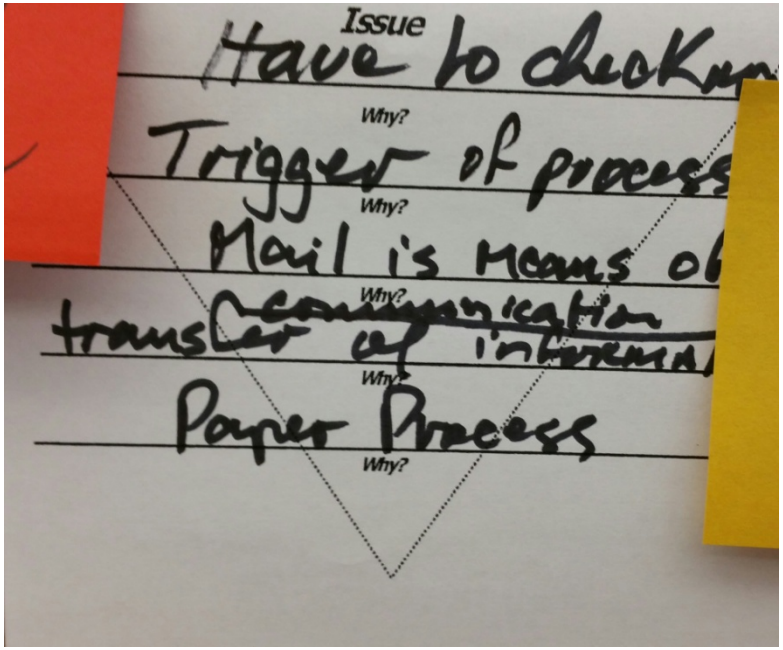
Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation

Five Why Funnel









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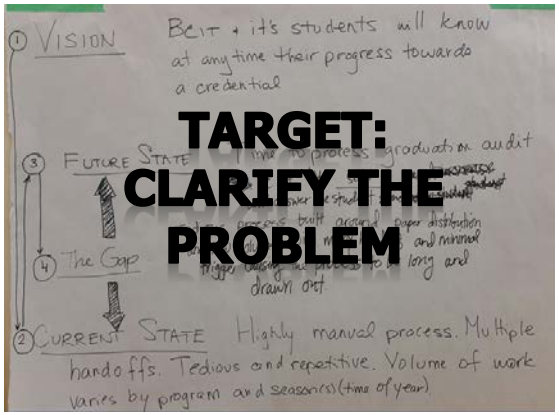
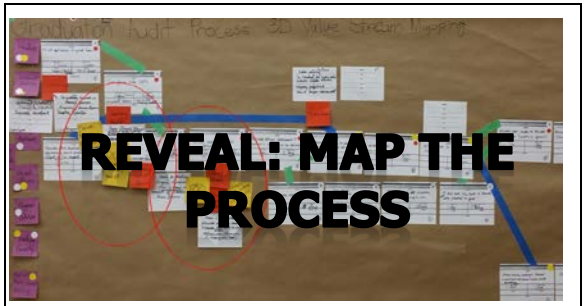
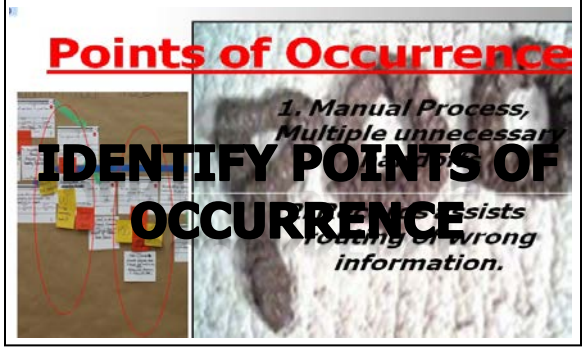
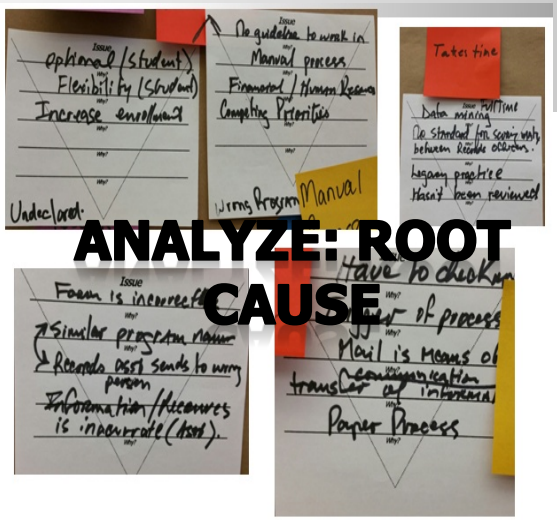








Navigate: Target setting

NAVIGATE: SET THE TARGET

Time stamp on graduation application (from Student/Program Advisors)

Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation

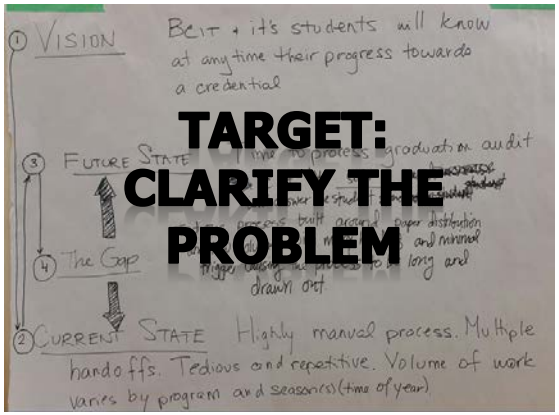
Process Target

Time stamp on graduation application

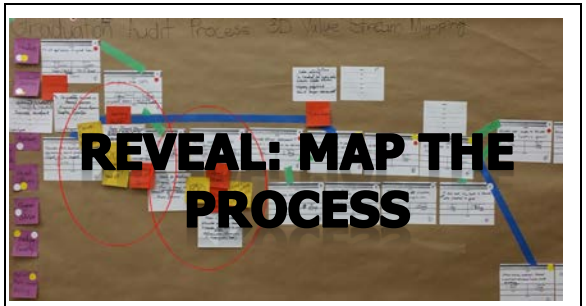
Reduce/eliminate graduation applications older than 48 hours when Student Records receives them from SIES

Background

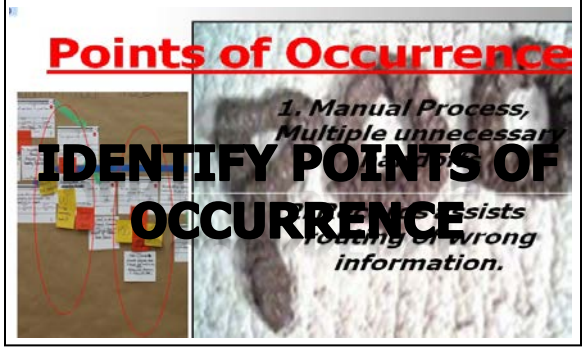
On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.



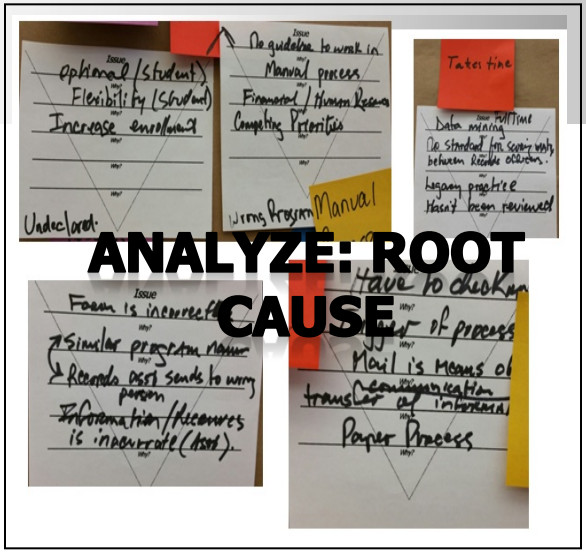
TARGET: CLARIFY THE PROBLEM



REVEAL: MAP THE PROCESS



IDENTIFY POINTS OF OCCURRENCE



ANALYZE: ROOT CAUSE

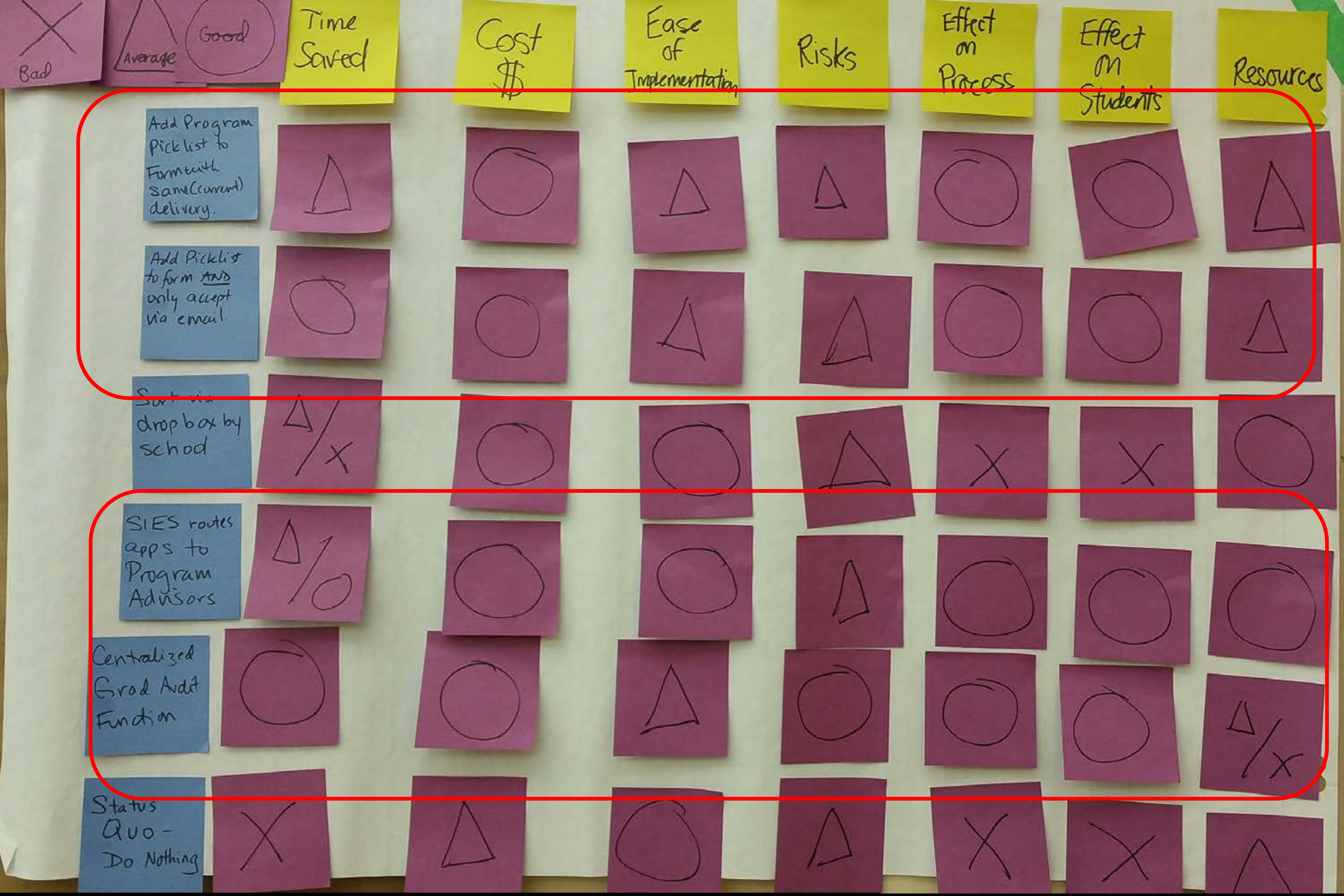
Navigate: Target setting

Time stamp on graduation application (from Advisors)

NAVIGATE: SET THE TARGET

STRATEGIZE: DEVELOP SOLUTIONS

Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation



Good X Bad Okay

Value Graph

Efforts Required		
	Don't do	**Strategic**
	Quick Hits	**Gems**
	Value/ Benefits	

Background

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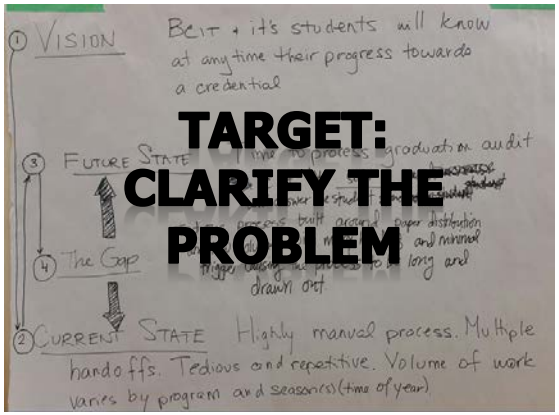

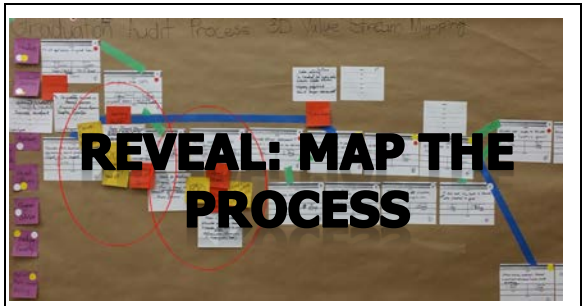

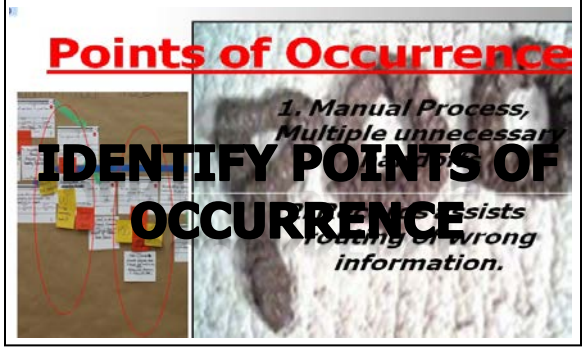

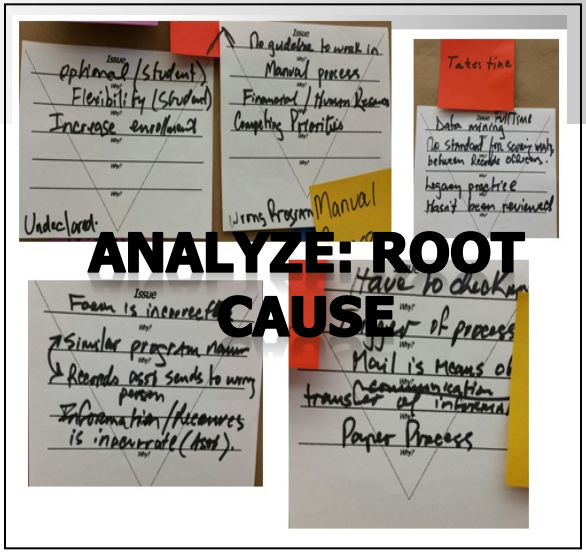

Navigate: Target setting

NAVIGATE: SET THE TARGET

Time stamp on graduation application (from SIES to Program Advisors)

Title: Grad Audit Process
Date: May 13, 2015
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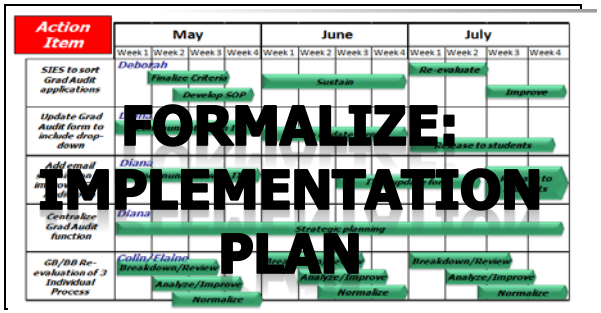
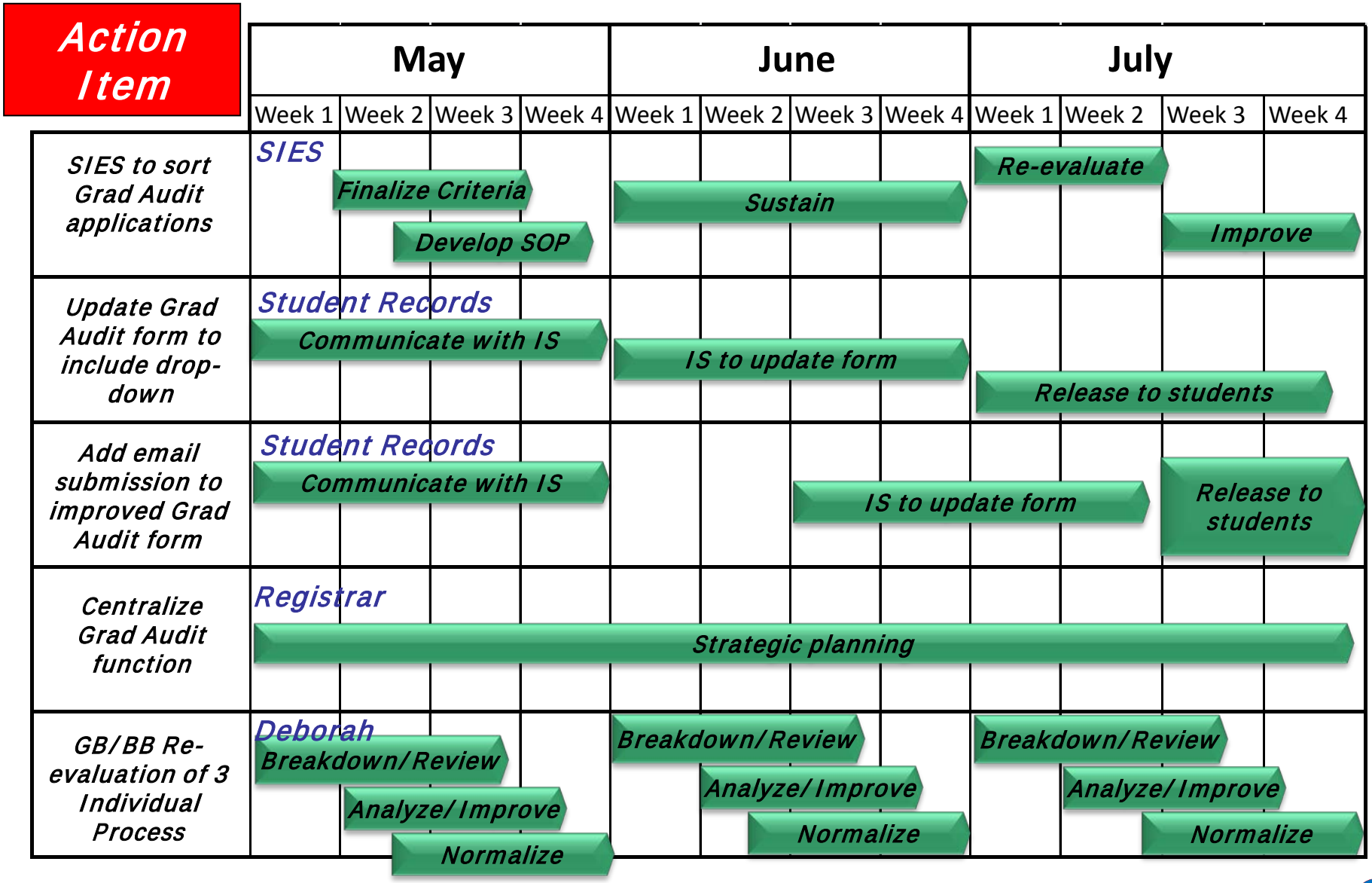


Future State Implementation Plan (<3 months)



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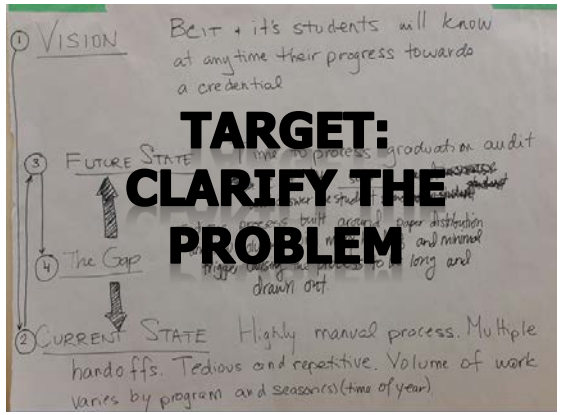
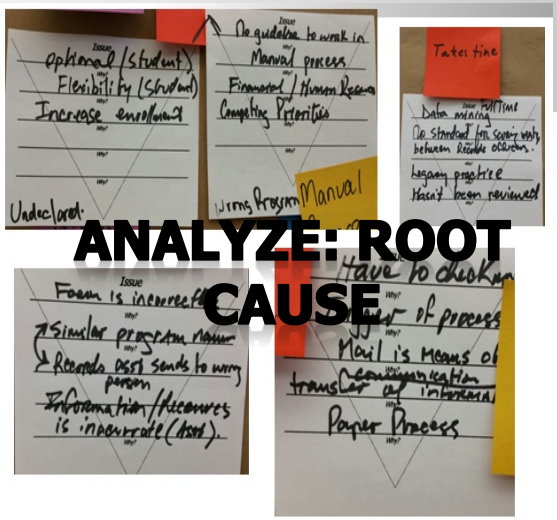
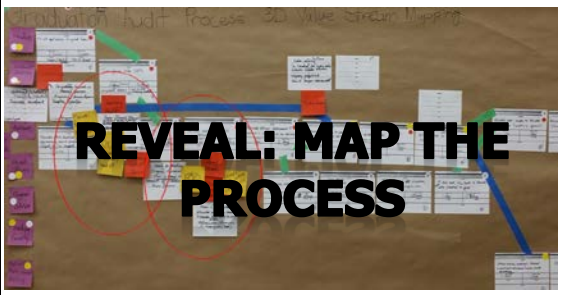


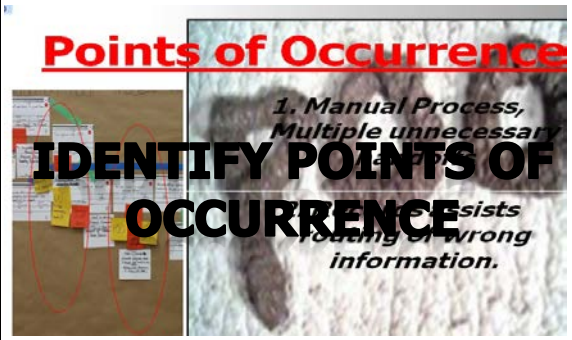
TARGET: CLARIFY THE PROBLEM



ANALYZE: ROOT CAUSE



REVEAL: MAP THE PROCESS



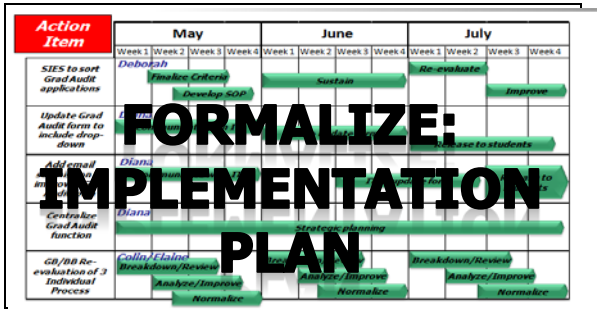
IDENTIFY POINTS OF OCCURRENCE

Navigate: Target setting

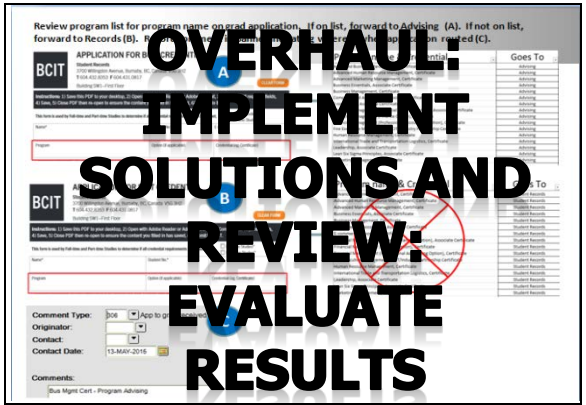
Time stamp on graduation application (from SIES to Program Advisors)

NAVIGATE: SET THE TARGET

STRATEGIZE: DEVELOP SOLUTIONS



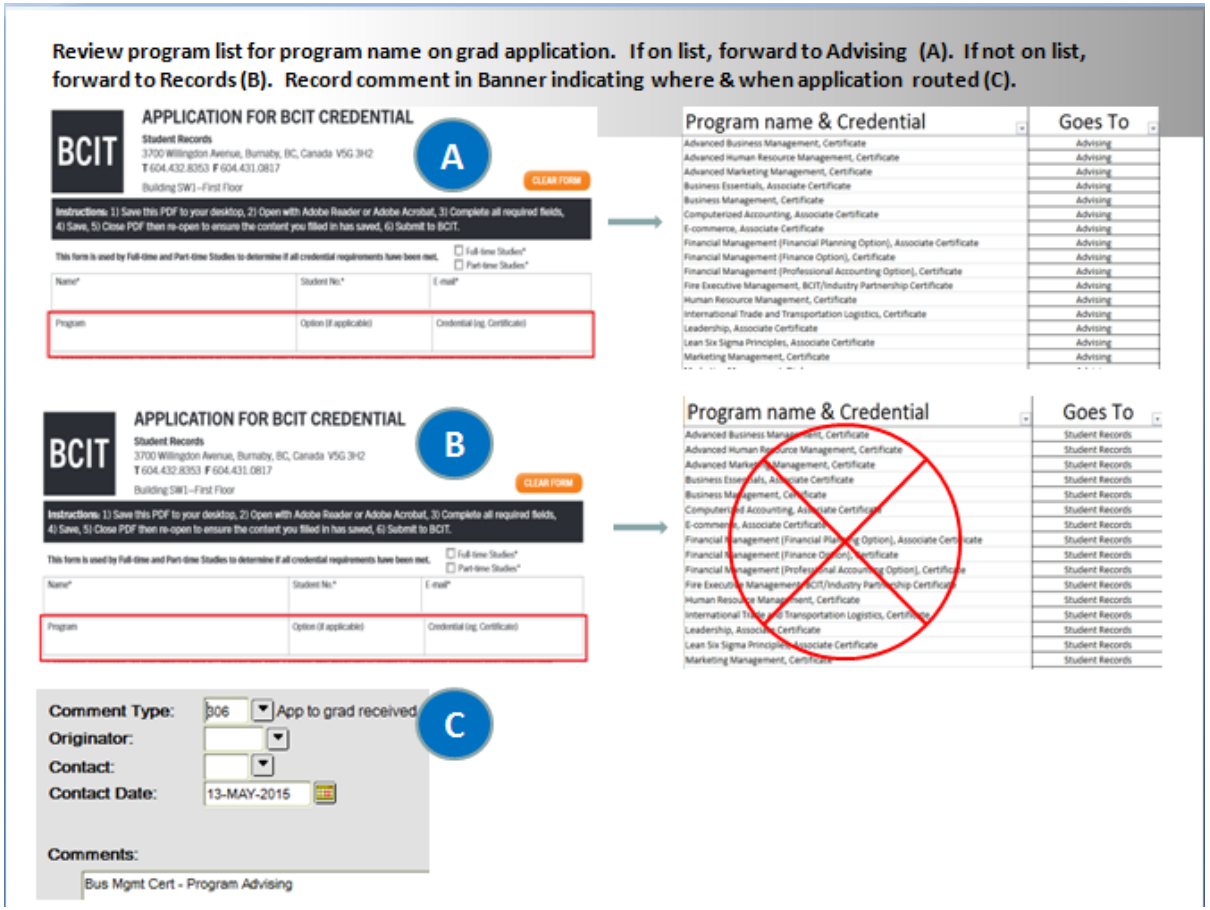
FORMALIZE: IMPLEMENTATION PLAN



OVERHAUL: IMPLEMENT SOLUTIONS AND REVIEW: EVALUATE RESULTS

Solution Implementation

By leveling the load and shifting the sort task to student information/enrollment services (SIES) we eliminate 2-3 unnecessary handoffs which translates to anywhere from 2-8 days of cycle time reduction.



Review program list for program name on grad application. If on list, forward to Advising (A). If not on list, forward to Records (B). Record comment in Banner indicating where & when application routed (C).

BCIT

APPLICATION FOR BCIT CREDENTIAL

Student Records
3700 Willingdon Avenue, Burnaby, BC, Canada V5G 3H2
T 604.432.8353 F 604.431.0817
Building SW1–First Floor

A

CLEAR FORM

Instructions: 1) Save this PDF to your desktop, 2) Open with Adobe Reader or Adobe Acrobat, 3) Complete all required fields, 4) Save, 5) Close PDF then re-open to ensure the content you filled in has saved, 6) Submit to BCIT.

This form is used by Full-time and Part-time Studies to determine if all credential requirements have been met.

☐ Full-time Studies*
☐ Part-time Studies*

Name*	Student No.*	E-mail*

Program	Option (if applicable)	Credential (eg. Certificate)

Program name & Credential	Goes To
Advanced Business Management, Certificate	Advising
Advanced Human Resource Management, Certificate	Advising
Advanced Marketing Management, Certificate	Advising
Business Essentials, Associate Certificate	Advising
Business Management, Certificate	Advising
Computerized Accounting, Associate Certificate	Advising
E-commerce, Associate Certificate	Advising
Financial Management (Financial Planning Option), Associate Certificate	Advising
Financial Management (Finance Option), Certificate	Advising
Financial Management (Professional Accounting Option), Certificate	Advising
Fire Executive Management, BCIT/Industry Partnership Certificate	Advising
Human Resource Management, Certificate	Advising
International Trade and Transportation Logistics, Certificate	Advising
Leadership, Associate Certificate	Advising
Lean Six Sigma Principles, Associate Certificate	Advising
Marketing Management, Certificate	Advising

BCIT

APPLICATION FOR BCIT CREDENTIAL

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E-commerce, Associate Certificate	Student Records
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Financial Management (Professional Accounting Option), Certificate	Student Records
Fire Executive Management, BCIT/Industry Partnership Certificate	Student Records
Human Resource Management, Certificate	Student Records
International Trade and Transportation Logistics, Certificate	Student Records
Leadership, Associate Certificate	Student Records
Lean Six Sigma Principles, Associate Certificate	Student Records
Marketing Management, Certificate	Student Records

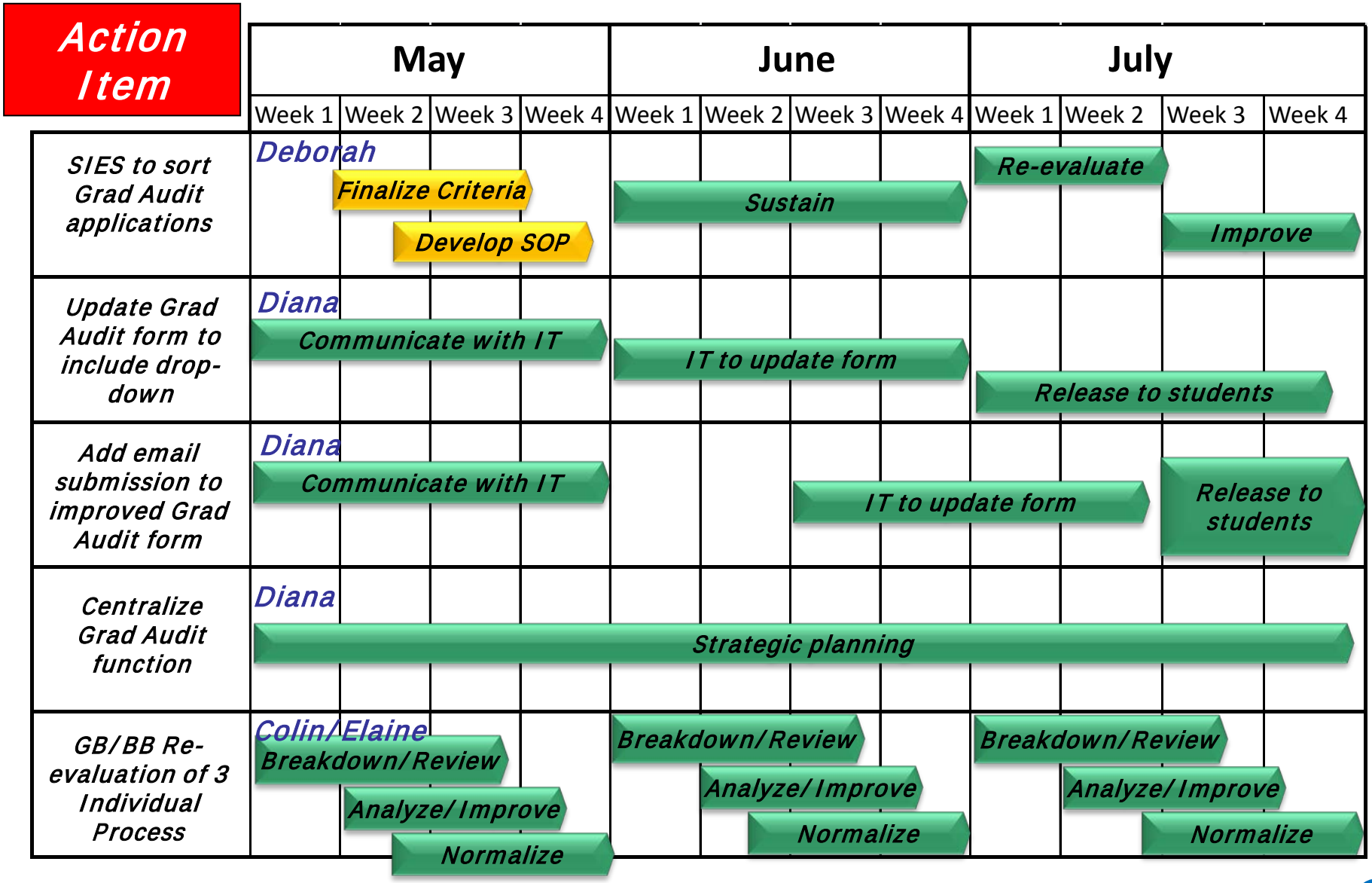
C

Comment Type: 306 App to grad received
Originator:
Contact:
Contact Date: 13-MAY-2015

Comments:

Bus Mgmt Cert - Program Advising

Future State Implementation Plan (<3 months)



Solution Implementation

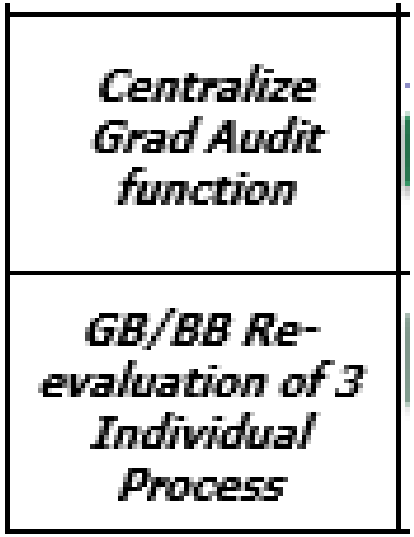
Future State (< 90 days) Savings:

SIES to sort Grad Audit applications
Update Grad Audit form to include drop-down
Add email submission to improved Grad Audit form

Part-time Advising: 24.2% time savings

Part-time Records: 18.2% time savings

Solution Implementation



Part-time "Advising" Processing

Current State Best/Worst Times: 35 -265 hours (1 – 6½ weeks)

Strategic Future State Best/Worst Times: 9 - 88 hours (1 – 11 days)

Part-time "Records" Processing

Current State Best/Worst Times: 19 -235 hours (1 – 6 weeks)

Strategic Future State Best/Worst Times: 9 - 89 hours (1 – 11 days)

Target **Time to process a graduation audit reduced by 50 %**

This will create capacity within our staff complement to allocate to other value-add activities that align with current institutional priorities

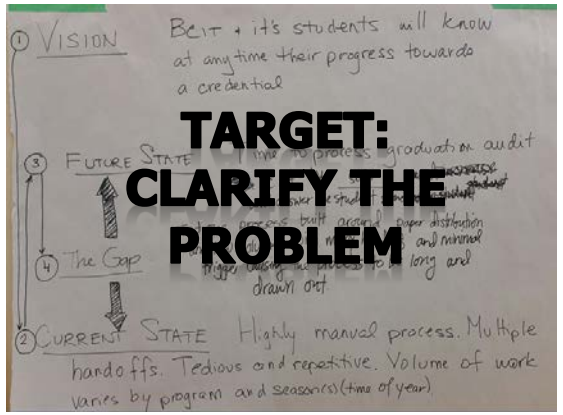
Staff are better equipped to work efficiently and with greater confidence. Exposure to Lean methodologies coupled with the implementation of an action plan fosters a culture of teamwork and a continuous improvement mindset.

Students will receive updated transcripts and credentials sooner thus enabling them to more quickly advance their careers and/or further their studies.

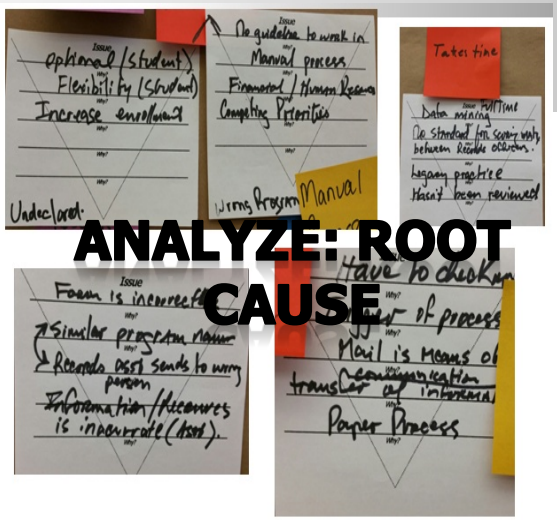
Background

On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.

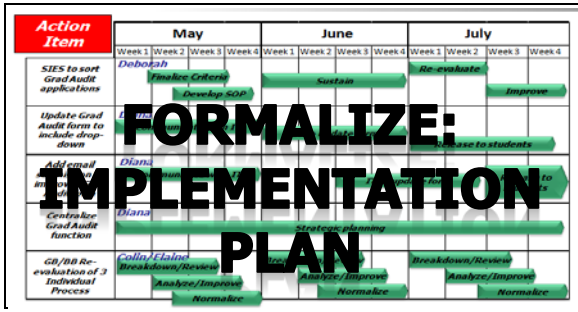
Title: Grad Audit Process
Date: May 13, 2015
By: Team Graduation



TARGET: CLARIFY THE PROBLEM



ANALYZE: ROOT CAUSE

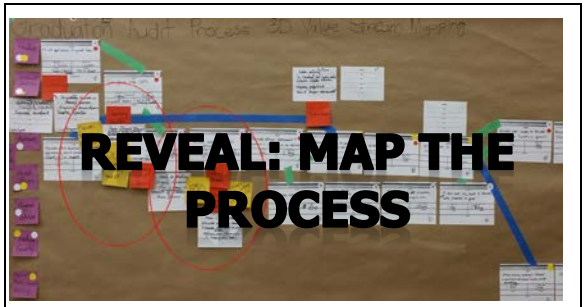


FORMALIZE: IMPLEMENTATION PLAN

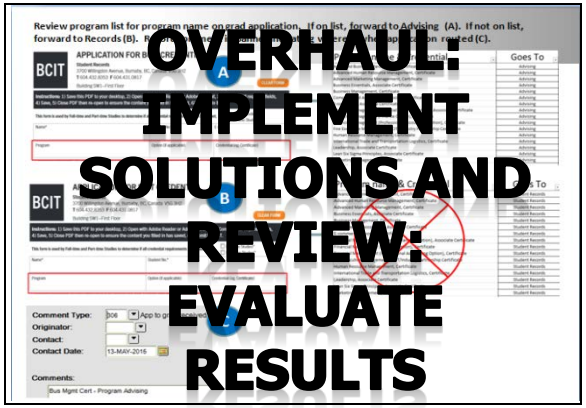
Navigate: Target setting

Time stamp on graduation application (from SIES to Program Advisors)

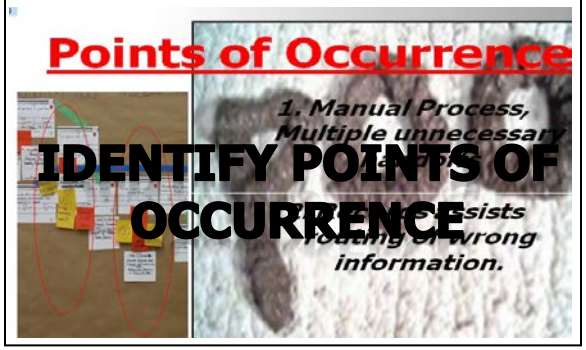
NAVIGATE: SET THE TARGET



REVEAL: MAP THE PROCESS



OVERHAUL: IMPLEMENT SOLUTIONS AND REVIEW: EVALUATE RESULTS



IDENTIFY POINTS OF OCCURRENCE

STRATEGIZE: DEVELOP SOLUTIONS

横展開

yoko ten kai

yoko = horizontal, lateral, sideways
tenkai = develop, deploy, advance

MOBILIZE: YOKOTEN

横展開

yoko ten kai

yoko = horizontal, lateral, sideways
tenkai = develop, deploy, advance

- *Other processes with many hand offs*
- *Other paper based processes (forms, documents, etc.)*

Background

On average, BCIT graduates about 7200 students per year. Each and every graduate is subjected to the Grad Audit process which is currently taking 6-8 weeks.

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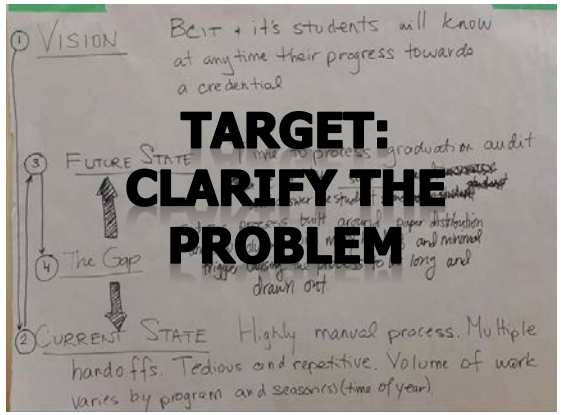
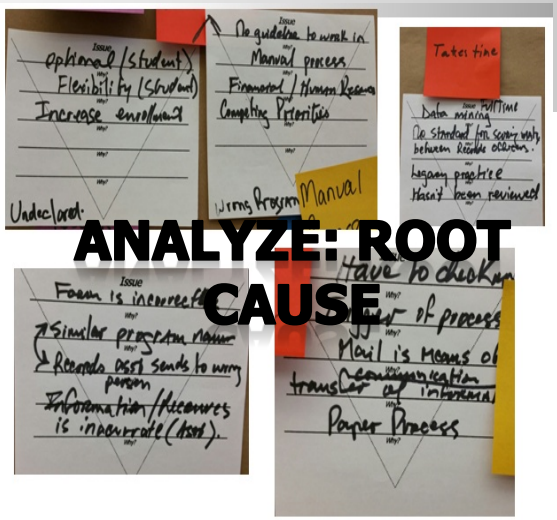
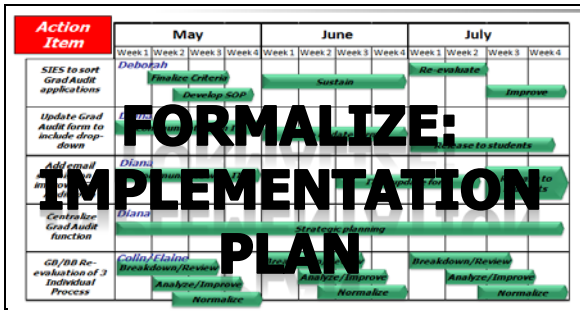


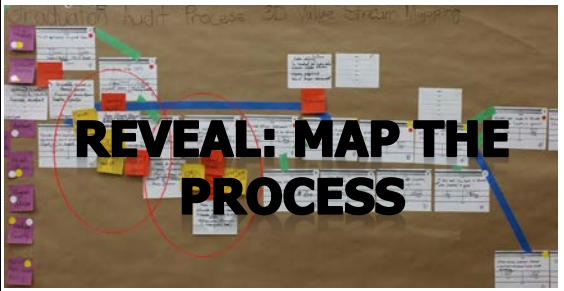
TARGET: CLARIFY THE PROBLEM



ANALYZE: ROOT CAUSE



FORMALIZE: IMPLEMENTATION PLAN



REVEAL: MAP THE PROCESS

Navigate: Target setting

Time stamp on graduation application (from Records/Program Advisors)

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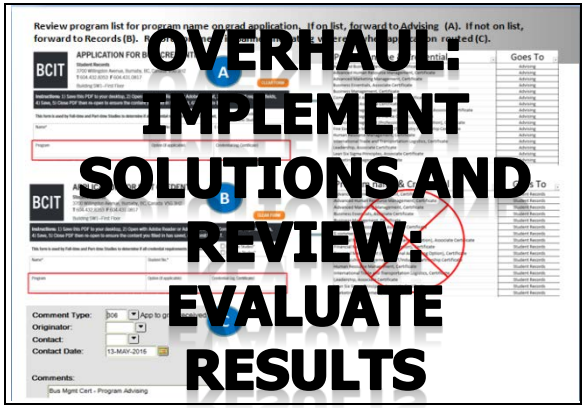

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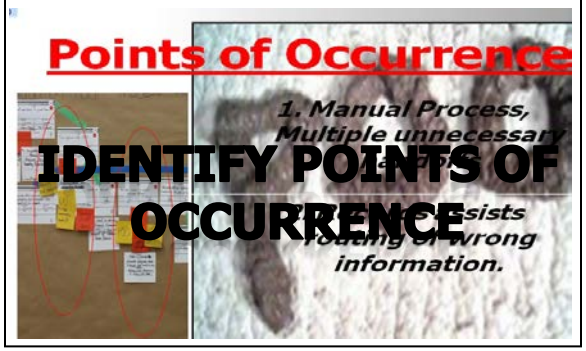


IDENTIFY POINTS OF OCCURRENCE

STRATEGIZE: DEVELOP SOLUTIONS

横展開

yoko ten kai

yoko = horizontal, lateral, sideways
tenkai = deployment, development, advance

MOBILIZE: YOKOTEN

O What?

Greater efficiency

Reduced processing times

More value added work

Happier students = Reputational value

Thank You

Questions?

ADMINISTRATIVE REPORT

TO: Corporate Services Committee

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Performance Management Policy

Administrative Recommendation:

THAT the Board adopt the Exempt Employee Performance Planning and Review Policy; and further,

THAT Policy No. 2615-00.01 Annual Performance Evaluations be rescinded.

Reference:

- Exempt Employee Performance Planning and Review Policy

Business Plan Objective:

Goal 4.1 To execute a well-defined strategic planning cycle and process;
Objective 4.1.1 By maintaining, evaluating and executing the Strategic Planning and Enterprise Risk Management Programs.

History:

The Regional District has a robust Strategic Planning Process and it's designed for the Board to measures progress against the annual Corporate Business Plan. At the Corporate Services Committee meeting 4 June 2015, Committee received a proposal from Administration to assign points to each performance indicator in the 2015 Business Plan, which the Board adopted a their regular meeting on 11 June 2015. A qualitative and quantitative quarterly report can now be submitted to the Corporate Services Committee and a final report can be prepared at the end of each calendar year. Management accountability for achieving the objectives set out in the Business Plan by the Board is activity-based and somewhat subjective, but this rating system will allow us to put numbers up for 2015 and to help refine the Business Planning process in the future.

Further, the 2015 Business Plan contemplates a revision to the Performance Planning and Review process and, since the organizational framework of the Regional District is based on the Board/ CAO Relationship, a policy has been developed that establishes a formal review process by the Board on the CAO and then a requirement for the CAO to cascade that evaluation process throughout the organization.

At their meeting of 5 June 2014, the Board resolved to support an incentive program to encourage management accountability and established a fund, not to exceed 1% of Exempt Staff salary, to commence in the next fiscal year. This program excludes the CAO and the amount included in the 2015 budget and available for this program is approximately $14,000.00.

Alternatives:

1. Amend the Exempt Performance Planning and Review Policy
2. Set aside the Exempt Evaluation Policy

Analysis:

The Policy anticipates that the Board would choose to incent the accomplishment of the Corporate Objectives in the 2015 Business Plan and hold the CAO responsible for doing so. The CAO performance evaluation process is proposed for weighting as follows: 80% of the evaluation being focused on the Business Plan and the remaining 20% related to personal performance based on the evaluation of the CAO by the Board and Staff. The emphasis on corporate performance is proposed to go down the further the position being evaluated falls into the organization.

As with any process like this, once an organization commences, it's necessary that we put in the effort to get value and it needs to be fair and honest to achieve the credibility that it would need to be successful.

Communication Strategy:

This is an internal program and will be communicated to those employees affected.

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: Exempt Employee Performance Planning and Review

AUTHORITY: Board Resolution dated _____.

POLICY STATEMENT

It is a policy of the Regional District of Okanagan-Similkameen that, in order to achieve the Board's goals and objectives, the Board shall develop a framework and implement a system to assess the performance, provide adequate compensation and incent superior performance of the Officers and Managers of the RDOS annually.

PURPOSE

1. To provide a link between Board expectations and the performance of Officers, Managers and Confidential Employees at the Regional District of Okanagan Similkameen (the "RDOS").
2. To ensure the Board has the opportunity to make informed decisions on the provision of adequate base compensation to secure and retain the services of exempt employees with the skills, abilities and competencies necessary to achieve the goals of the RDOS.
3. To establish a process to link compensation to performance and provide an objective basis for recognizing and rewarding superior performance.
4. To focus management performance on achieving the Corporate Business Plan.
5. To facilitate coordination and teamwork among the organization's senior management team.

DEFINITIONS

1. "Administrative Support" means human and financial resources provided by the CAO to carry out a function in support of the RDOS Board or its Committees.

2. "Board" means the Board of Directors for the Regional District of Okanagan Similkameen.

3. "CAO" means the Chief Administrative Officer of the Regional District of Okanagan Similkameen, duly appointed by resolution or bylaw of the Board of Directors, and holding the designations under s. 197, 198 and 199 of the Local Government Act.

4. "CFO" means the person appointed as Chief Financial Officer by the CAO and delegated the responsibility of s. 199 of the Local Government Act.

5. "Chair" means the person elected as Chairperson of the Board of Directors for the Regional District of Okanagan Similkameen by his peers on the Board.

6. "Committee" means a standing, select or ad hoc committee of the Regional District of Okanagan Similkameen.

7. “Exempt Employees” mean all those employees of the Regional District of Okanagan Similkameen excluded from the Union, including those in Officer, Manager and Confidential positions.

8. “Governance” means the process of exercising corporate leadership by the policy-making authority on behalf of the organization as a whole in terms of its purpose, control, and future.

9. “Manager of Legislative Services” means the person delegated the responsibility of s. 198 (Corporate Officer) of the Local Government Act by the CAO.

10. “Member” means an individual member of the Board of Directors.

11. “RDOS” means the Regional District of Okanagan Similkameen.

12. “Senior Management Team” means the Senior Management Team for the Regional District of Okanagan Similkameen, as appointed by the CAO.

13. Whenever the singular, masculine or feminine is used in this Policy it shall be interpreted as if the plural, feminine or masculine has been used where the context so requires.

RESPONSIBILITIES

The Board shall:

1. Govern the RDOS consistent with its Legislation, Bylaws, Mission Statement, Values and Budget.

2. Adopt an Annual Business Plan, including weighted corporate objectives.

3. Annually budget an aggregate amount for salary increases and performance rewards for the Exempt Employee Group.

4. On an annual basis, review compensation for Exempt Employees at Budget committee and authorize the CAO to increase salaries for exempt employees based on year-over-year adjustments to the BC Cost of Living Index.

5. Annually review a Corporate Services Committee Report on the performance of the CAO based on achievements against the annual Business Plan (80%) and personal performance (20%).

6. Maintain possession of this policy and any amendments thereto shall be made by resolution of the Board.

Individual Board Members shall:

7. Participate in the annual electronic performance evaluation of the CAO.

The Corporate Services Committee shall:

8. Administer the Exempt Employee Performance Planning and Review Policy and recommend amendments to the Board, if any.

9. When required, review the base compensation paid to Exempt Staff, informed by a market survey of benchmarked positions and submit a recommendation to the Board for the subsequent year's base pay.

10. Annually review a consolidated performance evaluation for the CAO based on achievements against the annual Business Plan (80%) and personal performance (20%).

The CAO shall:

11. Within Budget, establish rates of pay for the Exempt Group.

12. Present a Business Plan to the Board by December 31st of each year setting out the objectives for the subsequent year to achieve the strategic goals, prioritized and weighted.

13. Present an assessment of the corporate performance against the Business Plan to the Corporate Services Committee in January of the subsequent year, which shall be integral to the performance evaluation calculation.

14. Evaluate the performance of the Senior Management Team against their duties and award a performance reward to the Senior Management Team, if warranted, assessed on their success on corporate (70%) and personal (30%) objectives.

15. Ensure that all exempt employees receive a formal annual performance review.

16. Assign administrative support to the Corporate Services Committee for the review of survey results and undertake any instructions therefrom to address threats or opportunities identified.

EVALUATION CRITERIA:

1. The Chief Administrative Officer holds a strategic leadership position within the organization and the CAO Performance Planning and Review Process will address the competencies of critical importance to the success of the Regional District of Okanagan Similkameen:

   - **Communicates Clearly**: Listens to others, provides clear translation between the Board and staff, presents well at all levels and in all mediums.

   - **Leadership**: Supports the Board in maintaining a strategic focus in the organization, assisting and supporting the Board in maintaining operational readiness;

   - **Organizational Development**: Evaluates the CAO's performance on his ability to develop and lead a high performance team;

- **Systems Thinking**: Understands the big picture and forms linkages between strategy and action. Can grasp complexities and identify policy and priority contradictions;

- **Nurtures Relationships**: Builds trust and respect with others and moves towards win/win situations;

- **Understands Political Sensitivities**: Understands governance responsibilities and can bridge the political/administrative interface. Ensures implementation of the Board's decisions.

PROCEDURES

The Corporate Services Committee shall:

1. November - Review the profile and the competencies required for the CAO position as a basis for the annual CAO Evaluation Survey by the Board.

2. November - Develop an electronic survey tool to allow the Board Members to measure the CAO's success against the profile and competencies for the position. Administrative Support shall be provided by the Manager of Human Resources.

3. December - Survey all Board Members.

4. January - Review a report from the CAO on the corporate performance against the previous year's annual business plan and develop a point-rating for the corporate component of the CAO Performance Evaluation.

5. January - Review the results of the Board Evaluation of the CAO Survey, both quantitative and qualitative, in-camera. This survey shall be non-attributable and the CAO shall be invited to participate in the review at Committee.

6. Information obtained or disclosed during the evaluation process shall be confidential to the Board and the CAO and will not be used or disclosed except as defined per the Policy.

CAO Evaluation by Employees:

7. December – The HR Manager will develop and distribute an electronic survey to allow Employees to evaluate the performance of the CAO. The survey should be designed with questions that could be responded to fairly by employees to be used to assist the Corporate Services Committee in their assessment of the CAO's personal performance.

8. This survey shall be non-attributable.

9. January - Results of the Survey, both quantitative and qualitative, shall be provided to the Corporate Services Committee.

10. The CAO shall be invited to participate in the review at Committee.

11. Information obtained or disclosed during the evaluation process shall be confidential to the Board and will not be used or disclosed except as defined per the Policy.

CAO Base Compensation

12. It is a priority of the Board to remain competitive with their compensation practices in order to attract and retain competent employees.

13. January - the Corporate Services Committee shall obtain a report from the Manager of Human Resources on CAO Compensation. Every 3rd year, the HR Manager shall produce a report that compares remuneration of similar positions to the CAO across a broad range of organizations as a foundation for their analysis of the CAO salary and to determine if adjustment to the range is required.

CAO Performance:

14. The CAO shall provide the Corporate Services Committee with the following information to assist with the performance evaluation:
    a. The Business Plan; quantitative results
    b. A Self-Assessment
    c. The Job Description for the position
    d. The Employee Survey Results
    e. The Board Evaluation Results

The CAO shall:

15. Conduct performance evaluations on the members of the senior management team annually and issue performance rewards to the Senior Management Team, excluding the CAO, based on performance judged to be superior for that calendar year.

16. The CAO shall brief the Corporate Services Committee on the results of the annual Senior Management Team performance evaluations and performance rewards.

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Planning and Development Committee
Thursday, June 18, 2015
12:45 p.m.

REGULAR AGENDA

A. APPROVAL OF AGENDA

B. Delegation

1. Southern Interior Beetle Action Coalition
   Angelique Wood and Kim English will address the Committee regarding the Community Land Trust Initiative and the work being done in the Similkameen Valley around innovative housing solutions for seniors and families.
   a. Letter of Support – Town of Princeton
   b. Letter of Support – VanCity
   c. PowerPoint Presentation

C. ADJOURNMENT

Town of
PRINCETON

June 2, 2015 L6187

To whom it may concern:

The Town of Princeton is pleased to write this letter of support for the Southern Interior Beetle Action Coalition's continued research and development of tools to address rural population attraction, housing and senior's services issues.

Our aging rural populations are concerned with access to health care, housing and how long they can continue to live in their homes; young working families struggle to purchase homes and build community roots; and many of our rural communities struggle with maintaining population.

From a recent presentation we received we understand that there is considerable interest in both Hedley and other communities in how Community Land Trusts could be one potential tool to help address several of these challenges. We are interested and would like to know more about how a community land trust is an effective tool for community revitalization. It's important to preserve the rural way of living with a strong network for mutual aid, local ownership and land protection and stewardship.

The Town of Princeton would like to continue being informed on the progress of the community land trust.

Should you have any questions please do not hesitate to contact Rick Zerr, Chief Administrative Officer for the Town of Princeton at 250-295-3135.

Yours truly,

Frank Armitage
Mayor

Town of Princeton
151 Vermilion Avenue, P.O. Box 670, Princeton, British Columbia, Canada V0X 1W0
Phone: (250) 295-3135 * Fax (250) 295-3477 * Website: princeton.ca

Suite 810 – 815 West Hastings Street
Vancouver, BC V6C 1B4
Ph: (604) 877-7553
www.vancitycommunityfoundation.ca

Vancity Community Foundation

March 4, 2015

TO WHOM IT MAY CONCERN:

RE: Hedley Community Land Trust Project
Application of Southern Interior Beetle Action Coalition (SIBAC)
to the Real Estate Foundation of B.C. (REFBC)

Further to a request recently made through Michael Lewis, we are pleased to write this letter of support for the Community Land Trust Project being developed in Hedley, BC. Based on what we've seen thus far, this innovative pilot includes a number of aspects that are very interesting to us, and we see opportunities for both learning and for direct local impacts. The collective ownership and protection of tenure through a Community Land Trust model, the creative application of affordable housing options and the intergenerational revitalization of community (including particular attention to senior care and succession planning) each represent exciting potential.

At Vancity Community Foundation, together with Vancity Credit Union, we are working to support creative solutions like those represented in this project and will be anxiously awaiting the initial outcomes, with a hope that there may be future opportunities for expansion, replication and additional capital investment. We are actively seeking ways to allocate more of our community-based capital into initiatives that generate social, environmental and financial returns. The work of this project could lead to some interesting future collaborations.

Depending on the results achieved, we would certainly be open to future applications for support, and potential participation on a matching basis with other partners interested in the next phases of development. We have worked with both SIABC and REFBC on a number of initiatives in the past, and value the involvement of these important lead funding organizations.

Let us offer an enthusiastic recommendation to this application and our best wishes for success to all in the process from here. If there are any further questions regarding our involvement and interest, please do not hesitate to contact me directly.

Sincerely,

Derek Gent
Executive Director
direct line: (604) 877-7553
email: derek_gent@vancity.com

SIBAC Innovative Solutions for Rural Housing & Seniors Services Project

Project Updates

SIBAC Board Meeting – Feb 24th 2015

RDOS: Donna Butler– April 13 2015

SVPS at the Grist Mill- April 15th 2015

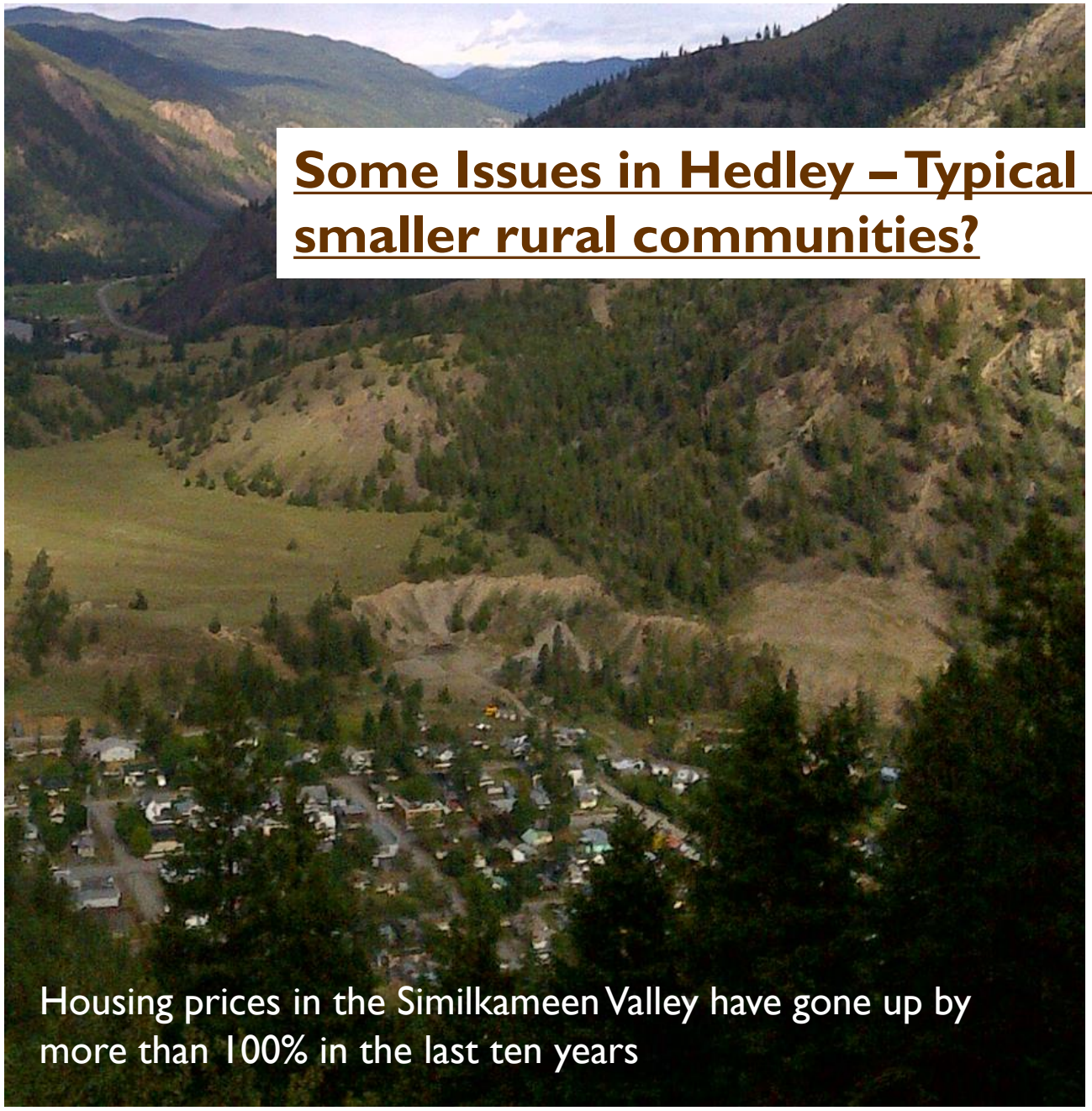
Princeton Town Council – May 4th 2015

Keremeos Town Council – June 15th 2015

Regional District Okanagan Similkameen – June 18th

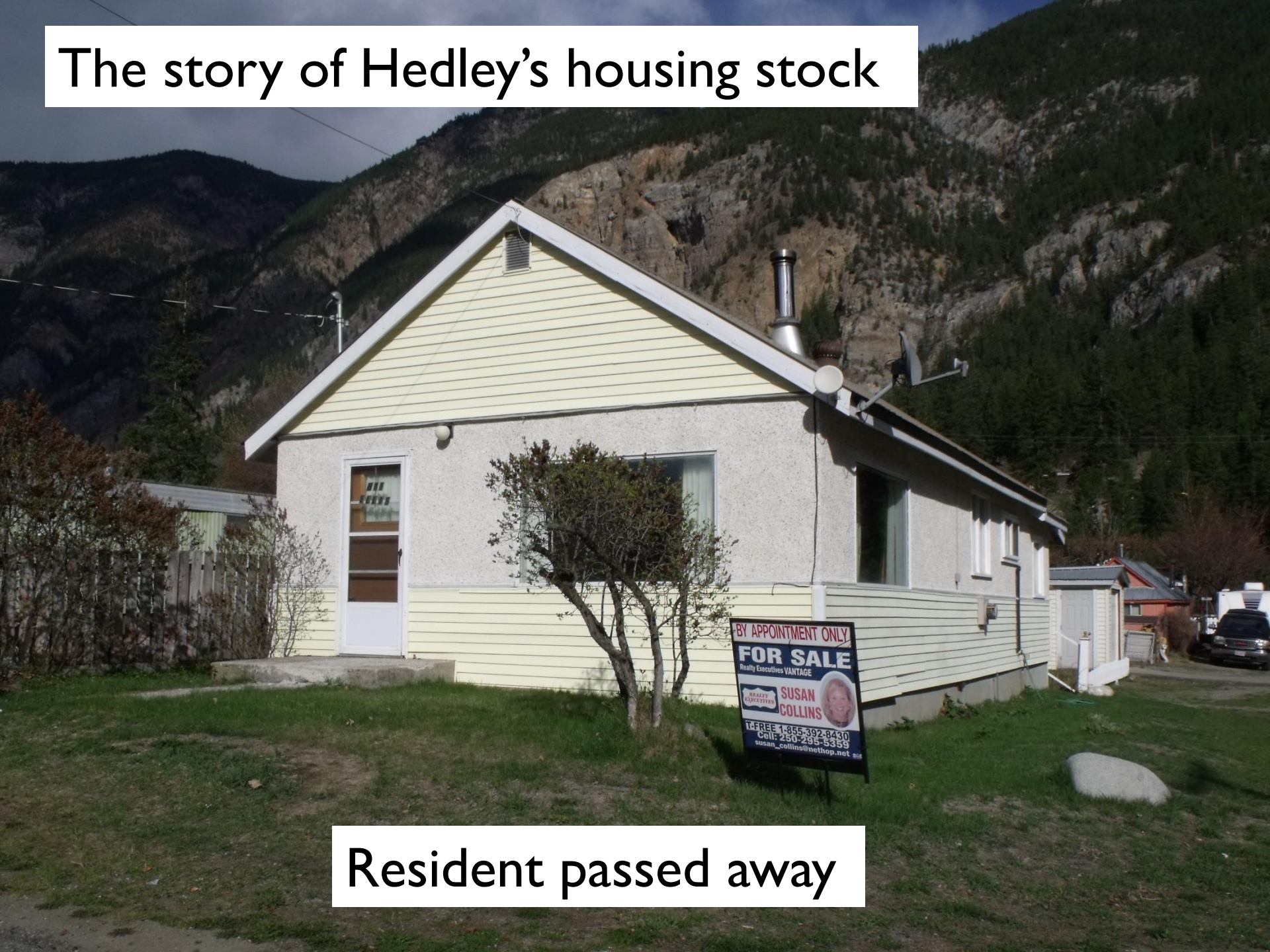
Rural Housing

Some Issues in Hedley – Typical of many smaller rural communities?



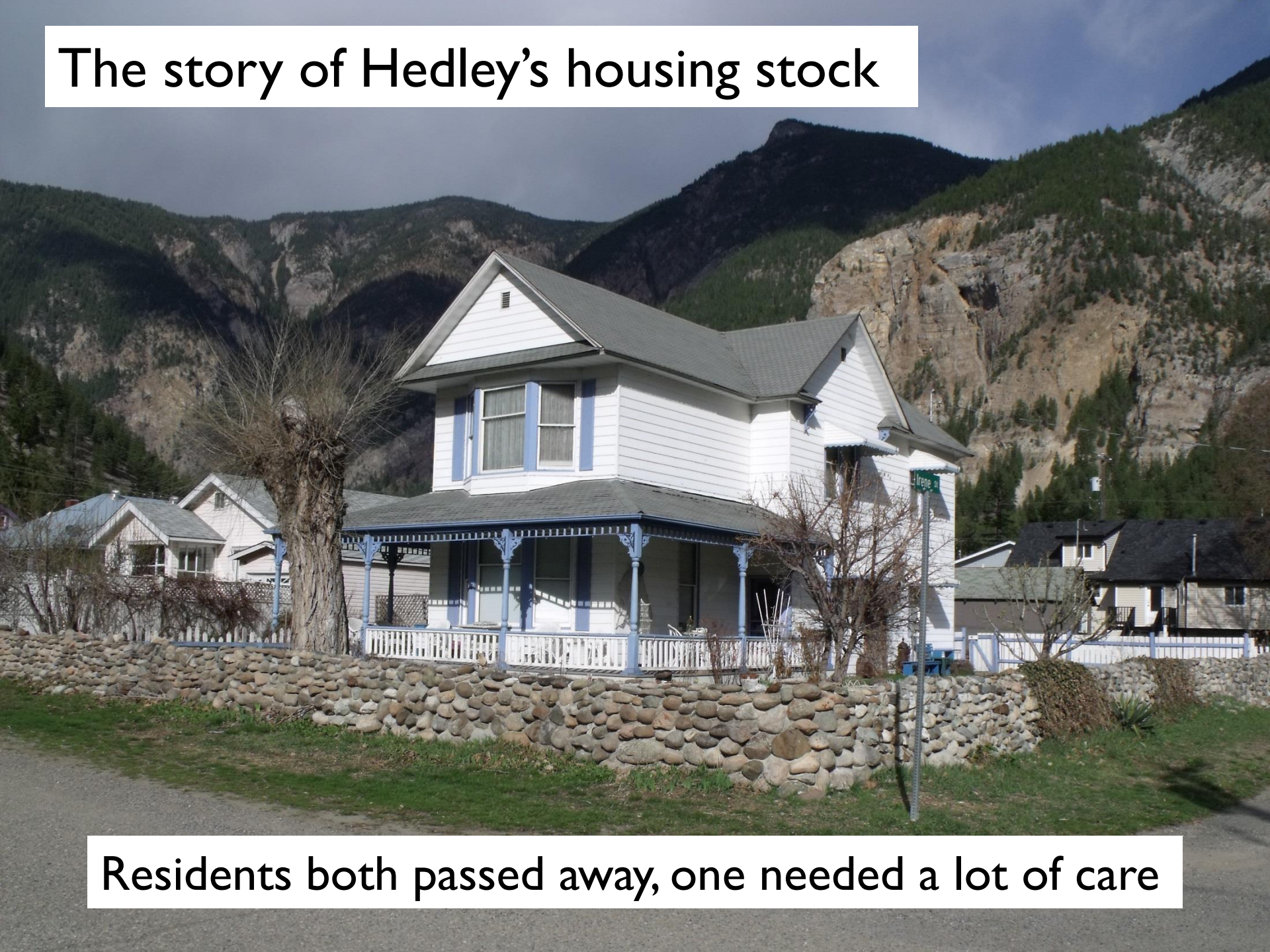
Housing prices in the Similkameen Valley have gone up by more than 100% in the last ten years

The story of Hedley's housing stock



Resident passed away

The story of Hedley's housing stock



Residents both passed away, one needed a lot of care

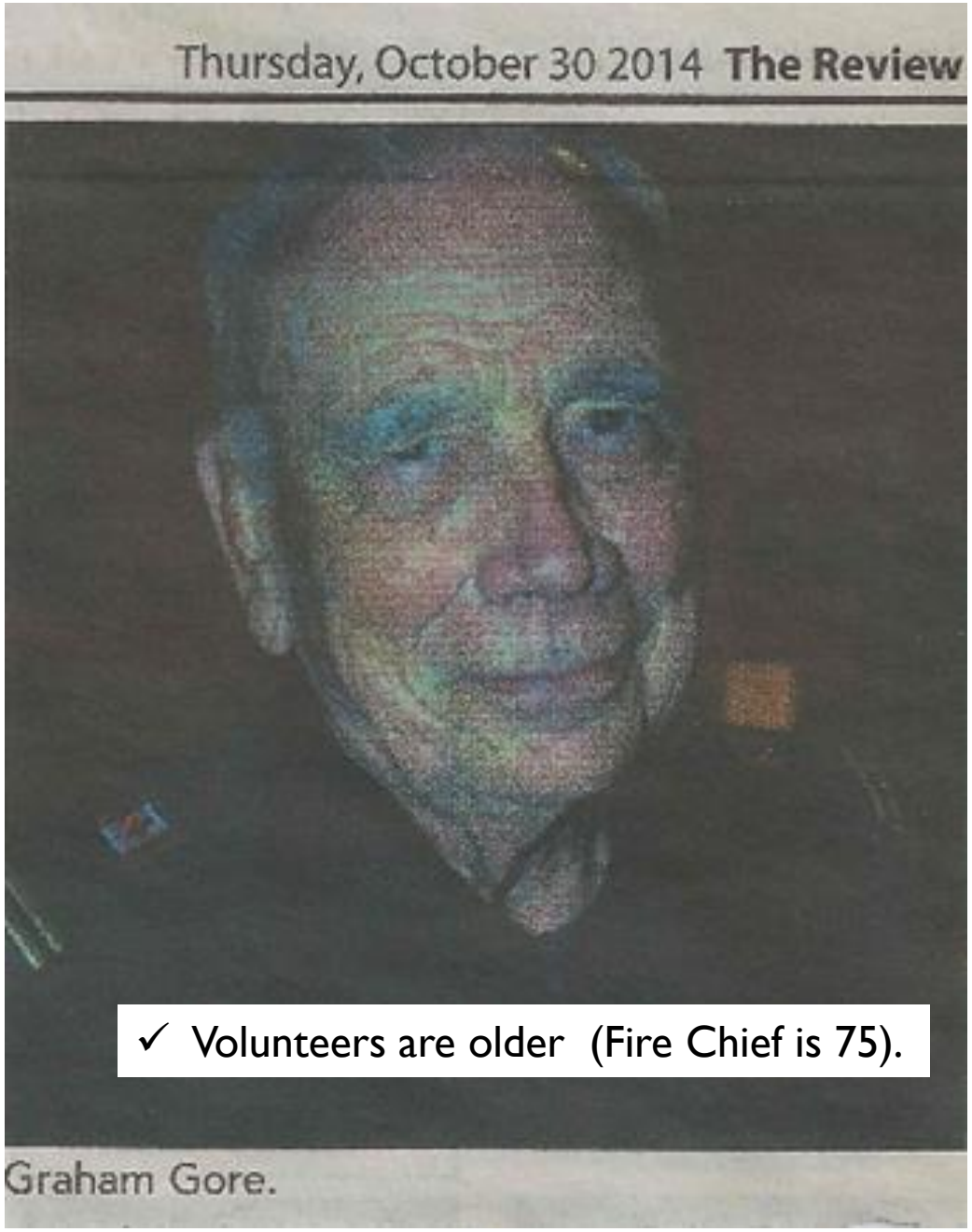

The story of Hedley's housing stock
Owner moved away for work

The story of Hedley's housing stock

Owners moved away for medical services

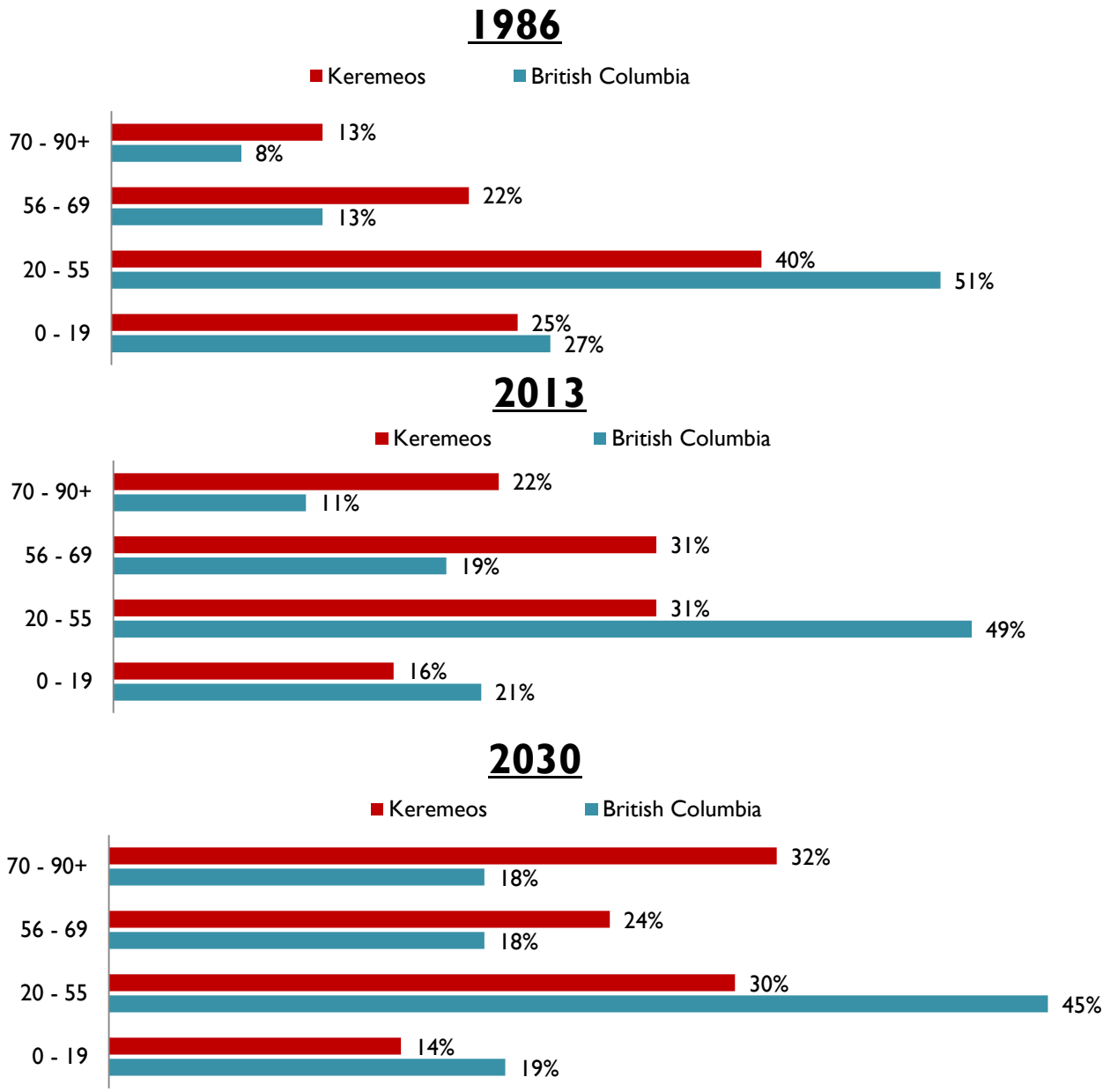
Some Issues in Hedley – Typical of many smaller rural communities?

- ✓ Many seniors want to live out their days in Hedley
- ✓ Little suitable new housing development occurring for seniors
- ✓ Difficult to sell a home
- ✓ Poor access to health care and home supports create insecurity about aging in place
- ✓ Youth growing up in Hedley must move away for work and education
- ✓ Many landowners do not want to rent so homes sit empty

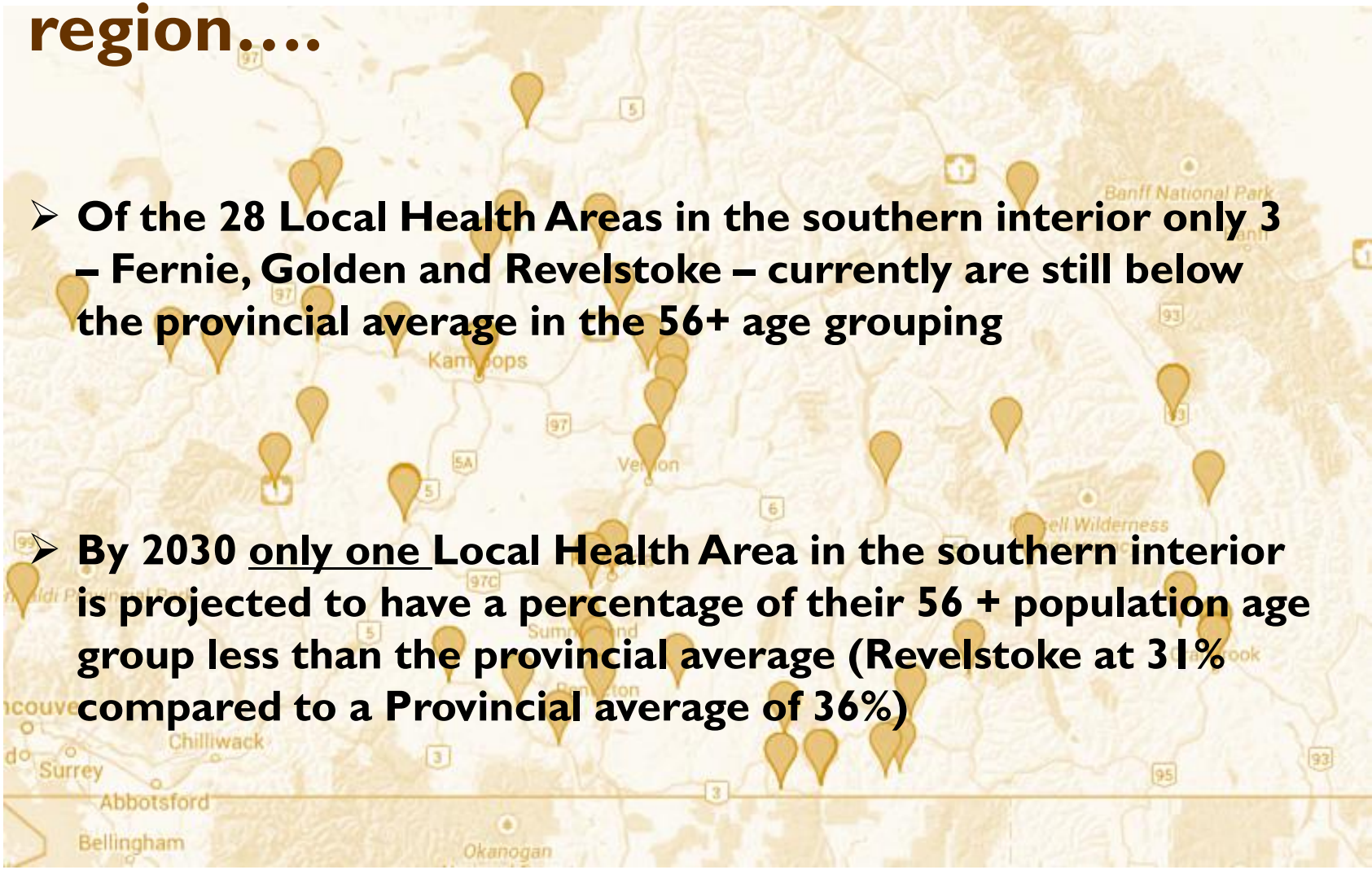


- ✓ Volunteers are older (Fire Chief is 75).

And we aren't getting any younger…….

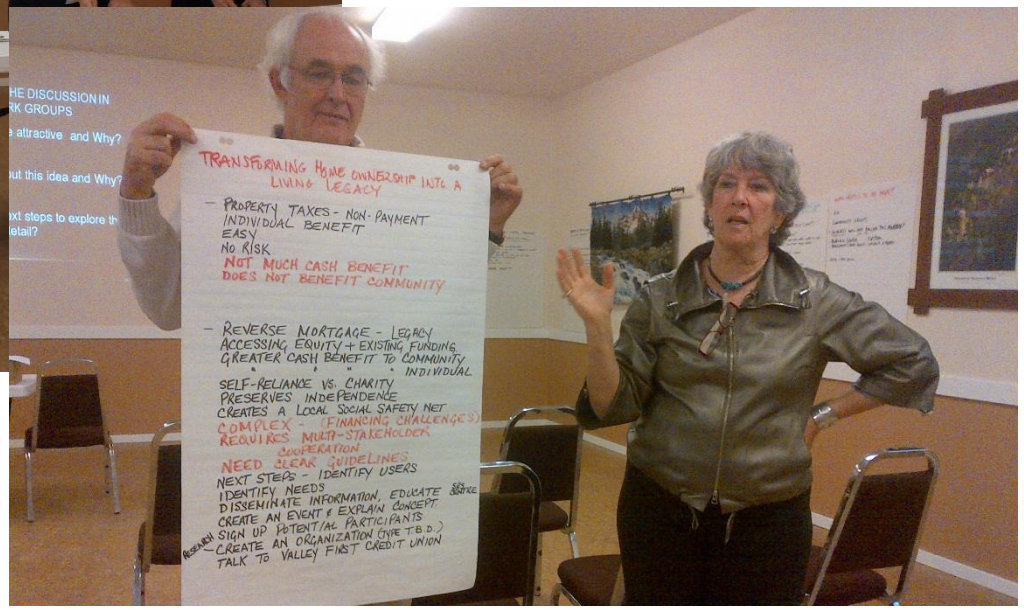


This is an issue for many small rural communities throughout the SIBAC region….



- Of the 28 Local Health Areas in the southern interior only 3 – Fernie, Golden and Revelstoke – currently are still below the provincial average in the 56+ age grouping

- By 2030 <u>only one</u> Local Health Area in the southern interior is projected to have a percentage of their 56 + population age group less than the provincial average (Revelstoke at 31% compared to a Provincial average of 36%)



Project Update

October 17 & 18 2014 : Workshop held in Hedley

- **Workshop participants included Betty Brown from Interior Health**
- **Town Councillors from Keremeos and Princeton joined both the Friday evening lecture and the Saturday morning "roll up your sleeves" workshop**

Project Update

- October 17 & 18 2014 : Community Workshop held in Hedley –
- 25 attendees
- February – March 2015 Completion of Summary Report & Research Compendium Document (1500 + pages)

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Environment and Infrastructure Committee
Thursday, June 18, 2015
1:30 p.m.

REGULAR AGENDA

A. APPROVAL OF AGENDA

B. Campbell Mountain Landfill - Substituted Requirements Landfill Gas Regulation

a. Campbell Mountain Landfill - Landfill Gas Management Facilities Design Plan

RECOMMENDATION 1

THAT the Regional District of Okanagan-Similkameen apply for substituted requirements to the Landfill Gas Management Regulation to allow for diversion of organics and bio-cover at the Campbell Mountain Landfill in place of Landfill Gas Collection.

C. ADJOURNMENT

ADMINISTRATIVE REPORT

TO: Environment and Infrastructure Committee

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Campbell Mountain Landfill - Substituted Requirements Landfill Gas Regulation

Administrative Recommendation:

THAT the Regional District of Okanagan-Similkameen apply for substituted requirements to the Landfill Gas Management Regulation to allow for diversion of organics and bio-cover at the Campbell Mountain Landfill in place of Landfill Gas Collection.

Reference:
BC Landfill Gas Management Regulation
RDOS Solid Waste Management Plan
RDOS Organic Management Facilities Feasibility Study

Business Plan Objective:

The implementation the Landfill Gas Capture Plan is listed under Activities within Section 3.3.11 of the 2015 RDOS Business Plan.

History:

The Landfill Gas Management Regulation was brought into effect January 2009. The Regulation requires that the Campbell Mountain Landfill install a Landfill Gas Capture System or apply for substituted requirements.

In keeping with the Regulation, the RDOS has obtained a plan for Landfill Gas Capture. Estimated costs and comparative Green House Gas (GHG) emissions have also been calculated for an alternative approach of full diversion of organics and placement of a bio-cover on the surface of the landfill.

Alternatives:

THAT the Regional District of Okanagan-Similkameen begin the tendering process for the installation of a Landfill Gas Capture System at the Campbell Mountain Landfill.

Analysis:

As shown in Section 7 of the attached report, submitted by Sperling Hansen Associates, there are significant financial and GHG savings by banning all organics from the landfill and utilizing a bio-cover in comparison to installing a Landfill Gas Capture System.

Table 1: Sperling Hansen Associates, Campbell Mountain Landfill, Landfill Gas Management Facilities Design Plan, 2015

From Section 7 of Report	**Landfill Gas Capture System**	**Diverting Organics/Bio-Cover**
Total Lifecycle Costing (2016 - 2073)	$23,562,000	$9,731,000
Total Lifecycle GHG Emissions (equivalent CO2 tonnes)	6,595	5,136

Landfill Gas Capture Systems work best when water can be introduced to speed up the creation of methane. In a Bio-Reactor Landfill, like the City of Kelowna Landfill, the water is recirculated through a leachate collection system. Bio-reactor landfills are also designed to be capped to withstand negative pressure to increase collection of gas.

The Campbell Mountain Landfill was developed without a leachate capture liner and water cannot be introduced safely to the landfill. The landfill has historically had landfill fires exacerbated by historic permeability that allowed air to enter the facility. In order to meet requirements for landfill gas capture, the RDOS would be required to install a geo-membrane to cap the landfill and hold in gas for collection through pipes. Due to the lack of water the amount of gas collected would be slow and limited while the fixed costs of installation and maintenance would be high. Due to the poor volume, the gas collected is assumed to not be economical for energy production. All gas collected would be flared.

The RDOS has already committed, through its Solid Waste Management Plan, to begin diverting all organics from landfills. Through the Organic Management Facilities Feasibility Study, the RDOS is determining the most sustainable way to create compost from bio-solids, yard waste and food waste. Some of this compost could be used to create an organic bio-cover. Engineered bio-covers have been found to effectively destroy methane; the main GHG created by landfills. Methane passing through the bio-cover is destroyed by bacteria living in the compost.

With the potential savings for both cost and GHG emissions, Staff recommend applying for substituted requirements for a Landfill Gas Management Strategy that allows for full diversion of organic waste and the application of an engineered bio-cover at the Campbell Mountain Landfill.

Respectfully submitted:

"Roger Huston"

_____

R. Huston, Public Works Manager

Attachment: CML Landfill Gas Management Facilities Design Plan, Sperling Hansen, February 2015

Campbell Mountain Landfill
Landfill Gas Management Facilities Design Plan
(Final Report)

PREPARED FOR: REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PREPARED BY: SPERLING HANSEN ASSOCIATES

PRJ12019

February 2015

SPERLING HANSEN ASSOCIATES

REGIONAL DISTRICT RDOS OKANAGAN-SIMILKAMEEN

- Landfill Services
- Landfill Gas Management
- Land Reclamation
- Corporate Management
- Groundwater Hydrogeology

SPERLING HANSEN ASSOCIATES

- Landfill Engineering
- Landfill Gas Management
- Solid Waste Planning
- Environmental Monitoring
- Landfill Fire Control

February 26th, 2015 PRJ12019

J.D. French, P. Eng.
Public Work Manager
Regional District of Okanagan-Similkameen

101 Martin Street, Penticton

BC, V2A 5J9

RE: Campbell Mountain Landfill LFG Management Facilities Design Plan

Dear Mr. French,

Sperling Hansen Associates (SHA) are pleased to submit the enclosed final report for the Campbell Mountain Landfill Landfill Gas Management Facilities Design Plan. This report has been prepared in accordance with the requirements of British Columbia Ministry of Environment (MOE).

Please contact the undersigned should you have any queries or comments. It has been a pleasure working for the Regional District of Okanagan-Similkameen on this project and we look forward to providing our services to you again in the near future.

Yours truly,
SPERLING HANSEN ASSOCIATES

Dr. Tony Sperling, P.Eng.
President

CC. Carol Danyluk, P.Eng.
Section Head Authorization
Environmental Protection Division
Southern Interior Region
Ministry of Environment

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LANDFILL GAS MANAGEMENT FACILITIES DESIGN PLAN

FOR

THE CAMPBELL MOUNTAIN LANDFILL

Prepared For:

REGIONAL DISTRICT OF OKANAGAN SIMILKAMEEN

FOR SUBMISSION TO

BRITISH COLUMBIA MINISTRY OF ENVIRONMENT

Prepared By:

SPERLING HANSEN ASSOCIATES INC.

February, 2015

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EXECUTIVE SUMMARY

According to the new British Columbia Ministry of Environment (BC MOE) Landfill Gas (LFG) Regulation (the Regulation), landfills that accept municipal solid waste for disposal into the landfill site on or after January 1st ,2009 and are assessed to produce more than 1,000 tonnes of methane per year are required to develop a LFG Management Facilities Design Plan (the Design Plan). The Design Plan shall be developed in accordance with the LFG Management Facilities Design Guidelines (the Design Guidelines) introduced by BC MOE.

The Campbell Mountain Landfill (CML) is located approximately 4.5 km northeast of Penticton, British Columbia on the western slope of Campbell Mountain overlooking Okanagan Lake. The LFG Generation Assessment by Conestoga-Rovers & Associates (CRA) in 2010 showed that CML was generating about 1,400 tonnes of methane in the year of assessment. Therefore, according to the Regulation, the Campbell Mountain Landfill is required to install an active gas collection system and to have the system operated by January 1st, 2016. The collected gas shall undergo thermal oxidation in an enclosed flare and/or a LFG utilization system. The RDOS retained SHA to develop the Design Plan for the Campbell Mountain Landfill.

As the first step of the conceptual design process, SHA conducted more advanced LFG generation modeling following a comprehensive analysis conducted on waste compositions and tonnage landfilled at the Campbell Mountain Landfill. Modeling results show that the site is currently generating about 1,200 tonnes of CH_4/year which is equivalent to about 240 standard cubic feet per minute (scfm) of LFG. Results also show that the LFG generation will peak in 2092 (one year after the anticipated final closure year of 2091 based on the conceptual geogrid berm design plan) at a rate of 488 scfm.

The Proposed LFG management system for the Campbell Mountain Landfill includes the following major Components:

- LFG collection system (vertical and horizontal LFG collectors, lateral/sub-hear/main header pipes);
- Condensate handling system (condensate traps, condensate collator pipes, and condensate storage tank);
- LFG extraction plant (moisture separator, blowers, gas analyzer, flow meter, process instruments and controls and power supply and distribution system); and
- LFG flare system (Enclosed flare, flame arrestor, control fail valve, pilot auxiliary fuel system, ignition and pilot control systems)

The LFG collection system is designed to handle the maximum gas generation flow rate expected over the landfill's lifespan (i.e. 488 scfm). However, 300 scfm (which is the estimated flow rate in 2035, 15 years from now) is used to size the LFG extraction and flare system. The two main reasons for this decision are (i) normally the extraction and flare system have to be replaced with new systems after about 15 to 20 years; (ii) RDOS is currently expanding its organic diversion program which will greatly impact the future gas generation at this site. Should the RDOS proceed with implementation of a very strict organic diversion and composting program, there will be a significant reduction in LFG generation. In such case the LFG generation modeling should be updated and implications shall be applied to the future LFG system expansions. Flares usually provide a maximum 10:1 turn down; thus, in this case, the proposed flare with a minimum flow rate of 30 scfm would have the capacity to manage the reduced flow.

In this project, SHA has adopted the most up-to-date LFG management technologies/ practices to design a "state of the art" LFG management system for the Campbell Mountain Landfill ensuring a high efficiency LFG collection/ management system. Some of the unique approaches design innovation and flexibility that SHA has adopted in developing this design include:

- Using Horizontal and Vertical LFG Collectors in different phases of the landfill as appropriate;
- Early installation of horizontal collectors in active phase of the landfill to increase the overall gas collection efficiency;
- Proper spacing between horizontal collectors so that in the future vertical wells can be drilled in between, should the area be found to generate more than the anticipated LFG flow rate;
- Proper sloping for the piping network to avoid condensate blockage;
- Using a matrix configuration for the header which will offer a great deal of operation flexibility;
- Use of bigger diameter bore hole (900 mm instead of traditional 300 mm) for the vertical wells with three different details for the well casings and set up, based on the location and use of wells;
- Proposing to use hydraulic bucket Auger for drilling instead of traditional rotary auger which compacts waste to the wells' walls and creates a barrier reducing vertical wells' collection efficiency;.
- Proposing use of a new type of wellhead equipped with quickly changeable orifice plates and a sensitive flow control valve which will offer higher flexibility and accuracy for controlling operations in the well field.

Based on the conceptual design provided in this design, our preliminary cost estimate for the detailed design and construction of the CML active LFG management system is approximately $2.2 million. Furthermore, SHA's estimate for installation of the CML Phase 1 closure system is approximately $4.8 million, which brings the total required capital budget for the 2015 work at the CML to approximately $7 million.

Finally, SHA has conducted multiple studies at the CML to explore the actual methane emission rates at this site to investigate whether or not a biocover system can be utilized at this site in lieu of an active LFG collection system. Our field investigation conducted in July 2014 indicated that the average methane emission rate from the CML was approximately 12 $g/m^2/day$. SHA' s past experiences in working with biofilter and biocover systems have proved this level of methane loading rate can be effectively handled with a thin biocover system. We proposed a conceptual design of such biocover system including a distribution layer installed beneath the biocover with fabricated media. We estimated that the total cost for installation of a biocover system at the CML, including a 600 mm barrier layer which is required by the new landfill criteria, would be in proximity of $2.9 million in short term and $9.7 million over the landfill lifespan. In contrast, an active LFG collection and flaring system, combined with geomembrane cap will cost $23.5 million while achieving lower methane oxidation performance.

SHA understands that the RDOS strongly believes that available resources should be focused on waste reduction and diversion efforts. SHA believes that for the relatively arid climate in Penticton, overall GHG impacts of solid waste management can be better managed by focusing on organics diversion and controlling of fugitive methane emissions using a biocover system than by implementing an active gas collection system. From a technical perspective, this strategy will have a better outcome while resulting in equal or lesser overall costs.

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Appendix A Lifespan Analysis and Waste Tonnage Projection – Geogrid Berm Design

Appendix B Historical Waste Composition Data

Appendix C LFG Generation Modeling Results

Appendix D Lifespan Analysis – Golder D&O Plan (2002)

1. INTRODUCTION

This report has been prepared in accordance with the Landfill Gas Management Facilities Design Guidelines (Guideline), prepared for the British Columbia Ministry of Environment (MOE) by Conestoga-Rovers & Associates (CRA), dated March 2010, and in accordance with the requirements of the British Columbia Ministry of Environment's Landfill Gas Management Regulation (Regulation), approved and ordered on December 8, 2008.

This report has been prepared by Sperling Hansen Associates (SHA) as a Qualified Professional for the Regional District of Okanagan Similkameen (RDOS), and meets the requirements of Section 7(2) of the Regulation.

2. SITE CONDITIONS AND DESIGN OBJECTIVES

2.1 Site Conditions

2.1.1 Physical Setting

The Campbell Mountain Landfill (CML) is located approximately 4.5 km northeast of Penticton, British Columbia on the western slope of Campbell Mountain overlooking Okanagan Lake. Access to the site is gained via Spiller Road, which winds up the side of Campbell Mountain. The legal description is District Lot No. 368, S.O.Y.D.

The site boundary, which is indicated on Figure 2-1, encloses a 59.5-hectare area of land owned by the City of Penticton (COP). To the north of the site, the lands are primarily owned by Westview Developments who intend to develop a residential subdivision on the property. To the west and south of the site, the lands are owned and utilized by a number of individuals for personal residence and agricultural purposes. To the east of the site, the lands are owned by the COP and are vacant.

The surrounding land uses, and in particular the proximity of permanent structures to the south and proposed structures to the north were considered during the planning and layout of this Landfill Gas Assessment.

2.1.2 Site History and Existing Conditions

The original topography of the site is shown on Figure 2-2 which is extrapolated from a pre-landfill contour plan of the site dated March 1972 and a photogrammetric review of 1964 aerial photographs conducted by Golder Associates (Golder) in 1995 (SHA, 2001).

Landfilling at the site was commenced in 1972 with refuse being placed within the north-south ravine in the area just south of the existing north ravine. Infilling in the north ravine commenced in 1975-1976. Since no bylaw existed outlining the types of waste accepted and prohibited at the landfill, municipal and industrial solid wastes were commonly placed together with liquid waste until the mid-1980's when a liquid waste facility was constructed.

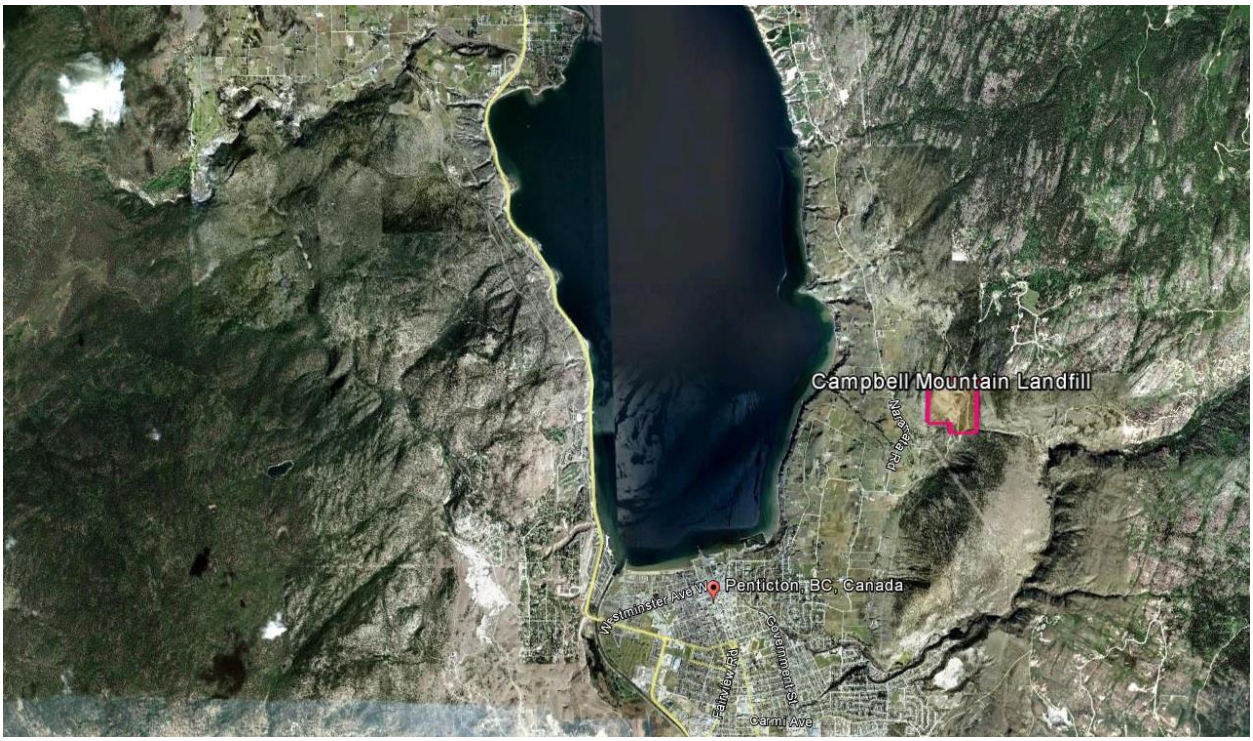

Figure 2-1 Campbell Mountain Landfill Site Location

The topography as of July 2014 is provided on Figure 2-3. A volume analysis using the original contours and the 2014 contours showed that historically, there has been a net fill of about 1.6 million m^3 placed at this site. Figure 2-4 shows the approximation of the waste depth at the CML up until July 2014. Currently, landfilling operations are occurring in Area 'A' shown in Figure 2-3. In order to take the maximum advantage of available air space before the first phase of the LFG collection system is installed, SHA recommended RDOS to continue filling in Area 'A'. This will also allow placement of enough waste over top of the horizontal LFG collectors, described in Section 3.1, so they can be brought online as soon as possible.

It is worth mentioning that due to the semi-arid environment in Penticton and understanding that installation of an active LFG collection system would not be required at this site, a progressive closure using an evaporative cover was initially proposed by Golder (March 2002). Nevertheless, the recent BC MOE landfill gas regulation currently requires an active LFG system

for this site. Installation of the active LFG collection system would also require placement of an impermeable cap system to avoid air intrusion during LFG collection.

Annual Tonnage

The RDOS provided SHA with the historical incoming tonnage and composition data from 1989 tol 2013 which are presented in Table 2-7 of Section 2.2.5. These data are reflected in the LFG generation assessment updated in 2014 and presented in Section 2.3.

Geology and Hydrology

The surficial geology of the Campbell Mountain Landfill site was originally mapped, on a regional scale, by Nasmith of the Geologic Survey of Canada (1962). Nasmith reported that the types and locations of the surficial deposits were controlled by a large tongue of glacial ice, which occupied the Okanagan valley during the last stage of glaciation. This ice tongue diverted drainage around the north side of the mountain, into the Penticton Creek valley. The meltwater, in conjunction with the drainage from Penticton Creek, deposited outwash terraces on the east side of the valley. As the level of the ice dropped, the meltwater was able to flow along the western flank of Campbell Mountain, depositing kame terraces of sand and gravel on the west slope of the mountain.

The Campbell Mountain Landfill site is characterized by loose to compact, unconsolidated glacial deposits, frequent rounded bedrock outcrops and shallow bedrock subcrops. The Geological Survey of Canada maps indicate that the bedrock around the landfill is part of the Monashee Group of the Shuswap terrane, and consists of layered gneiss and local areas of less metamorphosed sedimentary rock. The outcrops generally occur as north-south trending ridges that are 1 m to 5 m higher than the surrounding land surface. Their upper surfaces are rounded as a result of glacial action, and feature non-penetrative fractures.

The three most prominent bedrock outcrops are along the northern property boundary. One forms the large ridge in the northeast corner of the landfill property, which rises 70 m from its toe at Spiller Road to a maximum elevation of 710 m. The northeast ridge is fractured along its western edge, rounded along the top and flanked on the east and south by an apron of till and fractured rock. The other two large bedrock outcrops, which rise some 30 to 40 m, form the sides of the North Ravine. Although the sides of the ravine are heavily fractured, the upper surfaces and opposite sides of the outcrops are rounded and lightly fractured. West of the aforementioned ridge, a thin veneer of fine sand and silt covers the bedrock. The veneer, interpreted as glacial till, ranges in thickness to a maximum depth of 2 m.

Glacial till was also mapped on the eastern portion of the property. The area east of Spiller Road (south of the northeast ridge) is covered by a blanket of till consisting of a 0.7 m to 1.0 m thick

layer of sandy silt overlying a medium sand with isolated boulders, some silt, gravels and cobbles. The lower medium sand ranged from 1.9 m to more than 4.8 m in thickness.

The central portion of the landfill property is situated in a depression in the bedrock surface that was filled in by a thick deposit of glacio-fluvial sand and gravel, deposited either as glacial outwash or a kame terrace.

2.1.3 Campbell Mountain Landfill's Design and Operation (D&O) Plan

Historically, there have been several filling plans prepared and/or updated for the CML. A summary of these plans are provided below:

In 1995 SHA prepared the first formal Design and Operations (D&O) Plan for the CML (SHA, 1996). This plan provided two final contour designs. Option A consisted of landfill development on the existing footprint with expected closure year of 2037. Option B was based on development of a larger landfill up the hillside to the north and east of Spiller Road. This option included maximum crest elevation of 645 m above sea level (ASL) and final site capacity of 2.5 million m^3 effective 1995, and a lifespan to 2053. At the time the RDOS chose to go with Option A of the landfill development.

In 2002 Golder Associates were retained to update the D&O Plan (Golder, 2002). Their updated final contour design included a maximum crest elevation of 649 m ASL. In 2011, SHA re-evaluated the proposed concept indicating that the Golder design would provide 2.95 million m^3 of capacity effective 2011, and a lifespan to 2073. Golder also prepared a revised filling plan in 2006 which was further developed in 2009 (Interim Filling Plan Report). This fill plan consisted of two phases with no additional refuse placement in the North Ravine area. This revised filling plan included filling these two phases to an elevation of 645 m ASL with total available airspace of about 1.7 million m^3 effective 2009, and a lifespan to 2032. The final contours for Phase 1 were developed by Golder (2009). However, there were no detailed filling plan and final contours developed for the entire site.

In 2012, SHA investigated the benefits that could be realized by constructing steep sloping containment berms on the east and west sides of the CML (SHA, 2012). The proposed geo-grid berm would allow the landfill to be vertically expanded by an additional 10 m, increasing the landfill capacity by 1.25 million m^3. SHA's geo-grid berm design would provide available airspace of about 4.2 million m^3, and a lifespan to 2091. Figure 2-5 shows the conceptual geo-grid berm design and the related final contours.

SHA understands that the RDOS will proceed to build the geo-grid berm in the future. However, the current filling operation at the CML is mostly in accordance with Golder (2006) two-phase fill plan. Based on the current filling operations, the realistic closure year for the site is believed to be 2032 for which no detailed filling plan and/or final contours are developed (CRA, 2009). Should the RDOS decide to proceed with construction of SHA's geo-grid berms, the CML lifespan will be extended to approximately 2091. The lifespan analyses based on the available airspace in the geo-grid berm design is presented in Appendix A.

The design of the LFG management system for the CML is done based on the current filling operations and adaptable with the final contours shown in SHA's geo-grid berm design. The LFG collection system piping networks are to be sized to accommodate the maximum gas generation that will theoretically occur in 2092. However, there are uncertainties about the actual future filling plan. Furthermore, the RDOS has been planning to implement an aggressive organic waste diversion program. Therefore, SHA believes that using the maximum gas flow rate estimated for 2092 will grossly oversize the CML gas collection system. Nevertheless, assuming the current closure year of 2032 will perhaps result in under-sizing the system. Therefore, adopting a conservative yet realistic approach, SHA used 2053 as the closure year of the CML to estimate the maximum LFG flow rate peaking one year after the closure year in 2054. While the LFG collection system piping networks are designed to accommodate this conservative gas flow rate, the size of the blower and flare facility are based on the maximum gas flow rate which will be produced during the lifespan of these facilities (i.e. approximately in 2035). The LFG management system layout was designed based on the existing final contours in the east and south sides of the site with consideration that the system will expand to the last phase based on the final contours that was developed by SHA (2012) presented in Figure 2-5. However, everything beyond Phase 1 of the LFG collection system is considered conceptual and will have to be updated once an appropriate filing plan was developed for the remaining lifespan of the CML.

2.1.4 Climatic Condition

Campbell Mountain Landfill is located in a dry region of the province. The temperature and precipitation data for 1981 to 2010 was sourced from the Environment Canada website (Environment Canada, 2014), using the nearest weather station to the site. Table 2-1 below summarizes the data set. The average annual precipitation is approximately 346 mm with about 299 mm of rain and 59 cm of snowfall. The average annual temperature is about 9.5 ^{o}C with an average peak of 21 ^{o}C occurring in July and the minimum average of -1.1 ^{o}C occurring in December. The maximum average snowfall of 22.1 cm occurs in December. According to the Canadian Climate Normals, the extreme minimum and maximum temperature are reported to be about -27 ^{o}C (December 30, 1968) and 40 ^{o}C (July 17, 1941), respectively. Table 2-1 presents

the average monthly precipitation and temperature for Penticton Airport Station that is located in close proximity of the CML.

Table 2-1 Climate Data for Penticton Airport Station, 1981 to 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (mm)	12.6	14.0	20.3	25.4	39.3	46.3	28.7	28.3	24.6	26.0	21.8	11.4	298.5
Snowfall (cm)	18	8	4	1	0	0	0	0	0	0	7	21	59
Total Precipitation (mm)	26.9	19.8	23.6	26.0	39.3	46.3	28.7	28.3	24.6	26.0	28.1	28.6	**346.0**
Avg. Temperature(^{o}C)	-0.6	1.0	5.0	9.1	13.9	17.7	21.0	20.4	15.1	8.8	3.2	-1.1	**9.5**

2.2 Waste Composition

Accuracy in the information about waste composition deposited into the landfill plays a significant role in calculating the LFG generation rates from landfills. Looking at the available data and reports about historical operations and activities at the Campbell Mountain Landfill, SHA realized that there are several different terminologies, used by various consultants, which have resulted in inconsistencies with respect to reported tonnage and composition of wastes deposited at this site. These data were reorganized in a unified and well defined format as described below.

2.2.1 Deposited Soils at the CML

As mentioned in the previous sections, SHA realized an inconsistency in the reported waste tonnages received/ landfilled at the Campbell Mountain Landfill. For example, in some years the soil (clean or contaminated soil, etc.) which had been received at the landfill was reported in the total tonnage of deposited waste while this component was not incorporated in the waste composition data analysis. This practice would result in overestimating the gas generation at the landfill. With an extensive data compilation and analysis, all the available composition data and reported tonnages were unified as the first step of this study. Table 2-2 below shows these data for 2011 (as an example) showing two different approaches in estimating waste disposal rate and composition which was eventually incorporated in calculating the LFG generation rate for this year. It's obvious that when the soil is included in the reported tonnage of landfilled waste, the percent of inert becomes higher in the waste composition defined in the gas generation model.

Table 2-2 Two different approaches in reporting waste tonnage composition (2011 data)

Landfilled Waste	2011 Tonnage	Waste Components						
		Food Waste	Yard Waste	Paper/ Leather	Wood Waste	Textile	Nappies	inert
Including Soil	32,569.0	15.9%	3.3%	13.3%	8.5%	4.8%	0.2%	53.9%
Excluding Soil	24,906.2	20.8%	4.3%	17.4%	11.2%	6.3%	0.3%	39.7%

2.2.2 Major Deposited Waste Composition, Scale House Historical Data

Since 1989, the RDOS has done a great job in keeping track of the disposal activities at the Campbell Mountain Landfill. There is plenty of valuable information and data which helped to provide good quality input to the FOD model, hence, increasing the accuracy of the LFG generation estimate. Table 2-3 shows an example of these data reported for 2010 (RDOS, 2010). All these data are compiled and summarized in Appendix B.

Based on the data provided by the RDOS for years 1989 through 2013, about 85% of the wastes landfilled at the CML consist of Industrial Waste, Municipal Solid Waste (MSW) and Miscellaneous (mixed waste delivered to the landfill by municipal residents). As explained in the following sections, these "major" waste components were broken down to provide more detailed waste composition for the LFG generation model in a format similar to what shown in Table 2-2 above.

Table 2-3 Campbell Mountain Landfill scale house data for 2010 (RDOS, 2010)

Waste Material	Weight Reported at Scalehouse in 2010	
Landfilled		
Asbestos	26.980	tonnes
Carcasses	0.000	tonnes
Curbside Areas A,B,C,G	888.175	tonnes
Carcasses	1.945	tonnes
City Bulky Waste	20.385	tonnes
Controlled Waste	303.080	tonnes
Machine Demolition	262.840	tonnes
Food Process Waste	0.000	tonnes
Foundry Dust	248.835	tonnes
Highway Refuse	4.230	tonnes
Illegal Dumping	3.275	tonnes
Industrial	13233.180	tonnes
Infested vegetation	1.080	tonnes
Keremeos Transfer Bin	430.855	tonnes
Miscellaneous	3659.180	tonnes
Municipal Residential	4489.510	tonnes
Noxious Weeds	49.575	tonnes
Preserved Wood	129.340	tonnes
Curbside Areas D,E,F	1459.530	tonnes
Sod	306.880	tonnes
Sewage Screen	108.765	tonnes
Total Landfilled	**25627.640**	**tonnes**
Cover Material		
Clean Earth Fill	4120.72	tonnes
Contaminated Soil	127.71	tonnes
Clear Glass	82.84	tonnes
Used fo rcover material	**4331.27**	tonnes

2.2.3 Industrial Waste

More than half of the wastes received at the CML originate from commercial/ industrial areas. In the previous LFG generation assessment report, CRA assumed that these wastes have similar waste composition to the municipal waste (i.e. 26% Inert, 34% Moderately Decomposable, and 40% Decomposable) (CRA, 2010). SHA believes that this is one of the major factors that may lead to an inaccurate estimation for LFG generation. Therefore, SHA used results of a detailed waste audit conducted in 2010 at Glenmore landfill (provided by the RDOS) to provide a better estimate of the composition for Institutional, Commercial, and Industrial (ICI) Waste received at the Campbell Mountain Landfill. Summary of these data in are presented in Table 2-5.

2.2.4 Municipal Waste

For Municipal Waste Composition, SHA evaluated information from several waste composition studies conducted in the region in the past and concluded a best estimate for the composition of this major category of waste deposited at the CML. Table 2-4 below shows results of several studies previously conducted in BC, as well as SHA's assessment for the municipal waste composition going to CML. A summary of this assessment is also presented in Table 2-5 along with our composition estimate for the ICI waste.

Table 2-4 Previous MSW composition studies and SHA's conclusion for CML

Primary Waste Category	Secondary Waste Category	Canada Household Waste	Thompson Nicola Regional District	Kamloops	Metro Vancouver	Capital Regional District	RDOS SWMP (Landfilled Waste)	Campbell Mountain Landfill (Assumed for Municipal Waste)
		2002	2006	2006	2007	2009	2011	2012
Organics		**40**	**39.7**	**37.9**	**34.2**	**40.4**	**40**	
	Food Waste		20	8	23.2	25.4		24
	Yard Waste		6.6	0	5.8	6.8		7
	Wood Waste		13.1	30	5.2	8.2		9
Paper		**26**	**18.1**	**13.4**	**23.1**	**17.1**	**10**	**17**
Glass		**3**	**3.8**	**1.4**	**2.3**	**1.7**	**1**	**3**
Plastics		**9**	**13.1**	**8.8**	**13.4**	**12.9**	**12**	**13**
Metals		**4**	**6.3**	**2.1**	**3.5**	**2.6**	**7**	**4**
	Ferrous Metal		5.5	1.7	1	1.9		
	Non Ferrous Metal		0.8	0.5	2.4	0.7		
Other		**18**	**19**	**36.3**	**23.6**	**25.3**		
	Construction Demolition		6.6	17.1	7.5	6.3	10	
	Composite Products		5.6	11.8	1.5	5.7	5	6
	Rubber		0.8	0.2	0.4	0.7		1
	Textiles		4.2	6.3	1.2	5.7	4	4
	Hazardous Waste		1.8	0.9	3.1	0.8	1	1
	Other Inerts		0	0	13	6.1	10	11
Total		100	100	100	100	100	100	100

Table 2-5 Summary of SHA's conclusion for the composition of Municipal and ICI waste

Based on Existing Reports and Studies							
	Food Waste	Yard Waste	Paper/ Leather	Wood Waste	Textile	Nappies	inert
ICI Waste	18.29	2.50	19.91	9.73	6.64	0.00	42.93
Residential	24.00	7.00	18.00	10.50	5.50	1.00	34.00

2.2.5 Historical Wood Burn at the CML

Another important piece of information that increased the accuracy of the actual deposited waste composition was the amount of wood managed through controlled wood burns that used to be practiced at the Campbell Mountain Landfill. The RDOS started burning wood waste received at CML in a controlled manner from 1989 and ceased this activity in 1997. Since the tonnages for the first three years were not available, SHA assumed that 600 tonnes of wood waste were burnt annually in 1989 through 1991. Tonnages of landfilled and burnt wood waste reported by the RDOS are presented in Table 2-6.

Table 2-6 Historical Wood Burn tonnage at the Campbell Mountain Landfill

Year	Wood Waste (tonnes)		
	Landfilled	Burned	Total
1989	2,668.4	600.0	**3,268.4**
1990	2,354.8	600.0	**2,954.8**
1991	2,649.6	600.0	**3,249.6**
1992	2,606.6	619.7	**3,226.3**
1993	2,453.1	2,315.7	**4,768.8**
1994	2,210.1	2,296.0	**4,506.1**
1995	1,286.0	1,476.5	**2,762.5**
1996	698.0	1,377.8	**2,075.8**
1997	1,863.9	-	**1,863.9**

Using all the information explained above, SHA conducted its best estimate for the landfilled waste composition in categories required for gas generation model for every single year (1989 – 2013). Major waste components reported as (i) Keremeos Transfer Bin, (ii) Miscellaneous, and (iii) Municipal Residential Waste were assumed to have similar composition and treated as MSW in this analysis. The full data set of the major waste categories and the translations to the FOD model input waste component data are presented in Appendix B. Historical waste tonnages and composition deposited at the CML and used in the LFG generation model are summarized in Table 2-7. For modeling purposes, SHA assumed that waste compositions prior to 1989 were similar to this year. We also assumed that in the future, these numbers will remain similar to the average values between 2009 and 2013. The future waste tonnages are based on SHA (2012) with final closure year of 2091 (see Appendix A for the lifespan analyses assumptions).

Table 2-7 Scaled waste tonnage and composition deposited at CML

Year	Tonnes	Food Waste	Yard Waste	Paper/ Leather	Wood Waste	Textile	Nappies	inert
1989	39,654	18.9%	3.8%	17.9%	16.0%	5.8%	0.3%	37.3%
1990	37,894	19.0%	3.8%	18.0%	15.6%	5.8%	0.3%	37.5%
1991	37,919	18.7%	3.7%	17.7%	16.2%	5.7%	0.3%	37.6%
1992	39,491	18.8%	3.6%	17.9%	15.8%	5.8%	0.3%	37.9%
1993	40,612	19.3%	3.6%	17.8%	15.2%	5.8%	0.3%	38.0%
1994	41,976	22.1%	3.5%	17.4%	14.2%	5.6%	0.3%	36.8%
1995	37,286	19.9%	3.4%	16.1%	17.9%	5.2%	0.3%	37.0%
1996	35,088	19.5%	3.4%	16.0%	14.2%	5.2%	0.3%	41.3%
1997	35,845	20.7%	3.7%	17.0%	15.7%	5.5%	0.3%	37.1%
1998	32,331	20.8%	3.5%	17.4%	14.2%	5.6%	0.3%	38.2%
1999	38,181	16.5%	3.0%	14.6%	10.1%	4.8%	0.2%	50.8%
2000	31,718	18.7%	3.3%	16.5%	14.1%	5.4%	0.3%	41.6%
2001	29,656	17.7%	3.2%	16.0%	16.4%	5.2%	0.3%	41.3%
2002	31,183	17.1%	3.2%	15.5%	17.0%	5.0%	0.3%	41.9%
2003	35,252	15.1%	2.9%	14.1%	13.7%	4.6%	0.2%	49.5%
2004	34,476	17.7%	3.1%	15.9%	16.2%	5.2%	0.2%	41.6%
2005	38,306	17.9%	3.1%	15.9%	15.0%	5.2%	0.2%	42.6%
2006	37,974	18.3%	3.2%	16.2%	14.5%	5.3%	0.2%	42.3%
2007	35,388	19.6%	3.6%	16.6%	11.4%	5.4%	0.3%	43.1%
2008	30,438	20.8%	3.8%	17.6%	10.5%	5.7%	0.3%	41.2%
2009	31,482	18.9%	3.7%	15.1%	9.7%	4.8%	0.3%	47.5%
2010	25,628	20.7%	4.4%	17.4%	11.6%	6.3%	0.3%	39.2%
2011	24,906	20.8%	4.3%	17.4%	11.2%	6.3%	0.3%	39.7%
2012	24,195	20.9%	4.1%	17.9%	10.6%	6.2%	0.3%	40.0%
2013	23,745	20.5%	4.3%	17.7%	11.0%	6.4%	0.3%	39.8%
AVG. 2009 - 2013		**20.4%**	**4.2%**	**17.1%**	**10.8%**	**6.0%**	**0.3%**	**41.2%**

The LFG generation estimate was updated based on these assumptions as described in section 2.3.

2.3 Gas Generation at the Campbell Mountain Landfill

In 2010 CRA prepared a landfill gas generation assessment report for the CML. The assessment report showed that the CML was generating about 1,400 tonnes of CH_4 in the assessment year and that, according to the BC MOE LFG regulation, this landfill should have an active LFG management system installed and operated by 2016.

While the RDOS started taking the necessary steps to comply with the regulation, they believed that the conducted assessment may have overestimated the actual amount of gas generation for

the CML. The RDOS believed that more accurate investigations into the landfilled waste composition, historical wood burn and recent waste diversion activities may lower the LFG generation estimate for the CML and that with planned rigorous organic waste diversion activities this number might be kept below the threshold limit by 2016 (i.e. 1,000 tonnes/year of CH_4). The RDOS retained SHA, as a qualified professional, to prepare a LFG Management Facilities Design Plan and, as the first step, to undertake advanced LFG Generation Modeling for the Campbell Mountain Landfill to establish whether the actual LFG generation rate at the CML is below 1,000 tonnes CH_4. SHA conducted a comprehensive analysis on waste compositions and tonnage landfilled at the Campbell Mountain Landfill (presented in section 2.2) as well as an advanced LFG generation modeling described below.

2.3.1 LFG Generation Models

There are several LFG generation models which help landfill designers, operators and regulating authorities to estimate the amount of methane generated in the landfill. Due to the highly heterogeneous nature of landfills and effects of several dynamic parameters that affect gas generation, these models are not 100% accurate. Normally, providing better quality of historical data and information to models increases the accuracy of the model output. Therefore, SHA spent a great deal of time and effort to increase the accuracy of the information provided to the model.

Among the LFG generation models, the first order decay (FOD) model has been the most widely used. In this model, it is assumed that degradable materials in the waste are decomposed at a constant rate over a period of time. The FOD model assumes that the total amount of carbon decreases gradually (consumed by the bacteria) and therefore the rate of gas generation decreases every year after it peaks in the first few years.

In order to establish the theoretical LFG generation from the CML site, SHA used the Intergovernmental Panel on Climate Change (IPCC) FOD model.

2.3.2 Modeling Parameters

The IPCC FOD basically relies on two parameters, the methane generation potential (L_o, m^3 CH_4 per tonne of waste), and the methane generation rate constant (k, yr^{-1}). The value of L_o directly depends on the decomposable degradable organic carbon mass (M) landfilled each year and the value of k is primarily a function of factors such as, moisture content of the waste mass, availability of the nutrients for microorganisms that break down the waste to form methane and carbon dioxide, and pH and temperature of the waste mass, etc..

Methane Correction Factor: Methane Correction Factor (MCF) is an important parameter in the IPCC FOD model which is solely related to the type of landfill operation and management.

Based on the IPCC suggestion this factor is within the range of 0.4 to 1.0 depending on depth and management scheme of the landfill. For the Campbell Mountain Landfill, MCF is assumed to be 0.4 between the years of 1972 and 1982 (waste depositions occurred more than 30 years before this assessment), 0.6 from 1983 to 1990, 0.8 from 1991 to 1999, and 1 for 2000 until the estimated closure date (i.e. 2032 based on CRA report in 2009, Northern Landfill Gas Setback Assessment, and 2091 based on SHA 2012 filling plan with the geo-grid berm).

Methane Generation Rate (k): In its 2006 guideline, IPCC has suggested different k values for each component of waste depending on climatic conditions. Climatic conditions for the CML is assumed to be Dry Temperate (i.e. Mean T <20˚C and the mean annual precipitation (MAP) less than the annual potential evapotranspiration (PET)). Table 2-8 presents the k values for each of the solid waste components suggested in the IPCC guideline.

Table 2-8 Default methane generation rates (k) (year-1) for MAP/PET<1 and T<20º C (IPCC, 2006)

Methane generation rate constant (k) (years^{-1})	Range	Default
Food waste / Sewage sludge	0.05 - 0.08	0.06
Garden and park waste (non-food)	0.04 - 0.06	0.05
Paper and Textiles	0.03 - 0.05	0.04
Wood and straw	0.01 - 0.03	0.02
Bulk MSW or industrial waste	0.04 - 0.06	0.05

Degradable Organic Content: Degradable Organic Content (DOC) of the landfill is one of the most important parameters in calculating the gas generation from the landfill. DOC content, which is based on the composition of waste, can be calculated from the weighted average of the carbon content of various components of the waste stream. IPCC in its 2006 guidelines for national GHG inventories has suggested the default DOC values for the major types of waste which are presented in Table 2-9 below.

Table 2-9 IPCC's default DOC content for different MSW components (% of wet waste)

Waste Stream		DOC content in % of wet waste	
		Range	Default
A.	Paper and Cardboard	36-45	40
B.	textiles† and Nappies	20-40	24
C.	Food waste	8-20	15
D.	Wood	39-46	43
E.	Garden and park waste	18-22	20
F.	Rubber and Leather‡	39	39
G.	Plastics, Metal, Glass and other inert materials	0	0

†40 percent of textiles are assumed to be synthetic

‡Natural rubbers would likely not degrade under anaerobic condition at landfills, hence only half is incorporated

Then the percent DOC (by weight) is equal to:

$$DOC = 0.4(A) + 0.24(B) + 0.15(C) + 0.43(D) + 0.2(E) + 0.39(F) \quad \text{(Eq.1)}$$

Where: A = percent MSW that is paper
B = percent MSW that is textile or nappies
C = percent MSW that is food waste
D = percent MSW that is wood
E = percent MSW that is garden and park waste
F = percent MSW that is Rubber or Leather

Accuracy in the information about waste composition deposited into the landfill plays a significant role in calculating the DOC values each year. Looking at the available data and reports about historical operations and activities at the Campbell Mountain Landfill, SHA realized that there are several different terminologies, used by various consultants, which have resulted in inconsistencies with respect to reported tonnage and composition of wastes deposited at this site. These data were reorganized in a unified and well defined format as described in Section 2.3.

2.3.3 LFG Generation Model Equations

The basic equation for the IPCC FOD model is:

$$M = M_{\circ} * \exp(-kt) \quad \text{(Eq.2)}$$

where $M_{\circ}$ is the mass of decomposable DOC (DDOC) at the start of the reaction, when t = 0 and exp(-kt)=1, k is the reaction constant and t is the time in years. M is the mass of DDOC at any time.

From Equation 2 it is easy to see that at the end of year 1 the mass that is left un-decomposed in the landfill is:

$$M(1) = M_{\circ} * \exp(-k) \quad \text{(Eq.3)}$$

therefore, the mass decomposed into CH_4 and CO_2 after 1 year will be:

$$M_d(1) = M_{\circ} * [1 - \exp(-k)] \quad \text{(Eq.4)}$$

and the amount of CH_4 generated from decomposition of DOC is equal to:

$$CH_4 \text{ generated} = M_d * F * 16/12 \quad \text{(Eq.5)}$$

Where, F = Fraction of methane by volume in generated LFG (about 50%)
16/12 = Molecular weight ratio of CH_4 and C

In a first order reaction, the amount of product (M) is always proportional to the amount of reactant (M_o). This means that it does not matter when the waste was deposited. This also means that when the amount of waste accumulated in the landfill is known, methane production can be calculated as if every year is year number one in the time series, then all calculations can be done by equations (Eq.3) and (Eq.4) in a simple spreadsheet.

The default assumption of the FOD model is that CH_4 generation from all the waste deposited each year begins on the 1st of January in the year after deposition. This is the same as an average six month delay until substantial methane generation begins (the time it takes for anaerobic conditions to become well established).

2.3.4 Updated LFG Generation Model Results

According to SHA's updated calculations, the Campbell Mountain Landfill is currently (2014) producing 1,199 tonnes of methane, equivalent to 240 scfm landfill gas. The gas generation will peak in 2092 (1 year after the final closure based on the geo-grid berm fill plan) at rate of 2,433 tonnes/year of methane (488 scfm LFG) and will decline until it drops below 500 tonnes of methane in 2137. Figure 2-6 illustrates the estimated LFG flow rate and the annual methane generation rate at the CML during its lifespan. Figure 2-7 shows LFG flow rate and methane generation rate from 2014 up until 2054.

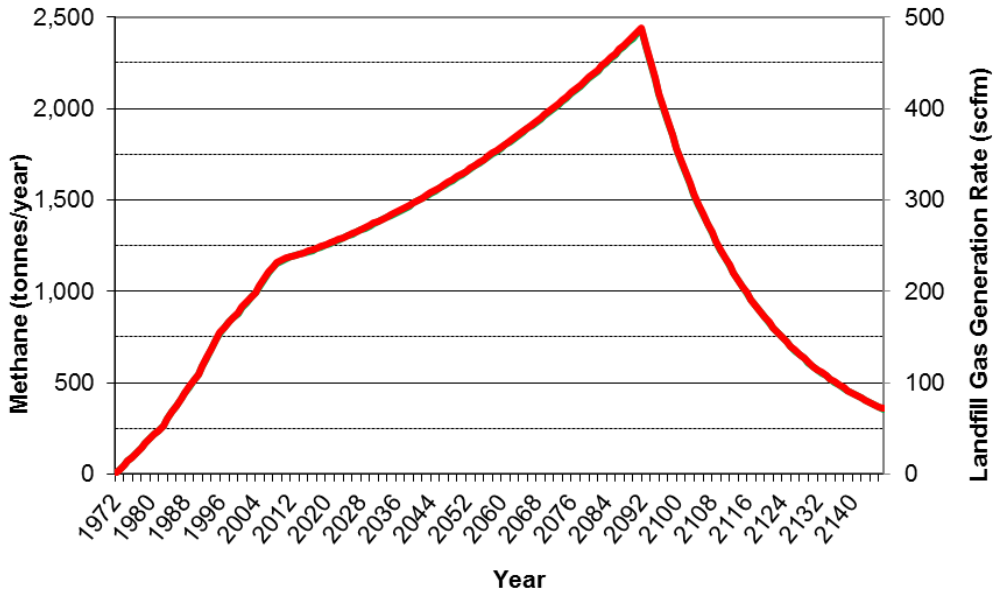

Figure 2-6 Landfill Gas Generation Estimate for the Campbell Mountain Landfill

The LFG Generation Modeling Results are also presented in Table C.1 of Appendix C.

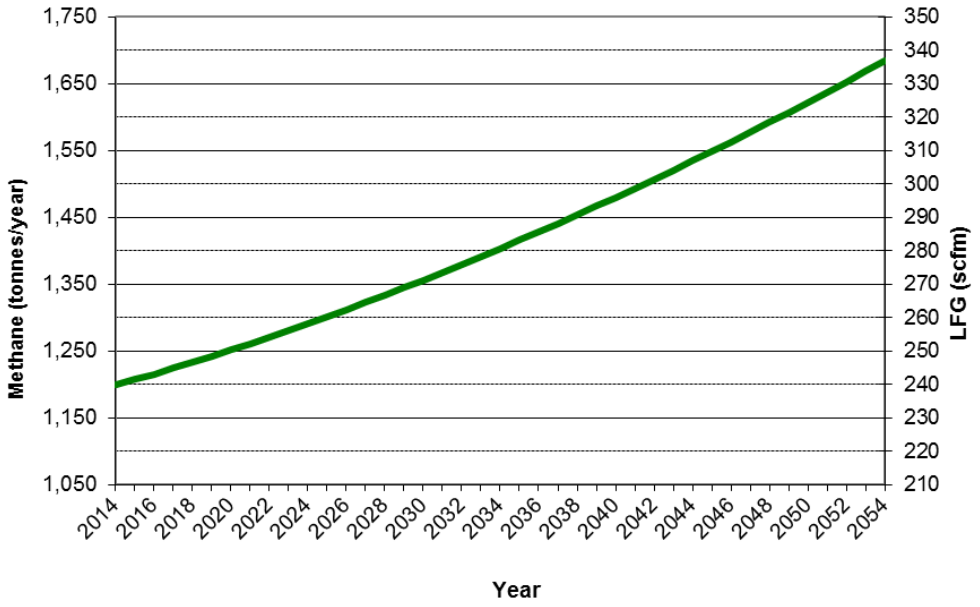

Figure 2-7 LFG Generation Estimate for the Campbell Mountain Landfill, 2014 to 2054

2.4 Health and Safety

2.4.1 Introduction

Landfill gas can be very hazardous to a worker when exposed to high enough concentrations. The hazards range from toxicity of hydrogen sulphide (H_2S), explosion and/or flames from methane (CH_4), or asphyxiation from lack of oxygen in confined spaces. The following section outlines the characteristics and risks associated with landfill gas.

Landfill Gas is created by the decomposition of refuse and is primarily composed of methane and carbon dioxide. Trace gases may also be present, including hydrogen sulphide, carbon monoxide, hydrogen, mercaptans, hydrocarbons, solvents and water vapour. Risks associated with landfill gas and its constituents include:

- Methane is explosive in concentrations between 5 and 15 percent by volume in air.
- Methane and carbon dioxide are simple asphyxiates, i.e. they can displace oxygen in confined spaces.
- Hydrogen sulphide and carbon monoxide are toxic and can result in death.

Trace gases in landfill gas may be odorous and toxic. Odorous gases may cause nausea in some persons. Toxic gases may be present at concentrations above the levels deemed safe for direct

human exposure; there is always a potential for levels to be sufficient to cause permanent and irreversible damage and even death.

Landfill gas will be present within the body of a landfill, but can also migrate laterally and accumulate in confined spaces, structures or in low-lying areas. Employees and subcontractors may become exposed to landfill gas when working on the gas collection system or when wells or trenches are excavated or drill holes are advanced in waste or buried utilities near the landfill.

For the Campbell Mountain Landfill, the greatest risks for landfill gas exposure are:

- when a worker is doing maintenance work on the gas collection system (well repairs, draining condensate collection sumps, blower service etc.);
- when entering a building where landfill gas may be accumulated (gas collection system electrical control building, leachate/ condensate pump control building or in other permanent or temporary structures at the site;
- when entering a manhole where landfill gas may be accumulated; and
- in any excavation, depression or low spot.

2.4.2 Health and Safety Plans

A detailed and site specific health and safety plan has to be developed for the CML. This plan shall cover all aspects of health and safety at the landfill including landfill gas, exposure to waste, leachate, condensate, tipping hazards, landfill fires, etc. The landfill gas section of the health and safety plan must include but not be limited to:

- Site specific hazards
    - Confined spaces, gas collection system components etc.
    - Acceptable exposure limits
- Safe work procedures
    - Well field operations and maintenance
    - Gas plant
    - LFG condensate collection/ handling system
    - Work-alone procedures
- Emergency response plan
    - Site plan with key features such identified confined spaces, gas collection and leachate treatment system, permanent structures, utilities etc.
    - Emergency response contact information
    - Directions to nearest hospital

The plan needs to outline in detail the safe work procedures (SWP) for key tasks to be completed such as well field monitoring, well modifications, blower and flare maintenance, draining and maintenance of condensate sumps and traps etc. It is important that a task specific risk assessment be completed as part of developing the safe work procedures.

2.4.3 Onsite Gas Monitoring

Performance Standard 4 in the Design Guidelines specifies that the concentrations of combustible in on-site structures must be kept below 20% of the lower explosive limit (LEL) for methane (1% by volume). A monitoring and landfill gas control program must therefore be in place at the site to ensure that the performance criterion is met at all times.

As outlined in Design Standard 10 in the Design Guidelines, all buildings on the landfill must be outfitted with equipment for continuous monitoring for combustible gases. The standard defines a building as "a structure or facility with walls, a roof, and a foundation, and that is accessible by people". Furthermore, the Standard has an exemption for the permanent gas monitoring system requirements for buildings that are elevated and do not come in contact with the soil. However, buildings that are not required to have a continuous gas monitoring system should be outfitted with ventilation that ensures that the gas concentrations in the building are kept below acceptable levels at all times.

The design of the gas monitoring and ventilation system is dependent of the unique configuration of each building and should therefore be tailored for each building.

2.5 Landfill Gas Management System Design Objectives

According to the Regulation, the Campbell Mountain Landfill is required to have an active gas collection system in place and commence operating by January 1st, 2016. The collected gas shall undergo thermal oxidation in an enclosed flare and/or a LFG utilization system. The LFG management system for the Campbell Mountain Landfill is designed in accordance with the Design Guideline requirements**.**

2.5.1 Guideline Requirements

The Design Guideline requires the LFG Management System be designed based on 10 design standards. These standards along with SHA's clarifications are summarized below:

Design Standard 1- *The results of the LFG generation assessment conducted in accordance with the Regulation will provide the basic inputs to design the LFG management system.*

As per the RDOS request, SHA looked into the LFG generation assessment report prepared by CRA and updated the generation assessment using updated waste tonnages and waste

composition reported by the RDOS. Results of the updated gas generation modeling are presented in Section 2.3.

Design Standard 2- *It is expected that LFG management systems must be designed to maintain 75 percent collection efficiency.*

SHA's design for the Campbell Mountain Landfill LFG collection system will ensure maximum gas collection efficiency with progressive installation of the collection system as landfilling continues and the new deposited wastes will undergo gas collection system within 3 – 12 months when additional layers of waste are placed over the top of the horizontal collectors. Refer to Section 3.1.

Design Standard 3- *All regulated landfills are required to design and install active LFG collection systems to collect LFG as per the BC MOE Regulation requirements.*

An active LFG collection system is designed for the Campbell Mountain Landfill as required by the regulation. Refer to Section 3.3.

Design Standard 4- *LFG management systems will be designed to accommodate the maximum LFG generation expected, rather than the expected LFG collection.*

As discussed in Section 2.1.3, the CML is currently being filled based on the Golder (2006) fill plan. While there is no detailed fill plan or final contours, it is anticipated that the landfill will reach its final capacity by 2032 (CRA, 2009). However, it is very likely that the RDOS will adopt the geo-grid berm design prepared by SHA (2012). This strategy will extend the landfill's lifespan to approximately 2091. Nevertheless, having an unclear final closure year and considering the RDOS plans to implement strict organic waste diversion program, SHA used 2091 as a very conservative closure year for the CML. Therefore the LFG collection system for this site is designed to handle the maximum gas generation rate of 488 scfm estimated to occur in 2092.

SHA proposes that the gas generation estimate be updated every 5 years based on the actual tonnages and updated waste composition before construction of a new LFG collection phase. The gas extraction and treatment systems (blower skid and flare system) are expected to be replaced every 15 to 20 years; therefore, these systems are designed for the maximum gas generation estimated for the next 20 years (i.e. ~ 284 scfm in 2035).

Design Standard 5- *All LFG captured must undergo a reduction in global warming potential as it relates to the methane component of the gas (i.e. flaring, LFG utilization for electricity generation, fuel for vehicles, etc.)*

The entire collected LFG will flow through a high efficiency enclosed flare. The RDOS may decide in a later stage to extend the LFG treatment facility for beneficial uses of LFG. In this case, the flare will be used as a backup or to combust the excess gas.

Design Standard 6- *An active LFG collection system is required to include a complete LFG extraction control plant on-site with a LFG flare. If flaring will be the primary methane destruction device, an enclosed high-efficiency flare will be utilized. A candlestick flare may be utilized as the backup system to a LFG utilization system, or may be used when there is a surplus of LFG collected (above the capacity of the utilization system). However, where a utilization system is in place and a candlestick flare is used as backup, the candlestick flare will not be the primary combustion device.*

An enclosed flare has been designed for the Campbell Mountain Landfill to handle the maximum LFG generation estimated for 2035 (i.e. 284 scfm). It is anticipated that the gas extraction and the flare system will be replaced / upgraded prior to that date and based on an updated LFG generation estimate.

Design Standard 7- *LFG flow rate (in m^3/hr or equivalent), methane composition (in percent by volume), oxygen content (in percent by volume) and flare stack temperature (in degrees Celsius) must be measured on a continuous basis with ongoing logging of all data on an aggregated period of not less than every five minutes. The LFG flow rate and composition (methane and oxygen content in percent volume) along with the flare stack temperature (in case of the enclosed flare) shall be continuously monitored and logged at least every 5 minutes.*

The system design will ensure that the flow rate, flare temperature and gas composition will be recorded at least every 5 minutes.

Design Standard 8- *An enclosed flare must be designed to have a minimum retention time of 0.5 seconds and a minimum flare temperature of 875 degrees Celsius.*
This will be considered in the design of the enclosed flare.

Design Standard 9- *Landfill owners and operators must develop an Operations and Maintenance Manual for the LFG management systems.*
An O&M manual for the CML LFG management system shall be prepared during the detailed design preparation.

Design Standard 10- *All buildings on the landfill site must have continuous combustible gas measurement equipment.*

SHA's design will address this requirement as mentioned in Section 2.4.3.

3. LANDFILL GAS MANAGEMENT FACILITIES DESIGN

The following section presents the information required under Sections 7(2)(a) and 7(2)(d) of the Regulation.

The Proposed LFG management system for the Campbell Mountain Landfill includes (i) LFG collection system, (ii) condensate handling system, (iii) LFG extraction plant, and (iv) LFG flare system. The LFG collection system consists of vertical gas extraction wells and horizontal gas collectors (trenches), lateral pipes, sub-headers and a main header. The LFG extraction system includes moisture separator, blowers, control valves, monitoring devices (pressure, temperature, gas flow and composition, etc.) and transmitters which communicate with the control panel. The proposed initial LFG management system schematic for Phase 1 is shown in Figure 3-1.

3.1 Collection Field

The collection system is the main component of a LFG management system. As per the regulation, the CML requires to have an active gas collection and control system (GCCS), meaning that mechanical assistance (driving force) is required to collect the generated gas throughout the landfill and convey to the LFG treatment facility (LFG flare system).

Phase 1 of the Campbell Mountain Landfill's GCCS includes 27 vertical wells, and 3 horizontal collectors. Depending on the future filling plan and the final contours, about 2 to 8 of the vertical wells may need to be removed or extended. The GCCS also includes about 650 m of main header, 1,200 m of sub-header and lateral collectors, and 2 condensate traps. Phase 1 of the GCCS should be installed in 2015 followed by progressive expansion of the system as the landfill closure progresses throughout the rest of the landfill's lifespan.

As previously mentioned, the CML currently does not have a clear long term filling plan. Nevertheless, after finalizing a filling plan, phasing and developing the ultimate final contours, next phases of the GCCS will have to be reviewed and finalized. Figures 3-2 and 3-3 show the Phase 1 and the final GCCS for the CML. Figure 3-2 shows the plan view of the Phase 1 LFG management system including location of vertical wells, horizontal collectors, condensate traps and lateral pipes. Figure 3-3 shows the approximation of the wellheads and the general layout of the header and sub-header pipes at the final closure stage based on the geo-grid berm design concept. As shown in Figure 3-2, SHA suggests that a biocover system be installed over the 'North Ravine' area. Given the historical spontaneous combustion of the organic material and the extremely low LFG generation rates in this area, it was determined that an active gas collection system for this area of the landfill is not warranted, and that application of biocover will be sufficient to oxidize the relatively small amounts of methane that is being generated from this area.

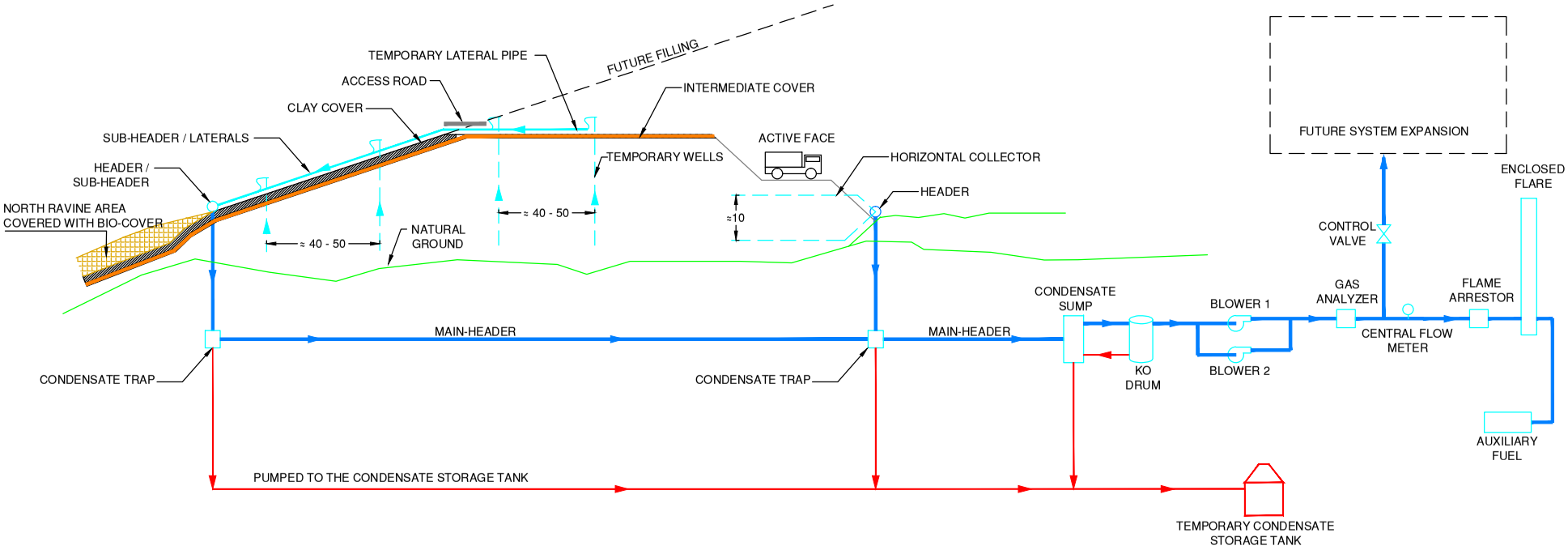

FIGURE 3-1 CAMPBELL MOUNTAIN LANDFILL PROPOSED LFG MANAGEMENT SYSTEM SCHEMATIC

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3.1.1 Horizontal Collection Trench Design

Horizontal gas collectors (wells) are a common component of the GCCS which is used in active and passive systems. In an active collection system, horizontal collectors are normally used when the depth of waste is not enough for installation of vertical wells (typically less than 10 m) or at the active face of the landfill for earlier collection of the landfill gas.

Installation of horizontal wells allows early extraction of LFG and will increase the overall collection efficiency of the LFG. Horizontal collectors can be considered as a temporary option or could be designed to be and used as the primary and permanent component of the collection system. Proper sizing, drainage and access to deep layers of the waste are some of the main considerations for long term use of horizontal gas collectors.

Since the CML is an active landfill and will continue to receive waste for quite a long time, installation of the vertical extraction wells in all the areas is not a viable option. As shown in Figure 3-2, three horizontal collectors (i.e. P1-H101, P1-H102, and P1-H103) will be installed in Phase 1 of the CML's GCCS. These collectors will be installed in Area 'A' shown in Figure 2-3. This area will undergo a few more lifts of waste until it reaches the final contours between 645 m and 660 m ASL (based on different filling scenarios described in Section 2.1.3). Regardless, a lift of horizontal wells will be installed every 10 m vertical and offsetting from the previous lift. The future horizontal collectors will undergo vacuum from both ends where possible. This approach will ensure maximum efficiency of gas collection through these horizontal collectors.

Each horizontal well will be connected to the header/ sub-header through a wellhead as shown in Figure 3-2 as P1-H001 through P1-H003 (details in Figure 3-4). This will allow individual vacuum adjustment, gas quality/ quantity monitoring, and complete isolation of the horizontal LFG collector if required. Details of the horizontal gas collectors are shown in Figure 3-4. As shown in this figure, perforated 150 mm and 200 mm (6" and 8") HDPE SDR 11 pipes are used in the design. Pipes will be installed in "Daisy Chain" fashion which eliminated potential tensions on the horizontal pipes due to potential differential settlements of the fill. Horizontal pipes are designed to have a minimum slope of 5% to ensure proper drainage of leachate and condensate. Further details for the trench dimensions and materials, pipe sizes, perforation etc. are provided in Figures 3-4 and 3-5.

3.1.2 Vertical Extraction Well Design

Vertical extraction wells are the most common collection component of a GCCS. Properly designed vertical wells allow for highest LFG collection efficiency from landfill sites. Typically vertical wells are used in the area of the landfill where depth of waste exceeds 10-15 m and final design levels are reached. Installation of vertical wells also allows collection of gas from

different horizontal layers of waste which might have been insolated with layers of daily or intermediate cover soil. Vertical wells can also be installed in active areas of the landfill and extended as the landfill is filled with waste. The later practice has a lot of operational challenges and is not normally recommended as best practice. These challenges include difficulties in properly compacting waste around the wells and risk of having wells driven over by compactors.

The general approach proposed for the LFG collection system at the CML is installation of horizontal collectors in the active areas of the landfill and areas that will receive more lifts of waste (as described in section 3.1.1) and installation of vertical wells in areas with which have reached the final design elevations. However, SHA suggests that the vertical wells also be installed in the crest area that may or may not receive additional lifts of waste, depending on the filling approach that RDOS will adopt. Installation of these wells will ensure a higher LFG collection efficiency. Should placement of more lifts of waste in this area be considered in the future, these wells will have to be either buried (still connected to the header without having access to them), terminated, or extended to the final contour elevations.

In total, as illustrated in Figure 3-2, there will be 27 vertical extraction wells and 3 horizontal collectors to be installed for Phase 1 of the CML's LFG collection system. The vertical wells are spaced between 35 to 50 m apart. Depth of wells ranges between 8 and 20 m (about 70% of waste depth or min 5 m above the landfill bottom). Locations of wells for Phase 1 are shown in Figure 3-2.

Typical details for vertical wells are shown in Figure 3-6. Details include 900 mm diameter well, 25-75 mm river gravel and 200 mm perforated PVC Sch. 80 pipe as the well casing in both cases. Each well will be connected to a lateral pipe/ sub-header/ or header pipe through a wellhead equipped with a flow control valve, gas sampling and flow monitoring ports. More details about vertical extraction well assembly and the proposed wellhead can be found in Figure 3-6. Coordination and depth of these wells are also presented in Table 3-1.

Table 3-1 Location and Depth of Wells for Phase 1 of the Campbell Mountain Landfill's GCCS

No.	Well ID.	Easting	Northing	MSW depth (m)	Depth of Drilling based on 2014 Contour
1	P1-V001	1466804.9	522317.5	13	8
2	P1-V002	1466768.7	522308.1	15	10
3	P1-V003	1466798.9	522277.7	15	10
4	P1-V004	1466753.1	522276.3	18	12
5	P1-V005	1466775.4	522247.1	20	14
6	P1-V006	1466730.1	522242.8	20	14
7	P1-V007	1466691.2	522235.9	17	12
8	P1-V008	1466753.8	522213.5	22	14
9	P1-V009	1466711.8	522207.4	26	18
10	P1-V010	1466669.3	522202.8	30	20
11	P1-V011	1466624.1	522202.0	30	20
12	P1-V012	1466770.1	522150.4	17	12
13	P1-V013	1466739.5	522176.3	22	14
14	P1-V014	1466696.7	522163.7	19	14
15	P1-V015	1466648.2	522164.2	30	20
16	P1-V016	1466600.0	522164.4	18	12
17	P1-V017	1466777.1	522111.2	22	14
18	P1-V018	1466731.9	522128.3	18	12
19	P1-V019	1466682.2	522118.0	10	0
20	P1-V020	1466633.2	522126.8	30	20
21	P1-V021	1466744.4	522080.0	15	10
22	P1-V022	1466693.0	522076.2	15	10
23	P1-V023	1466645.0	522077.7	28	18
24	P1-V024	1466596.8	522093.2	14	8
25	P1-V025	1466721.0	522036.0	14	8
26	P1-V026	1466671.4	522031.3	18	12
27	P1-V027	1466700.4	521990.5	14	8

3.1.3 Collection Field Piping Design

The collection field piping network conveys collected LFG from vertical wells and horizontal gas collectors to the LFG flare and utilization systems. The main task of the collection field piping network is to deliver sufficient vacuum and flow from each collection point (wellheads) and collect maximum possible landfill gas and prevent LFG fugitive emissions and off-site gas migration overcoming all the friction and dynamic head losses throughout the system.

Collection field piping at the CML includes header, sub-headers and lateral pipes. All the pipes will be installed below grade and constructed of SDR 17 high-density polyethylene (HDPE) pipes. Buried pipes will minimize the risk of damage from the landfill's operational activities and will reduce the risk of condensate freezing in the pipe. Headers will be placed in the header

trench on top of minimum of 150 mm bedding material as shown in Figure 3-4. A marker (warning) tape is proposed to be installed 150 mm above the header pipe as a warning to those who may be excavating into the landfill cover in the future. Warning signs will also be placed along the header at every 50 m interval.

The condensate formed in the piping network will be drained through condensate traps as described in section 3.2. The collection piping network is designed to accommodate the maximum LFG generation estimate presented in section 2.3. Pipe sizes are designed considering the following criteria along with achieving the lowest construction costs:

- Maximum estimated gas flow rate;
- Maximum gas velocity of 12 m/s in concurrent flow situation (when gas and condensate will flow to the same direction);
- Maximum gas velocity of 6 m/s in counter-current flow situation (when gas and condensate flows are in opposite directions);
- Minimum slope of 5% for header and sub-header when pipes are placed on top of waste and minimum slope of 2% if placed on native ground;
- Minimum slope of 4% for laterals;
- Pipes sized to have maximum head-loss of 25 mm (1") water column (WC) in 30 m long pipe section;
- Minimum vacuum of 250 mm (10") WC to be delivered to each wellhead.

Typically the header system is designed in three general configurations: (i) branched header, (ii) loop (ring) header, and (iii) matrix header. The last two offer the highest efficiency and operational flexibility. However, depending on the landfill shape and filling plan, it is not always possible to construct a loop or a matrix header. The proposed design for the Campbell Mountain Landfill's GCCS system includes a matrix configuration. The main header will initially be installed in a smaller loop (see Figure 3-2). However, eventually a full ring of the main header will be completed once all the phases of the landfill have received waste and the final contours are shaped as shown in Figure 3-3.

Head losses throughout the piping network, fittings, valves, etc. were calculated for the maximum estimated gas flow rates using the Darcy-Weisbach equation. Based on the aforementioned design criteria and pipe network configuration, the header pipes will be 150 - 250 mm (6" – 10 ") HDPE DR 17. Accordingly, all the GCCS's network pipes were designed and pipe sizes are shown in Figure 3-5.

In order to increase the operational flexibility of the GCCS, each sub-header is equipped with a butterfly valve and sampling ports. Monitoring ports will enable better monitoring of the system and the valves will enable partial isolation of the system should new well installation, wellhead

repair, or other maintenance issues are required in that section. Figure 3-7 presents details of the piping network including lateral /sub-header/ header connections and as well as details for the valve and gas (flow and quality) monitoring ports in the pipe network. Location of the control valves and monitoring ports will be identified during detail design.

3.1.4 Leachate Collection System Connections

As mentioned previously, the CML does not have a leachate collection system at the moment. However, the draft interim second edition of the new BC Landfill Criteria requires that any lateral expansion of the existing landfills should be lined and have leachate collection system. The collected leachates are usually treated onsite before release to the environment, or will be collected and conveyed to the sanitary sewer system if available.

In design of the leachate collection system, perforated leachate collector pipes would collect leachate from the expansion areas and a solid leachate pipe will convey leachate from the expansion areas to the treatment facility or a sanitary sewer system. As there is an opportunity available for collection of LFG from the leachate collection system when the landfill will be expanded, SHA recommends that such connections be provided. Figure 3-8 shows the detail of the leachate collection system connections. Each of the leachate system access points will be equipped with a valve and monitoring port. Also, each leachate system access points will be sealed to minimize air leakage to the LFG collection system as a leachate collection system can act as a significant source of air intrusion if not sealed properly.

3.2 Condensate Management

Condensate management is an important component in the design of LFG collection and utilization systems and critical for the overall performance and efficiency of a gas collection system. Landfill gas is usually 100 percent saturated with water vapor and produces condensate within the LFG transmission piping as the gas cools when near the surface (and/or at surface). The transmission piping needs to be sloped to drain condensate towards areas where it can be collected and be subsequently handled. If not properly drained, condensate has the potential of blocking the header lines and, therefore, compromising some or all of the gas collection system. Condensate accumulation may reduce the effective vacuum on portions of the well field and thus reduce the yield of LFG.

Landfill gas condensate is produced as the warm LFG cools down in the landfill gas collection system, consequently condensate formation will be at its highest during the winter months. The typical quantity of condensate generated from the LFG ranges from 20 - 80 mL/m^3 of LFG. Thus, a preliminary gas generation estimate at the CML concludes that an average condensate generation rate of about 73 – 290 m^3 / year is expected in 2016.

At the Campbell Mountain Landfill, condensate is expected to form within the sub-headers and headers as the warm LFG cools down and flows concurrently towards the landfill gas plant. The LFG piping network has been designed to accommodate the expected range of condensate generated from the CML. The design of the piping network includes expansion capability to withstand anticipated landfill settlement. Pipeline slopes of 5% were considered to provide adequate drainage of condensate through the piping network. The condensate will be intercepted and drained out through condensate traps as shown in Figures 3-1 and 3-2. It is important that the condensate traps be inspected on a regular basis to make sure that they are properly draining and the water levels are maintained at the designed levels.

Collected condensate needs to be disposed of in an environmentally sound manner. For that, it is usually recommended that the condensate be directed to the leachate collection system. However, the CML is a natural attenuation landfill with no leachate collection and treatment system in place.

One of the common methodologies that are usually practiced in dry sites is to use the collected condensate for dust control after diluting it with an appropriate volume of water. Another solution would be hauling the collected condensate to a wastewater treatment facility in the regional district. Landfill gas condensate is composed primarily of water and organic compounds. Often the organic compounds remain dissolved in water and the condensate separates into two different phases: a liquid (aqueous) phase and a floating organic (hydrocarbon) phase. The volume and composition of the organic phase vary among sites and may range from 1% to 5% (by volume). Condensate wastewater parameters namely BOD, TOC, COD etc. also vary among sites and are similar to typical landfill leachate. Most of the landfills in BC that deal with LFG condensate, dispose condensate in the leachate collection system. If the amount and quality of floating organics become concerning in the future, phase separators can be used in the condensate traps and organics can be dealt with separately. For the CML, SHA suggests installation of condensate storage tanks on site as a temporary solution until better estimates about the quantity and quality of the condensate are made after the first few months of operation of the GCCS system.

3.3 Landfill Gas Extraction Plant

A LFG extraction plant (also referred to as the gas handling system or blower station) generally includes the mechanical and electrical components of the LFG management system that actively collects LFG from the site. The design considerations for a LFG extraction plant include location and provision for future expansion, facility to enclose equipment and supporting components to ensure safe operation and monitoring.

At present, equipment selection is made based on the collection and destruction of the landfill gas through flaring. Provisions will be made within the detailed design for future tie-in of the cogeneration facility.

Campbell Mountain Landfill LFG extraction plant is proposed to be comprised of the following major components,

- Knock-Out Drum (also referred to as a moisture separator)
- Blowers
- Flow Meter
- Gas Analyzer
- Process Instruments and Controls
- Enclosed Flare
- Flame Arrester
- Flare Ignition and Pilot Control
- Power Supply and Distribution
- Plant Building/Structure
- Condensate drain trap or pump station

During the detailed design, equipment sizing shall be made based on the maximum estimated LFG generation rate within the expected lifespan of each equipment. As shown in Figure 3-2, the LFG extraction plant will be located on native soil at the north of the Campbell Mountain Landfill site. The proposed location is accessible by vehicles to allow for required maintenance. However, the available electricity on site will have to be upgraded and power be delivered to the proposed location. SHA proposes that all the basic equipment except the flare be located within an enclosed modular building or a sea-can container to avoid problems with icing, dust and wind.

Campbell Mountain Landfill's LFG extraction system will initially include two blowers and an enclosed flare system. In the future, and depending on the volume and quality of the extracted landfill gas, it might be possible to advance the system for beneficial use of the collected LFG through electricity generation or other available technologies.

Each blower will be designed at full required capacity, one operating and one as a redundant spare. Early stages of operation will yield low gas volumes; therefore, the blowers must have significant turndown capabilities. This flow rate flexibility (turndown) will be achieved through a combination of type of blower selected, recirculation loop with after-cooler, and/or variable frequency drive motor (VFD) (or belt/shiv drive motor). The blowers shall be sized to accommodate required gas flow to keep the flare running as well as to meet future requirements.

All the condensate collected at the moisture separator of the extraction plant will be sent to a condensate trap adjacent to the extraction plant (CT-1 as shown in Figure 3-2) which will be drained to the onsite condensate storage tank. LFG generation is estimated to increase from 242 scfm when the initial landfill cover is installed in 2015 to 488 scfm in 2092 when the entire landfill will be closed according to the geo-grid berm design final contours. It is anticipated that the gas generation rate will reach the rate of 284 scfm in 2035 when the extraction equipment expected to be renewed/ replaced with a new system. Therefore, the moisture separator will be designed to handle maximum flow rate of approximately 300 scfm. Accordingly, two (2) blowers are specified for 2015 with provision for installation of a third blower at a future date.

Based on the expected head loss and the requirement for delivering a minimum vacuum of 250 mm (10") WC at the furthest wellhead, blowers at the CML will be required to generate minimum of 915 mm (36") WC vacuum at the initial construction phase of the GCCS. This includes anticipated head-loss through the piping network, knock out drum, condensate traps and a positive pressure required for the LFG to be pushed through the flare system. For future expansion of the Campbell Mountain Landfill's GCCS, maximum vacuum of about 1524 mm (60") is expected to be ultimately required. SHA recommends that this number be revisited during the detailed design of the future phases of the GCCS and based on the updated filling plan and piping layout.

The potential for methane gas entering the atmosphere in and around the mechanical equipment will be a primary consideration in the selection of electrical equipment and materials for the LFG Plant. Wherever required, a built-in safety barrier will be incorporated in the electrical and control systems selection.

3.4 Metering Equipment

Measurement of the LFG flow rate in a GCCS is always very important for several reasons. A centralized gas flow meter system is necessary to measure LFG flow to the flare/ utilization system, and decentralized flow measurement devices are usually used throughout the system to evaluate and fine-tune the GCCS's performance and achieve higher gas collection efficiencies.

The flow meter at the LFG extraction plant is typically a pre-engineered/ pre-fabricated device with a high degree of accuracy. There are several types of suitable flow meters including an averaging pitot tube, an orifice plate, venturi meter, or thermal mass flow meter. The final device will be selected during detailed design. Whatever flow meter is selected, it should be suitable to handle the entire range of flow. The flow meter should also be capable of measuring totalized flow in addition to instantaneous flow rate.

Accuracy of the gas flow rate data greatly depends on the location of the main flow meter. It is very important that the flow meter be properly located in a section of the pipe where the velocity profile can be stabilized. The flow meter is located in a straight run of pipe, at a prescribed distance upstream and downstream of the nearest obstructions (elbows, valves, etc.). These straight run distances are typically specified by the flow meter manufacturer for the given piping configuration and obstructions. Schematic locations of flow meter and gas analyzer are shown in Figure 3-1.

The gas flow data, along with gas composition data (acquired through an online gas analyzer), are necessary for LFG management system performance evaluation as well as for GHG emission reduction credits trading purposes (if applicable). A data logger will be included in the final design of the landfill gas extraction plant to allow for recording of flow rate total flow, gas composition and flare temperature.

As mentioned in previous sections, all the wellheads as well as some strategic points of header, sub-headers and laterals will also be equipped with flow measurement devices. This will enable system operators to better adjust the collection field and increase the overall gas collection efficiency. For that purpose, pitot tubes and orifice plates are the two most common methodologies. In both methods, the velocity through a section of a pipe is measured based on a measured differential pressure. Pitot tubes normally loose accuracy when flow drops below a certain level (5 – 10 scfm). Therefore, SHA recommends the use of wellheads equipped with replaceable orifice plate where the device accuracy can be easily adjusted based on the flow rate. However, pitot tube and/ or insertion-type thermal mass flow meter are proposed to be utilized along the gas collection system piping network. Details of the new orifice plate wellhead and typical pitot tube set up are presented in Figures 3-6 and 3-7, respectively.

3.5 LFG Combustion/Utilization System

BC MOE requires that regulated landfills must collect LFG at a minimum of 75% of the generated LFG. The collected LFG shall undergo GHG emission reduction provisions through flare system or equivalent. However, it is viable for larger landfills to use the collected LFG as an energy source. Typical LFG contains approximately 500 Btu per standard cubic foot (scf) of energy. This energy can be directly utilized or be used through generating renewable energy. SHA recommends the RDOS further investigate the potential for LFG beneficial utilization options. However, an enclosed flare is proposed in the design plan to comply with the MOE requirement. Should the RDOS decides to go ahead with a utilization option, the proposed flare would be used as a backup system and to flare the excess volume of the collected LFG.

3.5.1 Flaring

Flaring the LFG is an acceptable practice in LFG management systems all around the world and leads to significant reductions in GHG emissions from landfills. There are two types of flares that are generally used in LFG management systems. Open (candlestick) flares and enclosed flares. Candlestick flares are the first generation of flares and are used where air emission control is not a high priority. British Columbia MOE approves the use of this type of flare only if it is used as a backup system for the main gas destruction unit. Enclosed flares offer higher CH_4 destruction efficiency under a more controlled environment (a minimum of 98 percent destruction of non-methane organic compounds). Unlike open flares, the combustion in enclosed flares occurs inside the flare chimney where LFG is mixed with air (entering through louvers in a controlled manner) reaching a desired combustion temperature inside the flare. The temperature is continuously monitored and recorded through several thermocouples. A flame detector will scan and communicate the presence of flame inside the chimney. Locations of major components of the flare station are shown in Figure 3-1.

A flame arrestor is another important part which is supplied with all types of flares and must be installed in the inlet line. The flame arrestor prevents flash back which may lead to explosion of the LFG extraction plant or even the entire collection system.

Looking at the gas generation estimation curve and considering 15 years as expected lifespan for a flare system, the enclosed flare for the Campbell Mountain Landfill's LFG management system will be designed for the maximum flow rate of 300 scfm. According to design standard 8 of the design guideline, this flare shall be designed to maintain minimum retention time of 0.5 seconds and a minimum flare temperature of 875 degrees Celsius. The enclosed flare will be required to have minimum turn-down of 10:1; hence, will be capable of handling a minimum flow rate of about 30 scfm.

3.5.2 LFG Utilization Equipment

The increasing awareness of energy conservation and emerging environmental issues have motivated municipalities in BC as well as private developers to investigate and, if feasible, to utilize LFG as a renewable energy source. The LFG can be utilized for the generation of electricity, natural gas or fuel for boilers and furnaces.

Should the RDOS decide to install a utilization system at the Campbell Mountain Landfill, a LFG utilization feasibility study is recommended to be conducted prior to proceeding with LFG utilization.

LFG Pre-treatment

To employ any LFG utilization technology, the raw collected biogas needs to be processed to some extent. The following constituents in the LFG require pre-treatment:

- Moisture/water vapour
- Particulate
- Sulphur Compounds
- Siloxanes
- Halogenated Organic Compounds
- Carbon Dioxide

The selection of pre-treatment technology depends on number of different factors. Every project needs to be assessed on a site specific basis with appropriate inputs. The Pre-treatment technology for the Campbell Mountain Landfill Utilization Projected will be selected during the detailed design of the system.

Potential Utilization Applications

The selection of utilization options available for a LFG management project depends largely on LFG quality, degree of pre-treatment required, amount of biogas produced, and economic viability.

The heating value of fuels derived from biogas depends primarily on the methane content. Based on the methane content, high-grade fuels can be directly supplied to the natural gas pipe line. Low-grade fuel is suitable for a variety of space and process heating applications, as boiler fuel for generation of steam for heating or electrical generation using internal combustion engines, steam turbine or microturbines. Medium-grade fuel has a greater potential for use as heating fuel than low-grade when processed. Currently, low-grade fuel application for LFG utilization is easily the most common and in which generation of electricity is dominant.

SHA is also aware of a BC Hydro initiative called the Standing Offer Program (SOP). The BC Hydro's SOP is intended to encourage the development of clean or renewable power projects of no more than 15 megawatts throughout British Columbia. The program streamlines the process for small developers selling electricity to BC Hydro, simplifies the contract and decreases transaction costs for developers while remaining cost-effective for rate payers. The Standing Offer Program supports the principles and policies set out in the 2007 BC Energy Plan and the 2010 Clean Energy Act.

One of the key requirements of the SOP is that the energy must be generated by a facility that generates electricity from clean or renewable resources or that is a high-efficiency co-generation

facility. BC Hydro launched the SOP on April 11, 2008 to encourage small project developers to sell electricity to BC Hydro. The 2007 BC Energy Plan and the 2010 Clean Energy Act provided direction to BC Hydro to establish a Standing Offer Program for small, clean or renewable or high efficiency cogeneration projects. The SOP was revised and re-launched on January 25, 2011.

3.6 LFG Management System Conceptual Cost Estimate

The cost of the completed gas collection and flaring system is provided in Table 3-1.

Based on the conceptual design provided in this design, our preliminary cost estimate for the detailed design and construction of the CML active LFG management system is approximately $2.2 million. This total cost estimate includes $1.3 million for the LFG collection system (including vertical and horizontal wells and piping network), and $0.8 million for the extraction and flaring system. This capital cost includes Phase 1 installation of the LFG system at the CML and does not include future system expansions and installation of the future LFG wells.

Table 3-2 Campbell Mountain LFG System Preliminary Cost Estimate

LFG System Detailed Design, Construction and QA/QC		Phase 1 2015
1	**LFG/ Condensate Collection System**	**$ 1,324,710**
1.01	Mob demob	$ 75,000
1.02	Vertical Well Drilling and Completion	$ 275,200
1.03	Bore Seal and Wellhead Assembly	$ 47,700
1.04	Horizontal Collectors	$ 62,500
1.05	Leachate/ Con. Pumps	$ 15,000
1.06	Condensate Storage Tank	$ 15,000
1.07	Header	$ 250,000
1.08	Lateral pipes	$ 240,000
1.09	Condensate Trap	$ 15,000
1.10	Electricity Upgrade	$ 100,000
1.11	Construction Supervision, QA/QC	$ 65,000
1.12	Engineering	$ 164,310
2	**Blower/ Flare Skid (Supply and Install)**	**$ 830,000**
2.01	Mob demob	$ 50,000
2.02	Enclosed Flare	$ 150,000
2.03	Extraction System	$ 250,000
2.04	General Works and Installations/ Commissioning	$ 150,000
2.05	Control Building	$ 100,000
2.06	QA/QC	$ 25,000
2.07	Engineering	$ 105,000
	Grand Total	**$ 2,154,710**

Also, Table 3-1 does not include the capital cost required for installation of an impermeable cap (geomembrane or compacted clay), nor the annual operating costs of the LFG system. SHA's estimate for installation of the CML Phase 1 closure system (i.e. approximately 8 hectares) is approximately $4.8 million, which brings the total required capital for the 2015 work at the CML to approximately $7 million. Our estimate for the annual O&M of the LFG system is approximately $50,000 per year.

4. SYSTEM INSTALLATION, OPERATION, AND MAINTENANCE

The following section presents the information required under Section 7(2)(b) of the Regulation.

4.1 Installation Schedule

SHA envisions having a stakeholder meeting where both the RDOS and the MOE representatives can provide feedback on the proposed Design Plan.

Upon completion of the Design Plan, the SHA design team will finalize the detailed design including drawings, technical specifications and tender documents.

The tender process will be divided in two different packages.

- Package 1: Landfill Gas Collection Wells and Piping Network (LFG Collection System)
- Package 2: Landfill Gas Blower and Flare System (LFG Plant)

By dividing the work under two different tenders, the RDOS can achieve significant cost savings by eliminating the General Contractor's markup.

The LFG Design Plan is completed and will be submitted to MOE in February of 2015. It is anticipated that works will be tendered during the months of June 2015. Construction is scheduled to commence in early August, starting with drilling of the gas wells and fabrication of the LFG Plant at the same time, and followed by installation of the piping network and finishing up in October of 2015. It is expected that the project commissioning will be completed in January, 2016.

Table 4-1 presented below outlines the schedule for the design, construction, and commissioning of the Campbell Mountain Landfill LFG management system.

Table 4-1 Schedule for the Installation of the Landfill Gas Management System

	Tasks	Completion Date
1	LFG Design Plan Submission to MOE	February 2015
2	Detailed Design and Construction Drawings	April 2015
3	Tendering Process	June 2015
4	Construction	August 2015
5	Commissioning	January 2016

4.2 Maintenance Requirements

In order to ensure optimum performance of the LFG management system and to maintain the system's operational goals (e.g. minimum 75% collection efficiency and high methane destruction efficiency) proper maintenance of the system will be vitally important. Unexpected system shut downs will result in increased GHG emissions from the landfill as well as jeopardizing the potential revenues from sale of carbon credits and/or renewable energy.

Below are some of the major recommendations for maintenance requirements for the Campbell Mountain Landfill. A detailed maintenance requirement list shall be prepared in the LFG management system's operation and maintenance (O&M) manual. The O&M manual must indicate maintenance requirements for the LFG collection field, LFG migration monitoring probes, condensate handling system, the LFG extraction plant and the flare station.

4.2.1 Spare Parts

Usually, each manufacturer recommends a list of spare parts and supplies for major equipment. In order to ensure an optimum performance of the LFG collection, the flare and utilization system at the Campbell Mountain Landfill and to minimize long-term system shutdowns at the collection and treatment facilities, a full list of spare parts for the Campbell Mountain Landfill LFG management system must be compiled based on the finalized detailed design. A simple example is a spare auxiliary fuel (propane tank) for the flare pilot which could be easily stored on site to prevent a system shut down. Full list of spare parts shall be included in the O&M manual.

4.2.2 Scheduled Maintenance

All components of the LFG management system shall be inspected on a regular basis. This includes testing and checking of LFG wellheads and pipes, condensate handling system, gas detection system, lubrication and oil change, flame arrestor cleaning and flare auxiliary fuel checking.

Inspection and maintenance of the blower and flare systems shall be done on a weekly basis. This may include equipment cleaning, auxiliary fuel refill (replacement), mechanical repairs and lubrication. Monitoring requirements and frequency for each component of the extraction plant and flare station shall be provided by the equipment supplier and included in the landfill's O&M manual.

Every single gas extraction wellhead and monitoring probe should be inspected for potential damage during each scheduled sampling and monitoring event. Damage resulting from the landfill's settlement, UV exposure of pipes and leaks from connections and joints are some of the issues to look for. Particular attention shall be directed to the landfill's settlement around the vertical LFG wells. Even when a slip joint is used in the well design, the well pipe may extend above the ground surface due to the settlement. This may damage the wellhead and/ or the connection pipes and flex hose, unless wells are properly inspected and maintained. SHA recommends that gas well inspections be conducted at least on a monthly basis.

4.2.3 Emergency Maintenance and Services

In some cases emergency maintenance may be required in response to an unexpected failure or system shut down. Immediate emergency services prevent property damage and human injuries and are not often required if proper repair and replacement procedure has been followed to identify and repair the failing components before catastrophic failure. A detailed plan for addressing emergency disruptions, maintenance and/or replacement of system components will be described in the O&M manual.

4.2.4 Equipment Calibration

In order to prevent errors and assure the quality of data measured to the best of each component's capability it is necessary to conduct routine calibration services. Calibrations are usually done according to the manufacturer's recommendations which will be included in the Campbell Mountain LFG management system's O&M manual.

4.3 LFG Migration Monitoring

The Design Guideline, the BC Landfill Criteria (1993), and the new Draft interim BC Landfill Criteria (2013) all require that offsite lateral migration of LFG be monitored along the perimeter of MSW landfills. The Guideline and both versions of the Criteria require that the soil gas concentrations not to exceed 100% lower explosive limit (LEL) of methane, which is equivalent to 5% volume. The Guideline requires that a site investigation should be completed if higher concentrations than 5% (by volume) of methane are measured along the property line.

For east and west perimeters of the CML, lateral landfill gas migration is not a great concern at this time given the fact that there are no developments near the site. Furthermore, since 1998 various LFG migration probes have been installed along the north and south perimeters of the CML. These include shallow and deep probes from which possibility of lateral migration of methane has been monitored on a regular basis. Historically, the north area of the CML has been the concerning zone in terms of possibility of off-site methane migration. However, the latest available report provided to SHA indicates that gas concentrations have not exceeded the 100% LEL threshold in any of the monitoring probes along the northern property boundary (CRA, 2012).

Permanent migration monitoring probes are typically spaced approximately 150 m apart if permanent structures are more than 300 m away, and approximately 30 m apart where structures are within 300 m from the landfill. The locations and spacing of the existing probes at the CML meets the requirements and there is no need for installation of new probes. However, it is recommended that the existing probes to be inspected for any possible damage due to silting or settlements.

By installing and impermeable cap, if the LFG is not properly collected, the gas pressure within the landfill will increase. This will increase the possibility of LFG lateral migration. Therefore, SHA proposes that the RDOS continue to assess the soil gas concentrations along the northern and southern property lines using the existing monitoring probes.

Figure 4-1 shows the locations of existing gas migration probes as reported by CRA (2012).

5. SYSTEM OPTIMIZATION

The following section presents the information required under Sections 7(2)(c) of the Regulation.

The design guideline requires minimum LFG collection efficiency of 75% to be achieved. This level of collection efficiency sounds achievable in long term throughout landfills' lifespan or in landfills which have reached their full design capacity. However, landfills like the Campbell Mountain Landfill may face challenges achieving this required level of collection efficiency at a reasonable cost. SHA has used the best practice and experience to design the GCCS for the Campbell Mountain Landfill. Based on the design standards and the recommended best management practices provided in the design guideline we expect to achieve a very high level of LFG collection efficiency. However, the 75% goal may not be achievable until final closure given the geometric constraints at this site. Minimum head loss through the collection field, big diameter vertical wells, proper pipe sloping and sufficient and appropriate condensate drainage

system are some of the factors that SHA has taken into account for designing the system to operate at the very highest efficiencies. Furthermore, the following are some of the provisions that SHA recommended for this site to ensure the highest possible LFG collection efficiency.

5.1 Progressive Installation of the LFG Collection System

Based on literature, when waste is first placed into a landfill, it will take about 3 to 36 months until it goes to a stable methanogenic phase. Since moisture plays a major role in enhancing bacterial activities, this period is usually longer for dry sites like the Campbell Mountain Landfill.

In the design of the GCCS for the CML, SHA has considered progressive completion of the system as the landfill's new phases get filled. Accordingly, horizontal gas collectors are proposed to be installed in active area. Horizontal collectors will be hooked up to the header/ sub-header and will undergo vacuum as soon as one to two lifts of waste (typically 3 - 5 m per lift) is placed on top of the collector trenches. SHA also recommended the RDOS reduce the active face footprint area to an optimum size so that enough thickness of waste is placed on top of horizontal collectors in a timely manner so that, as soon as that zone starts methane generation, vacuum could be applied.

5.2 LFG Monitoring and Field Adjustment

Proper field balancing technique is one of the most important factors in achieving high LFG collection rates. The RDOS's staff will have to perform periodic monitoring and wellfield adjustment events to maximize the LFG collection rate while ensure that air intrusion is not occurring. Significant air intrusion may result in increased aerobic activity and elevated landfill temperature which could eventually trigger landfill fire. Detailed field adjustment tips and techniques shall be included in the LFG management system's O&M manual.

5.3 Record Keeping

Two types of data shall be properly recorded; (i) inspection, maintenance and system shut down records and (ii) well field and gas migration monitoring data.

It is very important that all inspection and maintenance records be properly recorded and kept at a known location on site. This data shall be updated regularly or during emergency maintenance event and shall include expected date for next calibration or repair and replacement.

Data acquired from well field readings, which will have to be conducted on a regular basis, will ultimately accumulate into a big volume that cannot be easily handled if not properly organized. SHA recommends keeping these data along with well field specifications (i.e. location of wells, depth, screen depth, pipe size, etc.) in a proper and organized data base.

6. ADDITIONAL INFORMATION

The following section presents the information required under Sections 7(2)(e) of the Regulation.

As of date of preparation of this design plan, no additional information has been requested by the director.

7. BIO-COVER SYSTEM AS AN ALTERNATIVE SOLUTION

7.1 Background

SHA understands that the RDOS, in order to reduce the GHG emissions from the CML, would like to implement an aggressive organic waste diversion program. This will include further diversion of 75% of wood waste, yard waste and paper waste which would otherwise be deposited at the CML, as well as 50% diversion of food waste. In late 2014, the RDOS initiated conducting of a site selection study for a new composting facility which will handle most of the diverted organics. Furthermore, the RDOS would prefer to use a fabricated biocover at the CML to oxidize any residual methane emitting to the atmosphere. According to SHA's past experience, we believe that from a technical perspective this strategy will result in a significant greenhouse gas (GHG) emission reduction with equal or better outcome in comparison to the construction of an active LFG collection system at Campbell Mountain Landfill.

SHA also understands that if the MOE requires that active LFG collection be implemented at the CML, the capital budget allocated by the RDOS for expansion of the organic waste diversion and composting programs would have to instead be spent on installation of the impermeable cap and the active LFG collection system. In other words, mandating the installation of an active LFG system at CML will jeopardize the implementation of other RDOS green projects that would result in greater GHG emission reductions.

SHA held a stakeholder meeting in November 2014, where both the RDOS and the MOE representatives provided feedback on the proposed strategy. SHA envisions having a follow-up meeting with the MOE and the RDOS shortly after submission of this report to further investigate the possibilities of implementing this unique initiative at the Campbell Mountain Landfill as a demonstration project for BC.

This section of the report presents our conceptual cost estimate for fabrication and placement of an engineered biocover system for the Campbell Mountain Landfill.

7.2 LFG Emission Measurement

In July 2014, SHA conducted a full scale LFG emission measurement study at the CML. The fugitive methane emission measurement was conducted through an approach developed by Abedini, Atwater et al. (2014b). This methodology involves measurement of surface methane

concentrations from the entire landfill, as well as conducting flux chamber measurements in a representative portion of the landfill.

The surface methane concentration (SMC) scan using a flame ionization detector (FID) is an approved methodology used across the US, where it is required by the U.S. Environmental Protection Agency's (EPA) new source performance standard (NSPS) regulation. Because quantification of methane emissions is not economically feasible for all landfills, the NSPS regulation requires that the average methane concentrations at the surface of the regulated landfills be kept below certain levels. If the FID field measurements show methane concentrations above 500 ppm then the landfill owner has to implement control measures within a given period of time.

The Flux chamber technique is also an approved methodology by the US EPA and is used when quantification of methane emissions is required. However, because it is a very time consuming methodology, it's been rarely implemented in MSW landfills at full scale.

The methodology adopted in the methane emission measurement study at the CML was a combination of the two above-mentioned techniques. It was developed through PhD research by SHA's LFG specialist Dr. Ali Abedini. This methodology was first developed based on comprehensive field investigations including a FID surface scan of about 18 hectares and approximately 190 flux chamber measurements conducted at the Vancouver Landfill. During the course of the current project, the approach was repeated by conducting a FID scan over the entire CML site as well as conducting 36 flux chamber measurements over 3 hectares of the Campbell Mountain Landfill site. The resulting correlation between SMC and methane emission rate (MER) data was more conservative, yet very close to what was reported by Abedini, Atwater et al. (2014b), confirming the validity of this methodology.

7.2.1 Surface Methane Concentration Scan

A surface methane concentration scan was conducted on two consecutive days, July 17 and 18, 2014. The surface scan was conducted over the areas of the landfill that have historically received waste since 1964. The waste footprint was approximated based on the investigations and analyses that were previously shown in Figure 2-4.

In order to conduct the SMC scan, the site was divided into 11 measurement grids with approximate areas ranging from 6,000 m^2 to 17,000 m^2. Total area included 12.4 ha of the landfill site. The enclosed Figures 7-1 shows the boundaries of the measurement Grids 1 to 11. In Table 7-1 the footprint areas of these grids are presented.

A *Thermo Scientific TVA 1000* FID instrument was used to measure and log methane concentration at the landfill's surface. As shown in Figure 7-2, using a GPS devise, each grid

was walked in approximately 10 m pathways while logging methane concentration every 5 to 10 seconds.

Figure 7-2 FID Scan Walking Pathway in Grid #1

The FID instrument was calibrated using a calibration gas from tanks before and after conducting each set of grid measurements. Accordingly, the recorded methane concentrations were adjusted when a drift in the calibration gas reading was observed. Depending on the size of each grid, between 200 to 400 SMC data points were logged between calibration events. Photo 7-1 shows SHA staff conducting a FID measurement.

Photo 7-1 Surface Methane Concentration Scan Using a Portable FID Instrument

7.2.2 Flux Chamber Measurements

Application of flux chambers in landfills to measure fugitive methane emissions from the soil surface through isolating and monitoring the emitting gas from soil is a well-established method. The flux chamber technique includes placing a closed chamber (box) on the landfill's surface and monitoring the change of methane concentration in the box over time. Based on the rate of change in methane concentration in the chamber with time, chamber volume, and area beneath the chamber the methane flux emitted from landfill's surface can be calculated.

Grids 4, 6, and 7 previously showed in Figure 7-1 were selected for flux chamber measurements. The US-EPA guideline, *"measurement of gaseous emission rates from land surfaces using an emission isolation flux chamber"* (EPA/600/8-86/008), was used to determine the required number of flux chamber tests based on the footprint area of these grids. During the course of the field investigations, a total of 36 flux chamber tests were conducted. During these tests, the methane concentration inside the chamber was continuously monitored using a Landtec GEM 2000+ gas analyzer. Photos 7-2 and 7-3 below show the flux chamber test setup at the CML.

Photos 7-2 & 7-3 Flux Chamber Test Setup and SHA Staff Conducting the Test at the CML

The flux chamber test results were graphed and translated to methane emission rats (MER) based on the chamber volume and footprint area. Figures 7-3 and 7-4 show two examples of the graphical illustration of the flux chamber test results.

The resulting MER ranged between zero (non-detectable) to 1,318 $g/m^2/day$. The averaged results for Grids 4, 6, and 7 was respectively 7.3 $g/m^2/day$, 7.0 $g/m^2/day$, and 7.1 $g/m^2/day$.

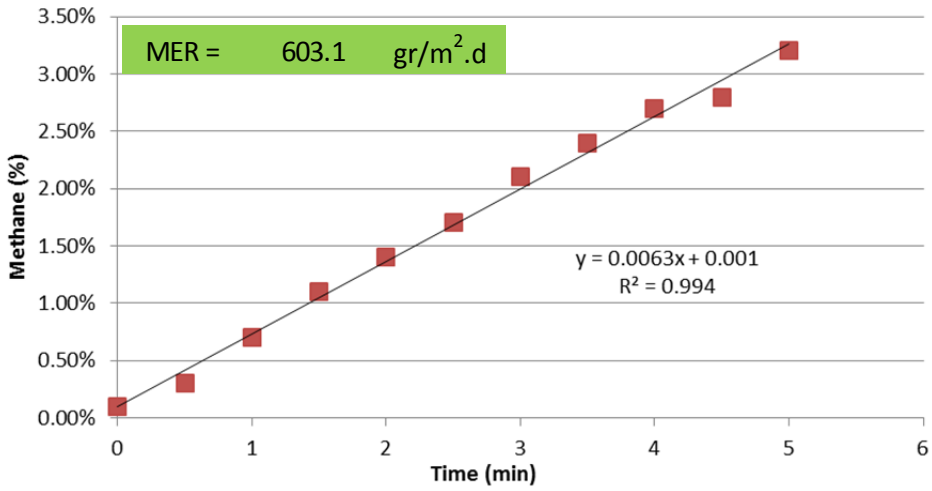

Figure 7-3 Flux Chamber Results Graphical illustration - Grid 4, FC#1

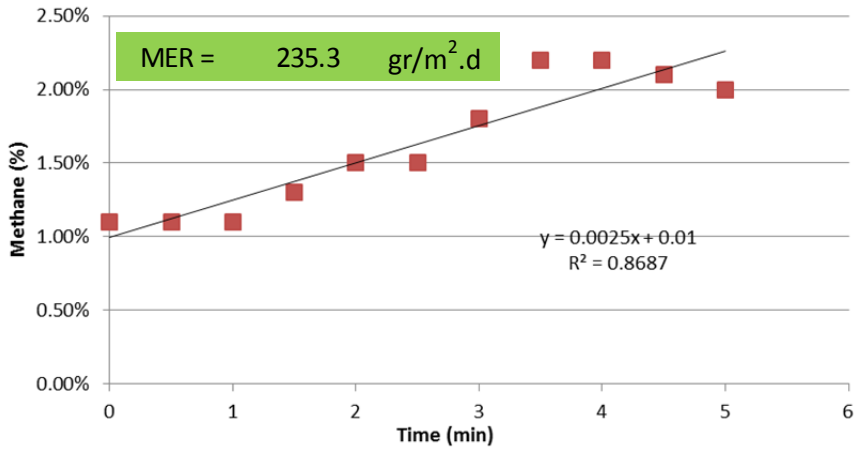

Figure 7-4 Flux Chamber Results Graphical illustration - Grid 7, FC#3

7.2.3 Effect of Barometric Pressure on LFG Emission

A very important aspect in measurement of fugitive methane emission from landfills is the effect of barometric pressure (BP) on the gas flux intensity. It is very well documented in the literature that a drop in atmospheric pressure results in increased LFG emissions with the rate of change in atmospheric pressure being the controlling effect (Young, 1990; Gebert and Groengroeft, 2006; Abedini and Atwater, 2014). Accordingly, the resulting emission rates from the CML were adjusted to account for barometric pressure change during the field investigation days. This information was acquired from the Penticton Airport Weather Station for the days of field investigation. Figure 7-5 illustrates the hourly variations in atmospheric pressure and temperature in Penticton area recorded for June 18, 2014.

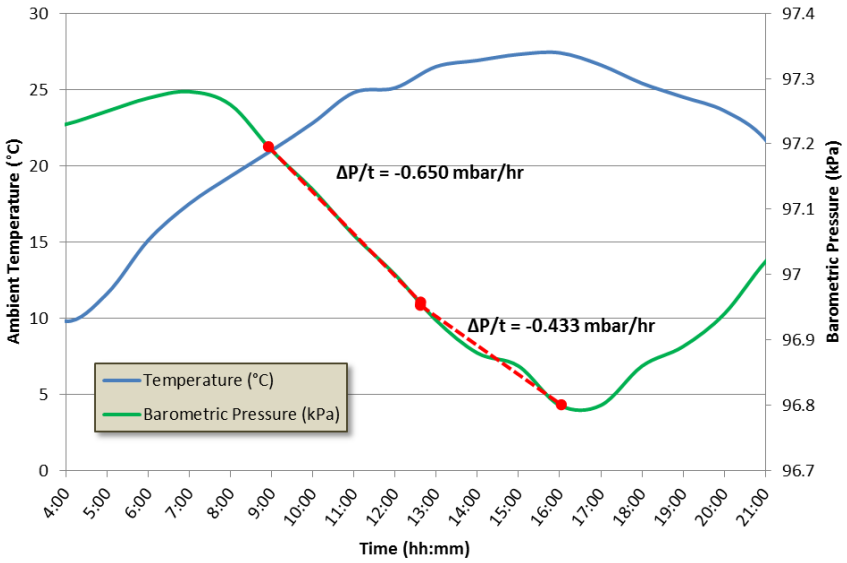

Figure 7-5 Atmospheric Pressure & Temperature (Penticton Airport Weather Station - June 18)

7.2.4 LFG Emission Survey Results

The recorded SMC data derived from the surface scan at the CML ranged between 0.5 ppm and 1000 ppm with a total average of 18 ppm over the entire site. To measure the fugitive methane emissions, the CML was divided into 11 measurement grids. Averages of the SMC data points from each measurement grid were then translated to average methane flux based on the correlation developed between these two values for 3 grids where both the SMC and the MER were measured. Figure 7-6 shows this correlation with $R^2 = 0.96$. Table 7-1 shows a summary of field investigation results including SMC and MER average values measured at the CML, as well as the methane emission rates and total emission calculated for this site. As shown in this table, the results from the developed correlation shown in Figure 7-6 are very close to what has been achieved at Vancouver Landfill based on Abedini, Atwater et al. (2014b).

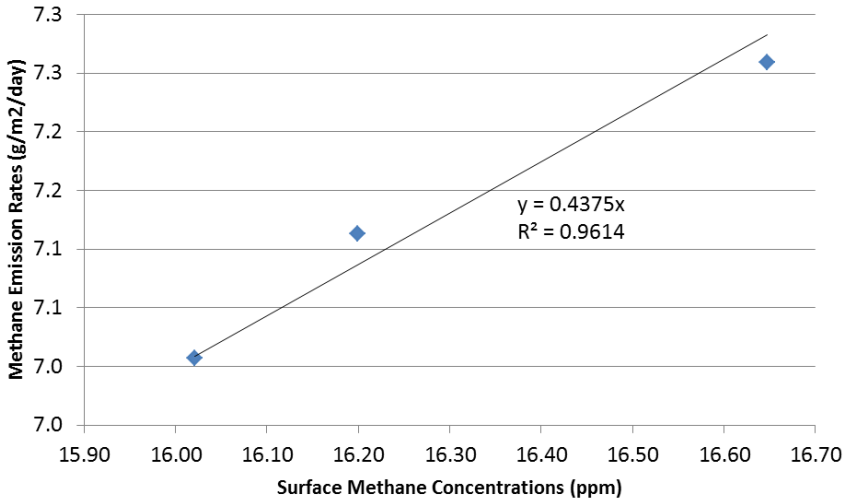

Figure 7-6 Correlation Between Average SMC and MER developed for the CML Site

Table 7-1 Summary of Methane Emission Measurement Results at the Campbell Mountain Landfill

Grid Number	Area	Surface Methane Concentration			Methane Emission Rate			Total Emission	
		MIN	MAX	AVG.	Flux Chamber	This Project	(Abedini, 2014)	This Project	(Abedini, 2014)
	(m2)	(ppm)	(ppm)	(ppm)	($gr/m^2/d$)			(Tonnes CH_4/year)	
Grid#1	14,408	5.02	301.02	14.25	--	6.2	5.2	50	42
Grid#2	10,086	1.17	58.90	5.90	--	2.6	2.2	14	12
Grid#3	15,392	1.72	994.19	39.43	--	17.3	14.5	147	123
Grid#4	13,346	1.01	202.36	16.65	7.3	7.3	6.1	54	45
Grid#5	17,452	1.31	342.60	19.46	--	8.5	7.1	82	69
Grid#6	7,666	0.92	325.69	16.02	7.0	7.0	5.9	30	25
Grid#7	7,799	1.74	368.06	16.20	7.1	7.1	5.9	31	26
Grid#8	15,913	0.44	159.04	20.94	--	9.2	7.7	81	68
Grid#9	6,131	1.31	400.87	17.35	--	7.6	6.4	26	22
Grid#10	10,188	2.22	98.58	11.30	--	4.9	4.1	28	23
Grid#11	6,008	0.44	101.73	7.36	--	3.2	2.7	11	9
TOTAL	**124,388**	**0.44**	**994.19**	**18.34**				**552**	**463**

Adopting the more conservative approach, the total fugitive methane emissions from the CML in 2014 were estimated to be approximately 550 tonnes of methane.

The estimated annual methane emissions from the CML are approximately 46% of the estimated methane generation at this site (i.e. 1199 tonnes/year). As mentioned in Section 4.3, offsite lateral migration of LFG from the CML has been historically monitored. These investigations have confirmed that migration levels are zero to very low. Therefore, SHA believes the applied soil cover with relatively high organic content is having a significant effect on reducing the atmospheric methane emissions from this site. It is currently responsible for consuming approximately 54% of the methane produced. This oxidation level is concluded based on a theoretical LFG generation estimation for the CML. However, there are advanced methodologies, such as stable isotope technique, that can more accurately quantify methane oxidation currently occurring at this site (Abedini, Atwater et al., 2014a)

Biological oxidation of methane in landfill cover soil is historically acknowledged by a number of regulatory agencies such as BC MOE, US EPA, and IPCC. These agencies adopted a default value of 10% oxidation rate for any type of soil cover. However, there are several studies which have reported methane oxidation fractions through landfill cover soil at higher values ranging from 22% to 55% (Whalen et al., 1990; Scharff et al., 2003; Chanton et al., 2009; Abedini et al., 2014). The current total methane emission rate from the 12.4 hectare footprint of the CML is equivalent to approximately 12 g/m^2/day methane loading rate. Based on SHA's past experience in design and construction of biofilter and biocover systems, this emission level can be easily managed through an engineered biocover system and biological methane oxidation.

7.3 Overall GHG Emission Reduction, Active LFG System vs. Bio-cover System

It is SHA's understanding that the RDOS, in order to reduce the GHG emissions from the CML, intended to implement an aggressive organic waste diversion program, along with placement of a fabricated biocover system at the CML site. This idea has been presented to the MOE during past two years and is further documented in this report.

The intended organic diversion program will include further diversion of 75% of wood waste, yard waste and paper waste which are currently being deposited at the CML, as well as 50% diversion of food waste. The fabricated biocover will be placed at the landfill to oxidize the remaining methane that will emit to the atmosphere. With implementation of these initiatives, the RDOS is hoping to meet the goals of the landfill gas (LFG) regulation while avoiding the large costs of an active LFG collection system at the CML.

In this section, we demonstrated the long term GHG emission reduction that would be achieved under the two scenarios. These scenarios are as follow:

Scenario A - Installation and operation of an active LFG collection system by 2016
Scenario B - Further diversion of organic waste and placement of engineered fabricated

7.3.1 GHG Emissions Calculation

Methane generation and the overall emissions for the two scenarios are provided in Table 7-2 below. GHG emission reductions in Scenario A include the collected methane with the active gas collection system with an efficiency of 75% and flare destruction efficiency of 99%. This system was assumed to be installed and operating starting January, 2016 as required by the BC LFG regulation. The overall GHG emissions from the CML in this scenario over a 20 year timeframe were about 6,600 tonnes of methane equivalent to approximately 165,000 tonnes of CO_2-e (based on methane's global warming potential of 25).

The GHG emission reduction levels for Scenario B would be realized through two processes: (i) methane generation avoidance due to diversion of the organic wastes, and (ii) fugitive methane oxidation through a fabricated biocover. Methane avoidance due to organics diversion starts at 0% for year 1 (2016) and increases to 34% for year 20, averaging an overall 20% methane generation reduction in comparison to Scenario A. This also shows that should the analysis be conducted in a longer term, the effects of the organic waste diversion in reduction of GHG emission from CML could become even more significant. The overall GHG emissions from the CML under Scenario B over a 20 year timeframe were approximately 5,100 tonnes of methane equivalent to approximately 128,000 tonnes of CO_2-e. Table 7-2 summarizes the methane generation and emission estimates for the two scenarios.

Table 7-2 Methane Generation and Emissions for Scenarios A and B

Year	Scenario A - Active LFG Collection			Scenario B - Organics Diversion and Biocover				
	CH_4			CH_4	Reduction due to Organics Diversion		Oxidized through Biocover	CH_4
	Generation	Collected	Emissions	Generation				Emissions
	tonne	tonne	tonne	tonne	tonne	%	tonne	tonne
2015	1,213	-	1,213	1,213	-	0%	-	1,213
2016	1,221	916	314	1,221	-	0%	916	305
2017	1,228	921	316	1,195	34	3%	896	299
2018	1,236	927	318	1,170	66	5%	878	293
2019	1,243	932	320	1,147	97	8%	860	287
2020	1,250	938	322	1,124	126	10%	843	281
2021	1,257	943	324	1,102	155	12%	827	276
2022	1,263	947	325	1,081	182	14%	811	270
2023	1,269	952	327	1,061	208	16%	796	265
2024	1,275	957	328	1,042	233	18%	782	261
2025	1,281	961	330	1,024	257	20%	768	256
2026	1,287	965	331	1,006	280	22%	755	252
2027	1,292	969	333	989	303	23%	742	247
2028	1,297	973	334	973	324	25%	730	243
2029	1,302	977	335	958	345	26%	718	239
2030	1,307	980	337	943	364	28%	707	236
2031	1,312	984	338	928	383	29%	696	232
2032	1,316	987	339	914	402	31%	686	229
2033	1,320	990	340	901	419	32%	676	225
2034	1,325	993	341	888	436	33%	666	222
2035	1,329	996	342	876	452	34%	657	219
Total	**25,610**	**19,208**	**6,595**	**20,545**	**5,065**	**20%**	**15,409**	**5,136**
	Collection Efficiency		75%					
	Flare Destruction Efficiency		99%					
	Biocover Oxidation Efficiency		75%					

This analysis shows that for the relatively arid climate in Penticton, overall GHG impacts of solid waste management can be better managed by focusing on organics diversion and controlling of fugitive methane emissions using a biocover than by implementing an active gas collection system. Based on this analysis, over a 20 year timeframe, implementation of Scenario B for the CML would result in 22% less GHG emission in comparison with Scenario A. Since methane generation avoidance due to diversion of organics from landfilling has a long term effect, this difference would be even more when a longer term analysis is conducted. Therefore, SHA concludes that from a technical perspective the RDOS's proposed strategy will have a better outcome while resulting in lesser overall costs. An overall conceptual design and cost estimate for the biocover system, as well as a long term cost estimate for different closure strategies are presented in Sections 7.4 and 7.5, respectively.

7.4 Biocover System Conceptual Design and Cost Estimate

SHA's field investigation conducted in July 2014 indicated that the average methane emission rate (MER) from the CML was approximately 12 g/m^2/day. We believe this level of methane loading rate

can be effectively handled with a thin biocover system, including a distribution layer installed beneath the biocover. The distribution layer will avoid "hot spots" and high methane loading rates occurring in these areas. The area which would have to undergo biocover installation is shown in Figure 7-7. Other details and assumptions considered in this conceptual cost estimate are as follows:

Total area where biocover will be placed:	Approximately 8 ha
Gas Distribution layer Thickness:	150 mm
Thin Biocover Thickness:	300 mm
Conceptual Biocover Media Blend:	Bio-solid:Sand:Wood Chips (1:1:1 ratio)
Biosolid Source:	Annacis Island WWTP
Wood:	Available on site, chipped and handled at $\$10/m^3$
Sand:	Purchased at $\$25/m^3$ (could be reduced if available on site)

Table 7-3 below shows details of our estimate for fabrication and placement of the biocover system at the CML. We estimated total cost of $1.3 million for placement of the system which translates to about $\$17/m^2$. This is approximately half of the cost for installation of an active LFG collection system for a landfill of CML size.

Table 7-3 Campbell Mountain Landfill Biocover System Conceptual Cost Estimate

	Task	Quantity	Units	Unit Rate	Total
1	Any Required Approvals (Qualified professional or Land Application Usage)	1	LS	$15,000.0	$15,000
2	Biocover Blend Design, Sampling and Lab Analyses	1	LS	$15,000.0	$15,000
3	Supply and Place Gas Distribution Layer	12,000	m^3	$15.0	$180,000
4	Providing Biosolids from Annacis	8,000	m^3	$30.0	$240,000
5	Supply Sand for Design Mix	8,000	m^3	$25.0	$200,000
6	Supply Wood (Chipped / Hog) for Design Mix	8,000	m^3	$10.0	$80,000
7	Topsoil Blending with Allu Buckets - 2 passes	24,000	m^3	$4.5	$108,000
8	Apply Topsoil to Final Cover System - 150mm Lifts	24,000	m^3	$4.0	$96,000
9	Engineering Cost (15%)	1	LS	15%	$140,100
10	Contingency (25%)	1	LS	25%	$268,525
	Total Cost				$1,342,625
	Total Cost (Per m^2)				$16.8
	Total Colsure Area (ha):	8	ha		
	Biocover Thickness (mm):	300	mm		
	Distribution Layer Thickness (mm):	150	mm		
	Bio-Solid:**Sand**:**Wood** Volumetric Ration:	1	1	1	

In addition to the above, to meet the final closure requirements of the new landfill criteria, the biocover would be constructed over top of a 600 mm barrier layer of locally sourced loess as was used in the North Ravine closure. The cost of the barrier layer will likely be in the $15 to $20 $/m^2$ range. This brings the total cost of biocover option to approximately $2.9 million in comparison with the $7 million for installation of a full closure system and an active LFG system. Since the barrier layer will be required regardless of the gas control method that is selected, the associated cost is not included in the cost estimate provided in Table 7-3.

7.5 Long Term Cost Comparison of Closure Options for the CML

As we go forward, the RDOS needs to commit to a closure and LFG management strategy. A fundamental basis for developing this strategy is to achieve effective control of the fugitive methane emissions from the CML that will result in a minimum of 75% reduction in potential GHG emissions from this site. As indicated in previous sections, the two technically feasible closure options for the CML site are:

- Progressive installation of geo-membrane a cap and an active LFG collection and destruction system
- Progressive placement of a clay barrier along with an engineered biocover system

SHA believes that with implementation of either of these options, the RDOS will be able to achieve the required GHG emission reduction target set by the BC MOE.

In this section, the long term cost implications of these options are investigated.

7.5.1 Landfill development and closure areas

As previously indicated, we developed the active LFG control system conceptual design based on the geo-grid berm concept final closure and lifespan analysis. However, the detailed filling and closure sequence for this concept are yet to be developed. Therefore, the following analysis is conducted based on the original design and operation (D&O) plan that was developed by Golder (2002).

Golder's suggested final contour design included a maximum crest elevation of 649 m ASL. The enclosed Figure 7-8 shows these suggested final contours and phasing. In 2011, SHA re-evaluated the proposed concept indicating that the Golder design would provide 2.95 million m^3 of capacity effective 2011, and a lifespan to 2073. We also updated the lifespan analysis for the CML based on the Golder design, presented in Table D.1 of Appendix D. As indicated in this table, closure of Phase 1, Phase 2, and Phase 3 of the CML will occur in 2016, 2063, and 2073, respectively.

To develop the two closure scenarios, we considered the maximum efficiency of the system in reducing fugitive methane emissions. Therefore, option 1 includes installation of an active LFG collection system, as shown in the design plan drawings, and installation of a geomembrane cap system in the areas which will no longer receive waste in the future. Option 1 also includes placement of a biocover system in the areas which will not receive waste for a long period of time. For example, the enclosed Figure 7-9 shows suggested closure areas for the Phase 1 closure system which includes 5.6 hectares of geomembrane cap and 2.3 hectares of biocover system (along the North Ravine area and the existing crest area).

Accordingly, Option 2 of the closure system includes placement of an engineered bio-cover

system over top of a 600 mm compacted clay barrier layer (to meet the final closure requirements of the new landfill criteria). The suggested final closure areas based on the Golder final contours are shown in the enclosed Figure 7-10.

7.5.2 LFG Collection system phasing and long term cost estimate

According to the present LFG management system design plan, Phase 1 of the LFG active system will include vertical wells, horizontal collectors, header and sub-header pipes, a condensate management system and the LFG extraction system (blower and flare). This phase is envisioned to be constructed in 2015 or 2016 at a total cost of approximately $2.2 million.

Furthermore, in order to comply with the MOE requirement of 75% LFG collection efficiency, SHA recommends that the LFG collection system be expanded, with periodic installation of the horizontal collectors between the two final closure phases. Subsequently, when a new area of the landfill reaches the designed final elevation, that area will receive the final closure system and new vertical wells will be installed.

Table 7-4 Campbell Mountain LFG System Conceptual Cost Estimate

		Phase 1 Closure 2016	Phase 2 2017-2062	Phase 2 Closure 2063	Phase 3 2064-2072	Phase 3 Closure 2073
1	**LFG/ Condensate Collection System**	**$1,324,710**	**$5,704,575**	**$ 938,425**	**$1,051,215**	**$873,425**
1.01	Mob demob	$ 75,000	$ -	$ 75,000		$ 75,000
1.02	Vertical Well Drilling and Completion	$ 275,200	$ -	$ 400,000		$400,000
1.03	Bore Seal and Wellhead Assembly	$ 47,700	$ 108,000	$ 59,500	$ 21,600	$ 59,500
1.04	Horizontal Collectors	$ 62,500	$3,562,500	$ -	$ 712,500	$ -
1.05	Leachate/ Con. Pumps	$ 15,000	$ -	$ 15,000		$ 15,000
1.06	Condensate Storage Tank	$ 15,000	$ -	$ -		$ -
1.07	Header	$ 250,000	$ 375,000	$ -		$ -
1.08	Lateral pipes	$ 240,000	$ 900,000	$ 210,000	$ 180,000	$210,000
1.09	Condensate Trap	$ 15,000	$ 15,000	$ -	$ -	$ -
1.10	Electricity Upgrade	$ 100,000	$ -	$ -	$ -	$ -
1.11	Construction Supervision, QA/QC	$ 65,000	$ -	$ 65,000	$ -	$ -
1.12	Engineering	$ 164,310	$ 744,075	$ 113,925	$ 137,115	$113,925
2	**Blower/ Flare Skid (Supply and Install)**	**$ 830,000**	**$ -**	**$ 542,500**	**$ -**	**$ -**
2.01	Mob demob	$ 50,000	$ -	$ 50,000	$ -	$ -
2.02	Enclosed Flare	$ 150,000	$ -	$ 150,000	$ -	$ -
2.03	Extraction System	$ 250,000	$ -	$ 150,000	$ -	$ -
2.04	General Works and Installations/ Commissioning	$ 150,000	$ -	$ 100,000	$ -	$ -
2.05	Control Building	$ 100,000	$ -	$ -	$ -	$ -
2.06	QA/QC	$ 25,000	$ -	$ 25,000	$ -	$ -
2.07	Engineering	$ 105,000	$ -	$ 67,500	$ -	$ -
	Grand Total	**$2,154,710**	**$5,704,575**	**$1,480,925**	**$1,051,215**	**$873,425**

As indicated in Table 7-4, SHA envisions that installation and expansion of the CML LFG collection system will be completed in 5 phases shown in 5 different columns. Installation of the vertical wells will occur in 2015, 2063, and 2073. The horizontal expansion of the system will occur periodically throughout the landfill lifespan between 2017 to 2062, and 2064 to 2072. Furthermore, based on the expected lifespan of the mechanical equipment, such as blowers and enclosed flare, SHA envisions that the extraction system will need a major upgrade in 2063.

7.5.3 Comparison of the closure options long term cost estimate

The overall cost comparison of the two LFG management strategies for the Campbell Mountain Landfill is provided in Table 7-5. Our cost projection for progressive closure of the CML and installation of an active LFG collection system is approximately $24 million. This amount is about 2.5 times of the total cost of Option 2, installation of a 600 mm clay cap and a bio-cover system. These cost projections are also illustrated in Figure 7-11.

Please note that these cost estimates do not include the associated costs of operation and maintenance of either of these systems.

Table 7-5 CML Overall Progressive Closure Conceptual Cost Estimate for Two Scenarios

Phase	Item	Year	Closure Area (ha)		Option 1		Option 2
			Geo-membrane	Bio-Cover	Geo-membrane Cap and Bio-cover	LFG System	Bio-cover & Clay Cap only
Phase 1	Closure System	2016	5.6	2.3	$ 3,751,000		$ 2,923,000
	LFG System	2016				$ 2,155,000	
Phase 2	Horizontals Wells	2017-2062				$ 5,705,000	
	Closure System	2063	6.8	5.8	$ 5,066,000		$ 4,662,000
	Vertical Wells	2063				$ 1,481,000	
Phase 3	Horizontal Wells	2064-2072				$ 1,051,000	
	Closure System	2073	5.8	0.0	$ 3,480,000		$ 2,146,000
	Vertical Wells	2073				$ 873,000	
TOTAL:		**2016-2073**			**$ 12,297,000**	**$ 11,265,000**	**$ 9,731,000**
					$ 23,562,000		

* Estimates do not include O&M costs and inflation

Bio-Cover Only: 17 $/m^2

Bio-cover+Clay Cap: 37 $/m^2

Closure System: 60 $/m^2

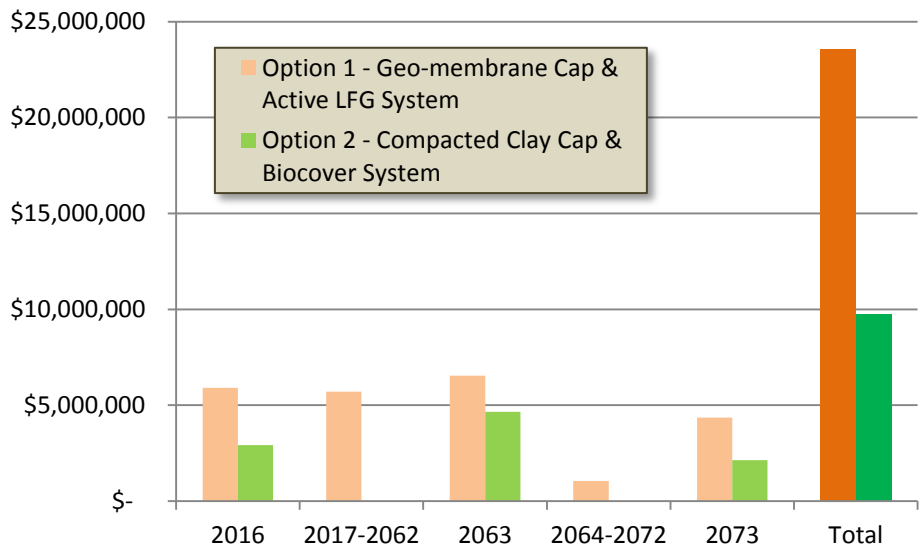

Figure 7-11 Overall Progressive Closure Conceptual Cost Estimate for Two Scenarios

SHA understands that the RDOS strongly believes that regional district's available resources should be focused on waste reduction and diversion efforts. SHA believes that for the relatively arid climate in Penticton, overall GHG impacts of solid waste management can be better managed by focusing on organics diversion and controlling of fugitive methane emissions using a biocover system than by implementing an active gas collection system. Our analyses presented in Chapter 7 of this report have shown that from a technical perspective, this strategy will have a better outcome while resulting in lesser overall costs.

8. LIMITATIONS

This report has been prepared by Sperling Hansen Associates (SHA) on behalf of the Regional District of Okanagan Similkameen (RDOS) in accordance with generally accepted engineering practices to a level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions in British Columbia, subject to the time limits and financial and physical constraints applicable to the services and following the Regulations and the MOE Guidelines.

The report, including all tables and figures and data compilation during the course of the project, is based on engineering analysis by SHA staff. Except where specifically stated to the contrary, the information on which this study is based has been obtained from external sources. This external information has not been independently verified or otherwise examined by SHA to determine its accuracy and completeness. Sperling Hansen Associates has relied in good faith on this information and does not accept responsibility for any deficiency, misstatements or inaccuracies contained in the reports as a result of omissions, misinterpretation and/or fraudulent

acts of the persons interviewed or contacted, or errors or omissions in the reviewed documentation.

The report is intended solely for the use of the RDOS. Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Sperling Hansen Associates does not accept any responsibility for other uses of the material contained herein nor for damages, if any, suffered by any third party because of decisions made or actions based on this report. Copying of this intellectual property for other purposes is not permitted.

The findings and conclusions of this report are valid only as of the date of this report. The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to SHA during the course of this project. Should additional new data become available in the future, Sperling Hansen Associates should be requested to re-evaluate the findings of this report and modify the conclusions and recommendations drawn, as required.

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9. REFERENCES

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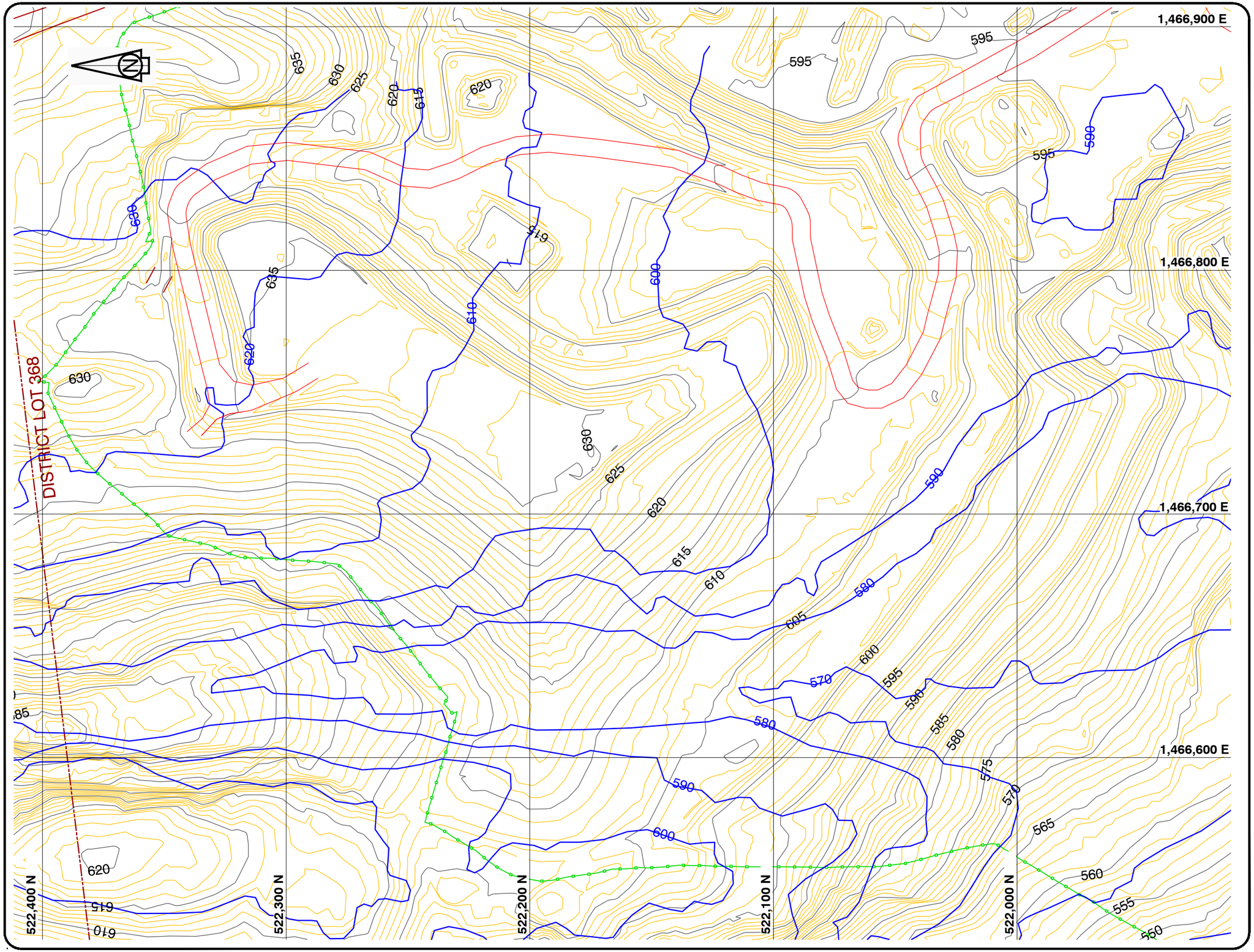

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Landfill Services Group
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- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 East Keith Road
North Vancouver, B.C. V7J 1J3

Phone: (604) 986-7723
Fax: (604) 986-7734

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- 10m 1964 CONTOUR
- ROAD
- FENCE
- PROPERTY LINE

CLIENT: REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
2014 AND 1964 CONTOURS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 2-2**
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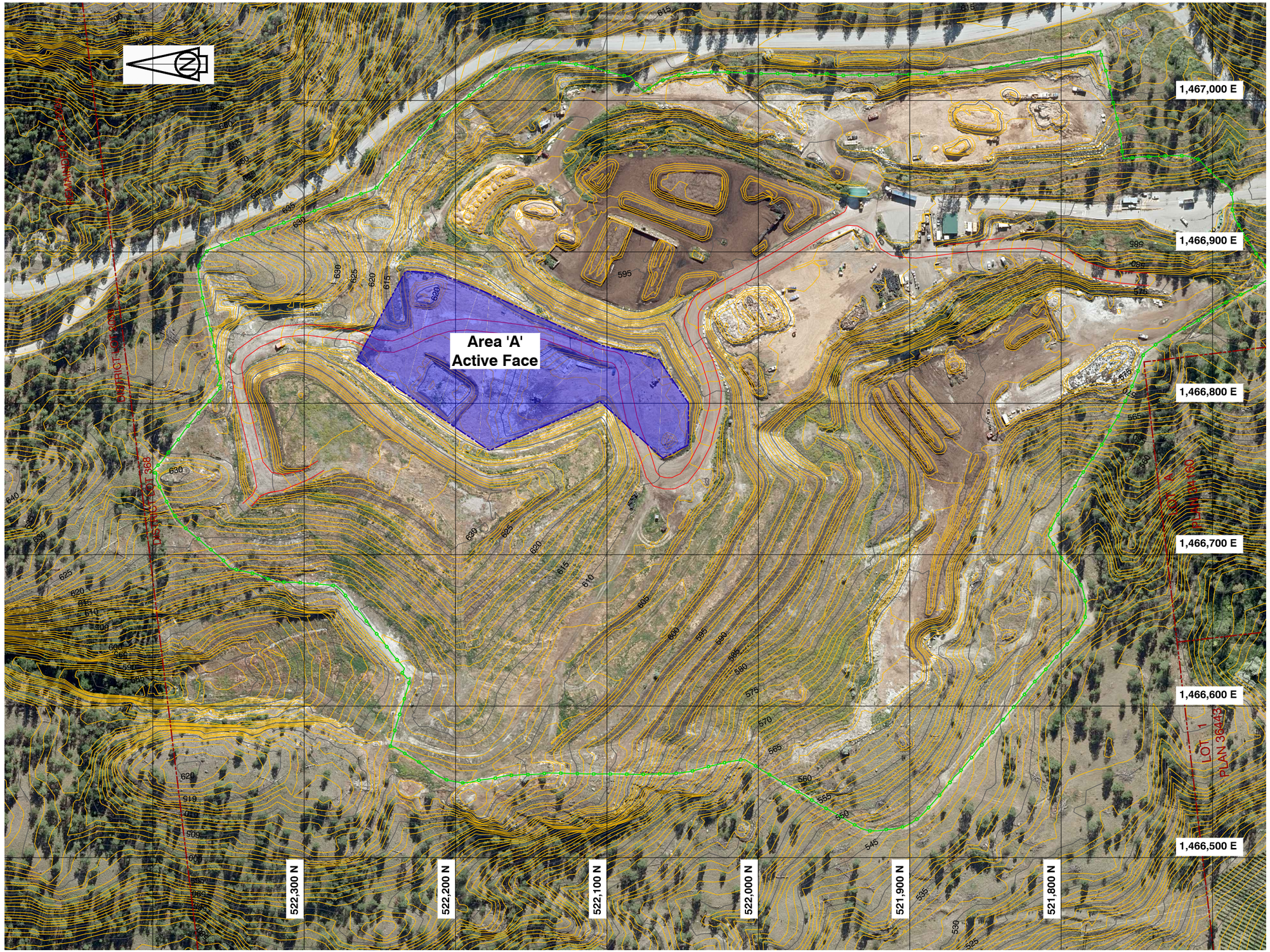

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LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- FENCE
- PROPERTY LINE
- ACTIVE FACE

CLIENT:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

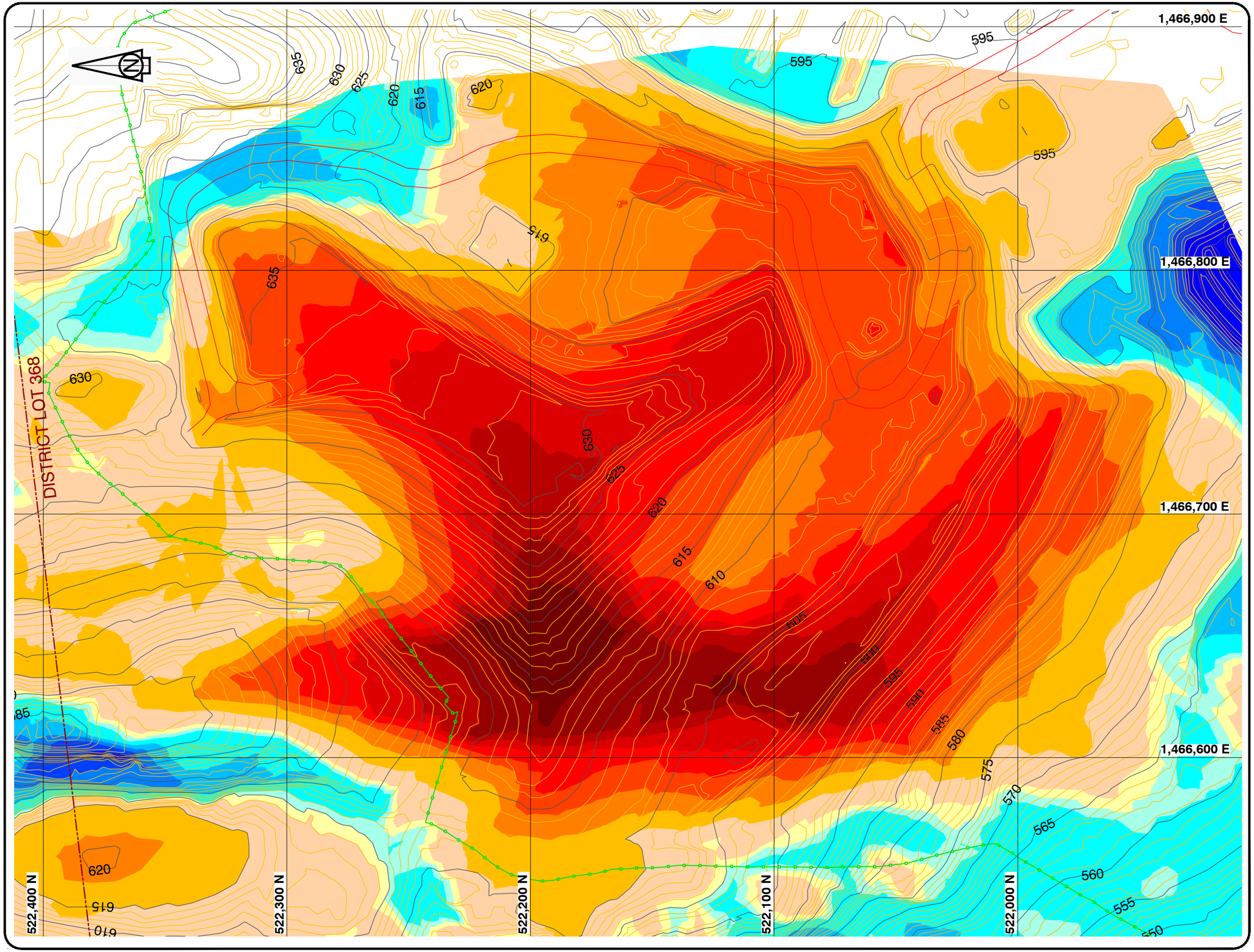
PROJECT:

CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:

EXISTING 2014 CONTOURS

SCALE:	DATE:	PROJECT NO:
1:2500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 2-3**
CHECKED	TS	



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LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- FENCE
- PROPERTY LINE

Elevations Table		
MIN. ELEVATION	MAX. ELEVATION	COLOUR
-21.0m	-17.0m	
-17.0m	-13.0m	
-13.0m	-9.0m	
-9.0m	-5.0m	
-5.0m	-1.0m	
-1.0m	0.0m	
0.0m	1.0m	
1.0m	5.0m	
5.0m	9.0m	
9.0m	13.0m	
13.0m	17.0m	
17.0m	21.0m	
21.0m	25.0m	
25.0m	29.0m	
29.0m	33.0m	
33.0m	40.0m	
NET VOLUME: ~1,621,000 m³		

CLIENT:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:

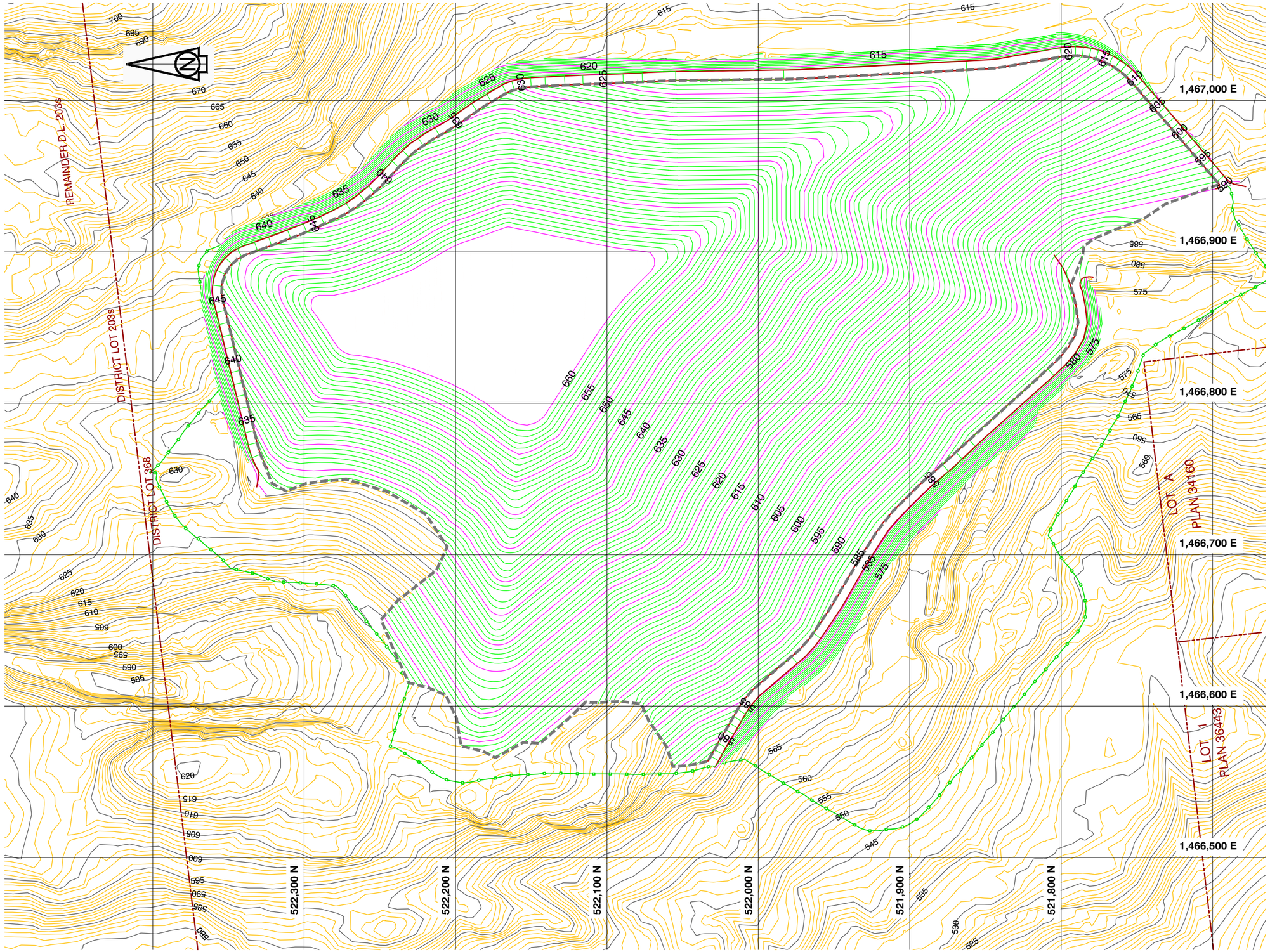
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:

CUT AND FILL EXISTING 2014 TO 1964 CONTOURS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019

DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 2-4**
CHECKED	TS	



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Fax: (604) 986-7734

LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- 5m NEW CONTOUR
- 1m NEW CONTOUR
- ROAD
- FENCE
- PROPERTY LINE

CLIENT:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

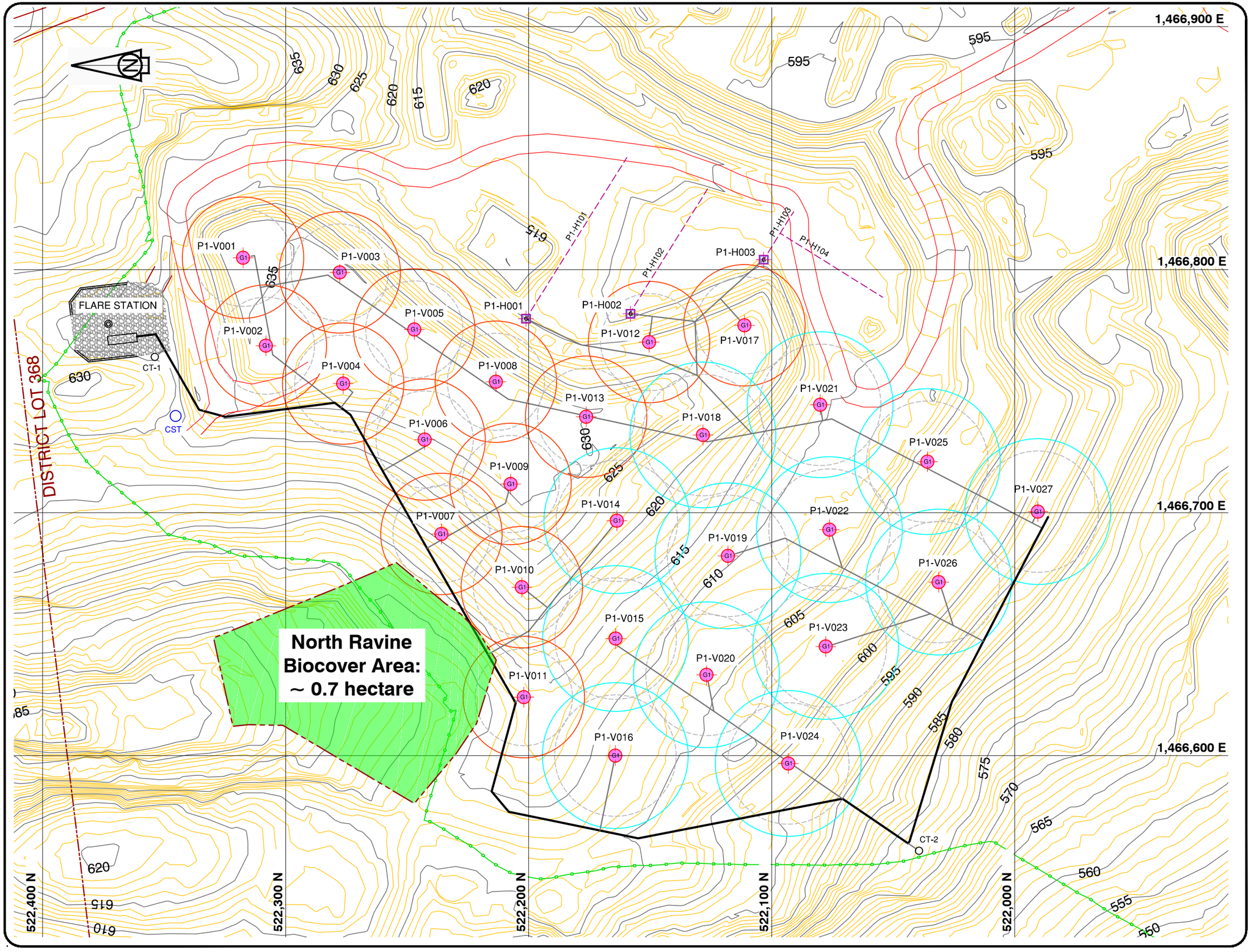
PROJECT:

CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:

GEOGRID BERM DESIGN
FINAL CONTOURS

SCALE:	DATE:	PROJECT NO:
1:2500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 2-5**
CHECKED	TS	



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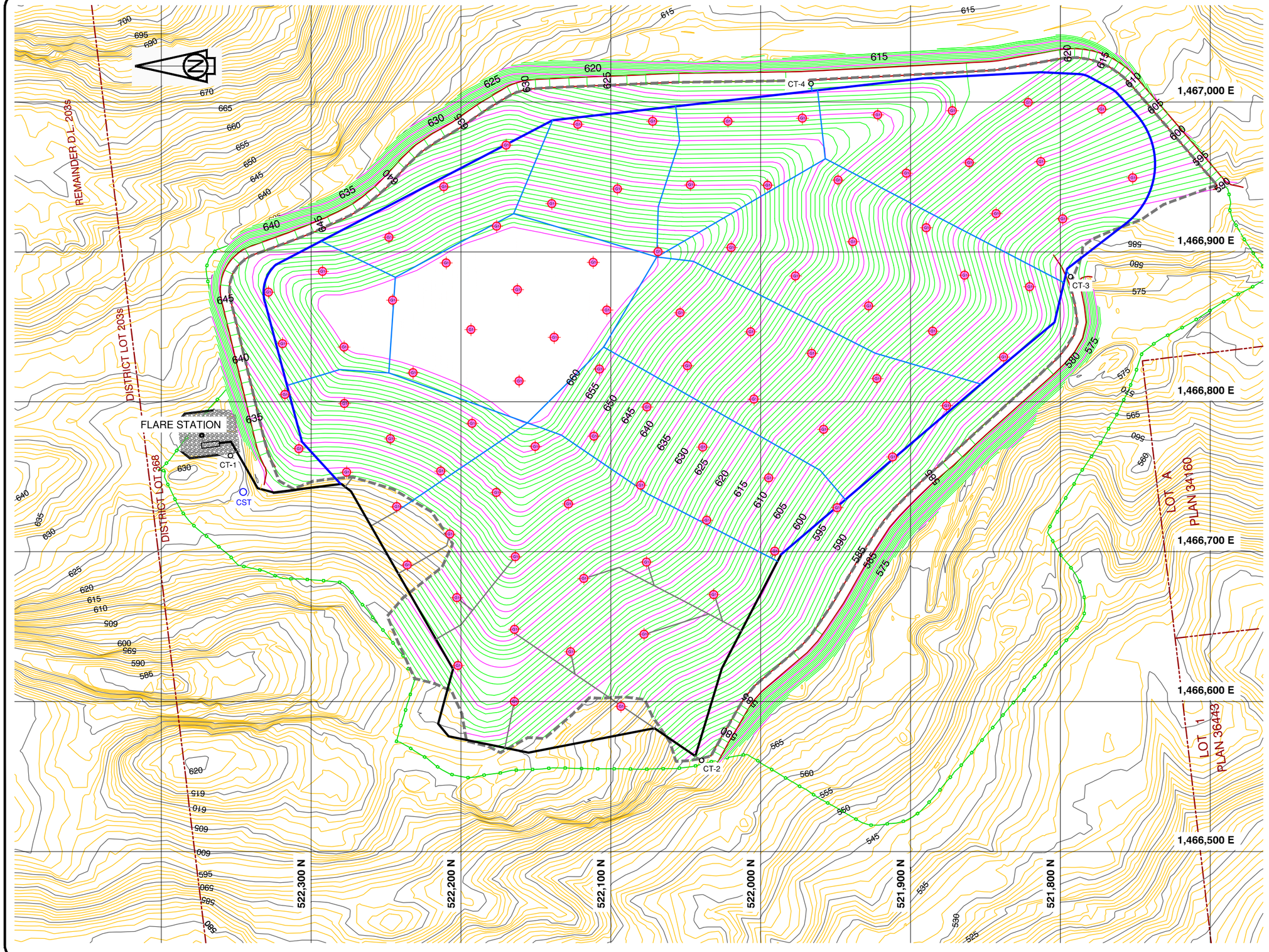
- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- FENCE
- PROPERTY LINE
- LFG MAIN HEADER PIPE PHASE 1
- LFG SUB-HEADER/ LATERAL PHASE1
- LFG HORIZONTAL COLLECTOR
- LFG VERTRICAL WELL WELLHEAD (P1-V001)
- LFG HORIZONTAL WELL WELLHEAD (P1-H001)
- CONDENSATE TRAP (CT-1)
- CONDENSATE STORAGE TANK (CST)
- BIOCOVER AREA (NORTH RAVINE)
- BLOWER AND FLARE STATION AREA

CLIENT:
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
LFG COLLECTION SYSTEM LAYOUT - PHASE 1

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 3-2**
CHECKED	TS	



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LEGEND:

- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- 5m NEW CONTOUR
- 1m NEW CONTOUR
- ROAD
- FENCE
- PROPERTY LINE
- LFG MAIN HEADER PIPE PHASE 1
- LFG SUB-HEADER/ LATERAL PHASE1
- LFG MAIN HEADER PIPE - FUTURE
- LFG SUB-HEADER PIPE - FUTURE
- G1 — LFG VERTRICAL WELL WELLHEAD
- CT-1 — CONDENSATE TRAP
- CST — CONDENSATE STORAGE TANK
- BLOWER AND FLARE STATION AREA

CLIENT:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

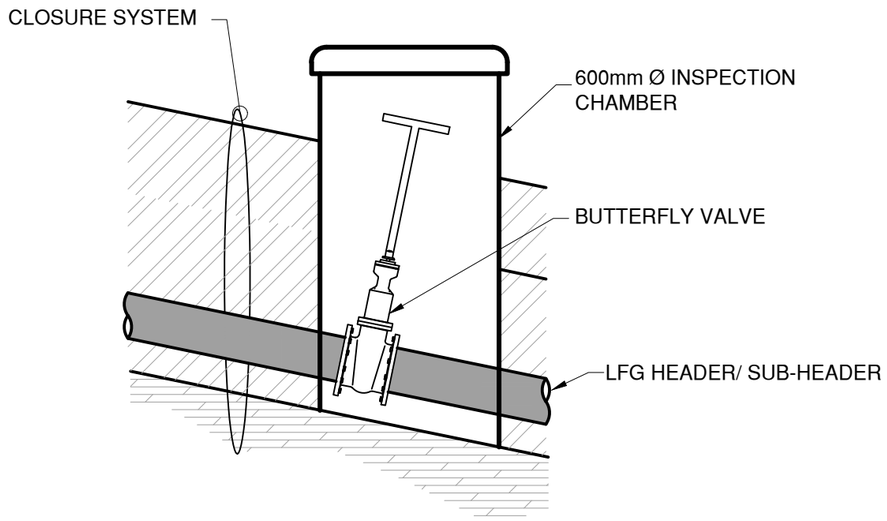
PROJECT:

CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:

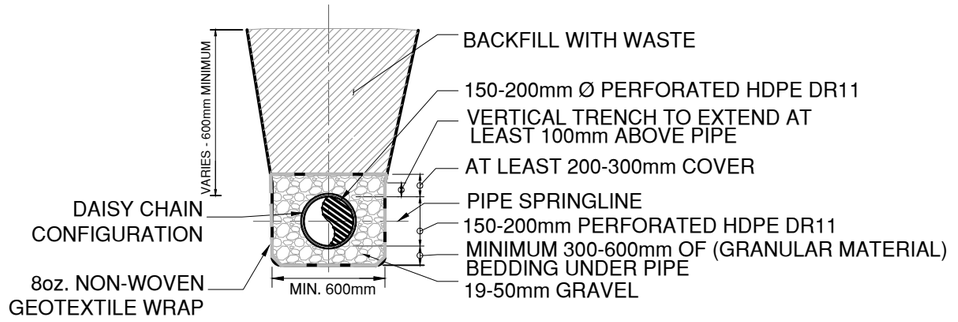
LFG COLLECTION SYSTEM LAYOUT - FINAL PHASE

SCALE:	DATE:	PROJECT NO:
1:2500	2015/01/09 (yyyy/mm/dd)	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 3-3**
CHECKED	TS	



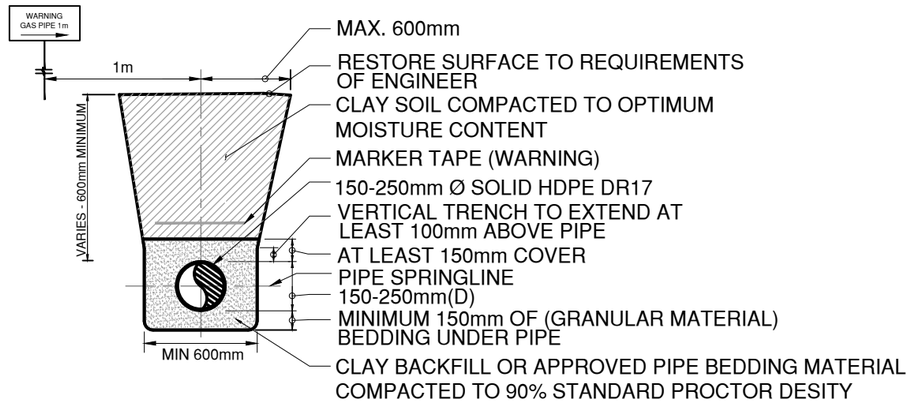
LFG VALVE CHAMBER

SCALE 1:20



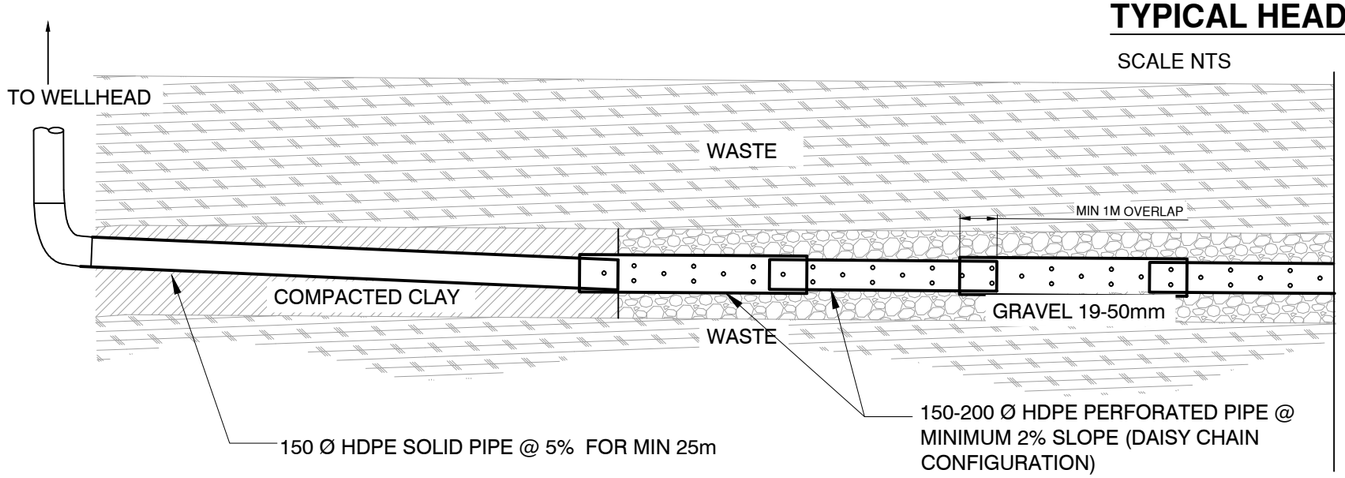
TYPICAL HORIZONTAL PIPE TRENCH DETAIL

SCALE NTS



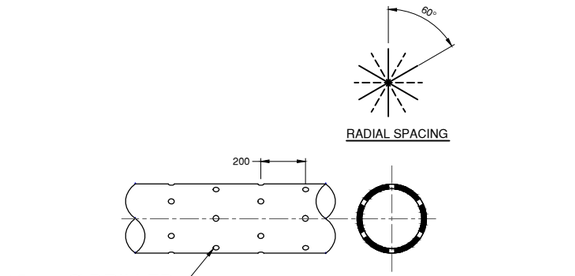
TYPICAL HEADER/SUBGRADE TRENCH DETAIL

SCALE NTS



HORIZONTAL CONNECTION TRENCH DETAIL

SCALE 1:40



NOTE:
NO FIELD CUTTING ALLOWED.
PIPE SHOULD BE PERFORATED BY MANUFACTURER OR CONTRACTOR BEFORE DELIVERED TO SITE.

PERFORATED HORIZONTAL PIPE DETAIL

SCALE 1:20

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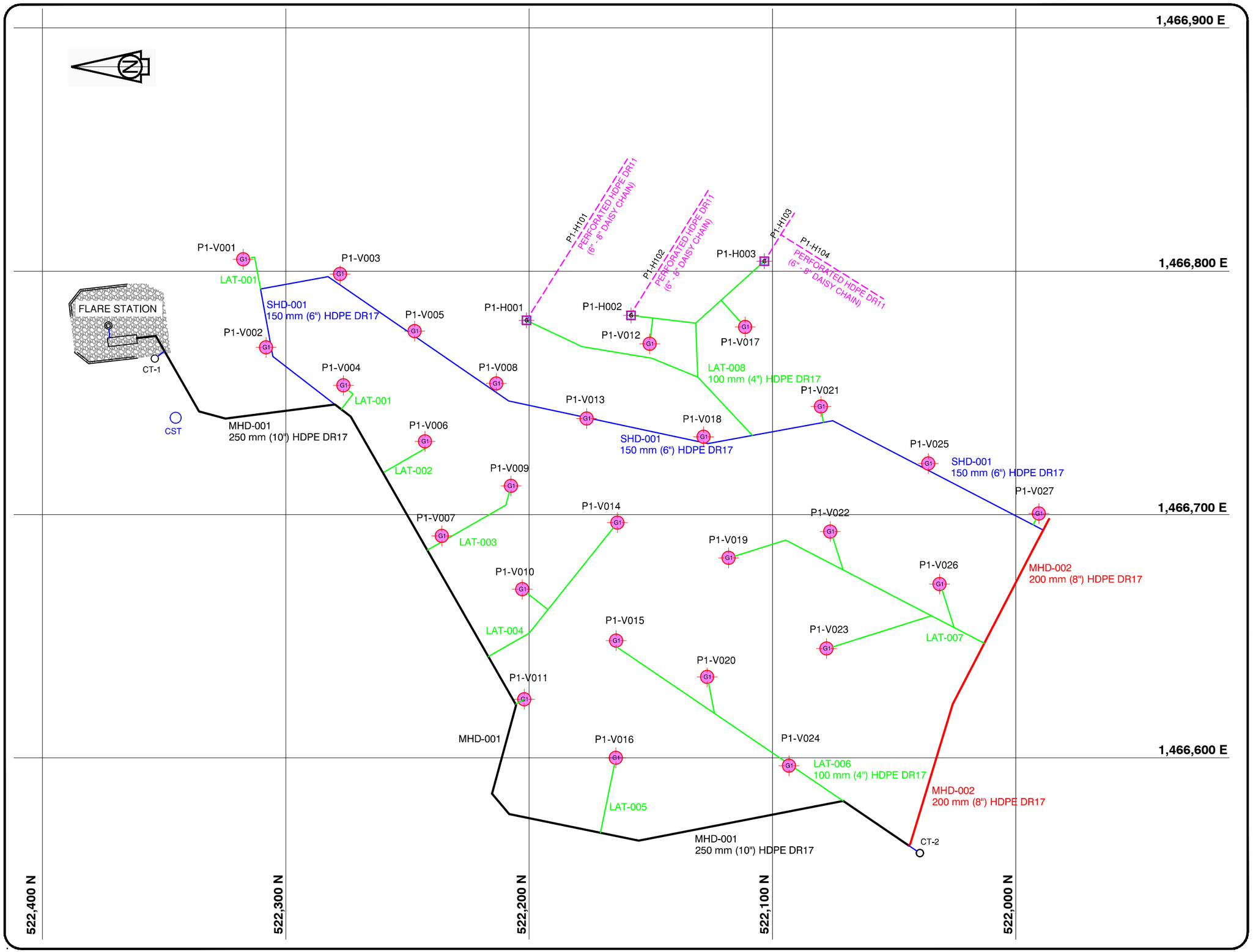
PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
HORIZONTAL COLLECTION TRENCH AND LFG HEADER PIPE DETAILS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	FIGURE 3-4
CHECKED	TS	



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Phone: (604) 986-7723
Fax: (604) 986-7734

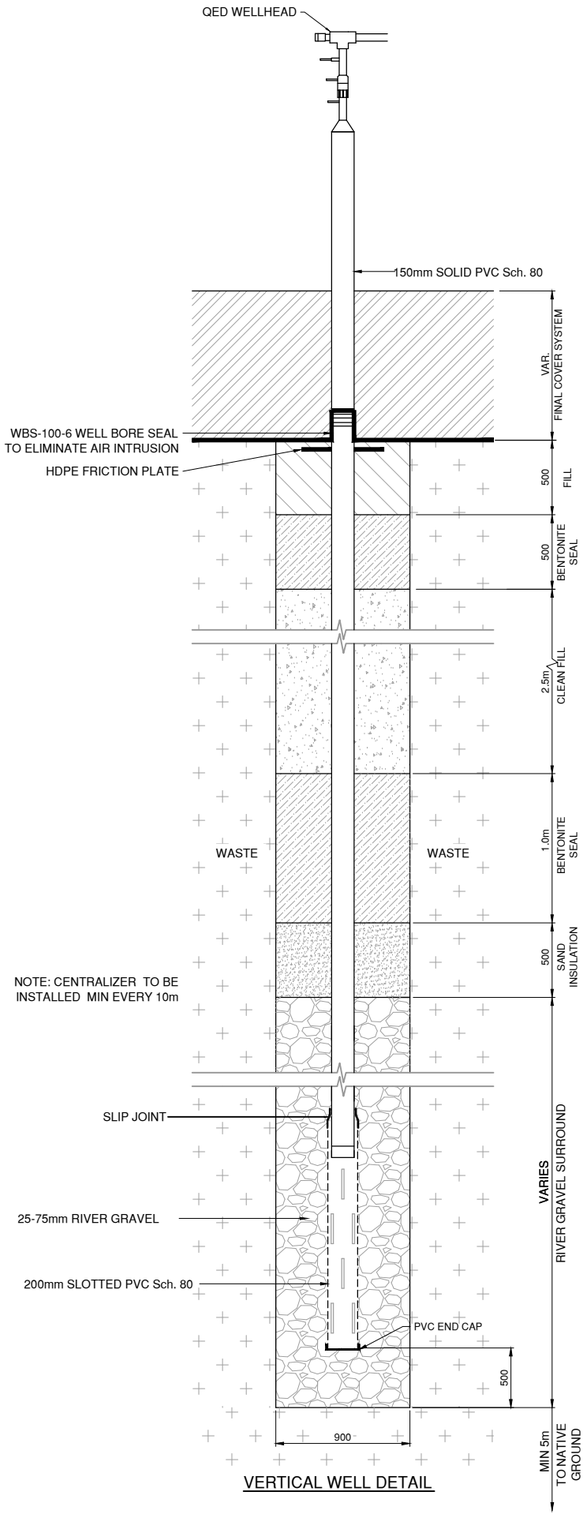
MAIN HEADER 250 mm HDPE DR 17
MAIN HEADER 200 mm HDPE DR 17
SUB-HEADER 150 mm HDPE DR 17
LATERAL PIPE 100 mm HDPE DR 17
H. COLLECTOR 150-200 mm DR 11
P1-V001 — LFG VERTRICAL WELL WELLHEAD
P1-H001 — LFG HORIZONTAL WELL WELLHEAD
CT-1 — CONDENSATE TRAP
CST — CONDENSATE STORAGE TANK
BLOWER AND FLARE STATION AREA

CLIENT:
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

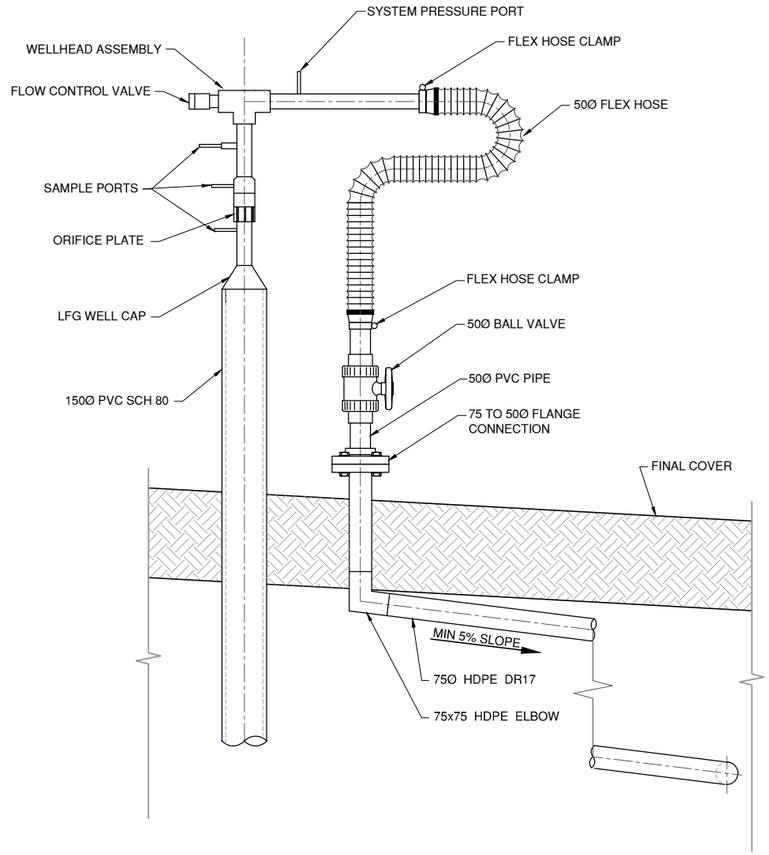
PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
LFG COLLECTION SYSTEM PIPING NETWORK PHASE 1

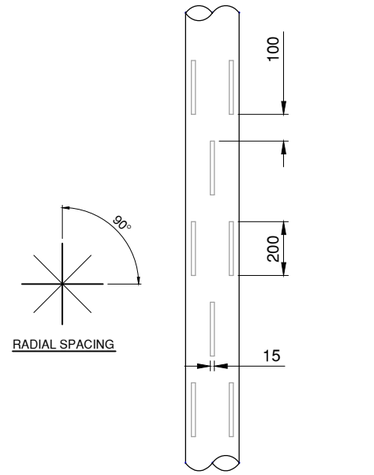
SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 (yyyy/mm/dd)	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 3-5**
CHECKED	TS	



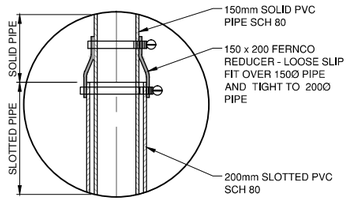
VERTICAL WELL DETAIL



WELLHEAD DETAIL(TYP.)
SCALE 1:25



SLOTTED PIPE DETAIL



SLIP JOINT
N.T.S

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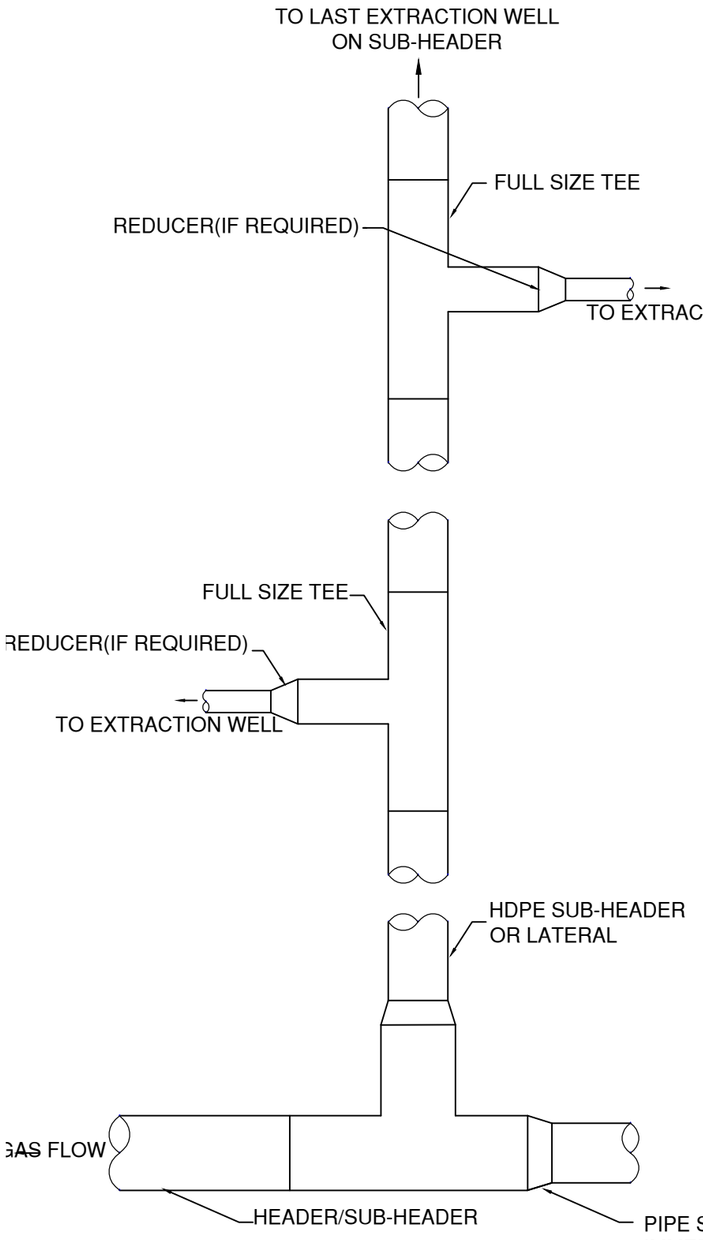
PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
VERTICAL EXTRACTION WELLS DETAILS

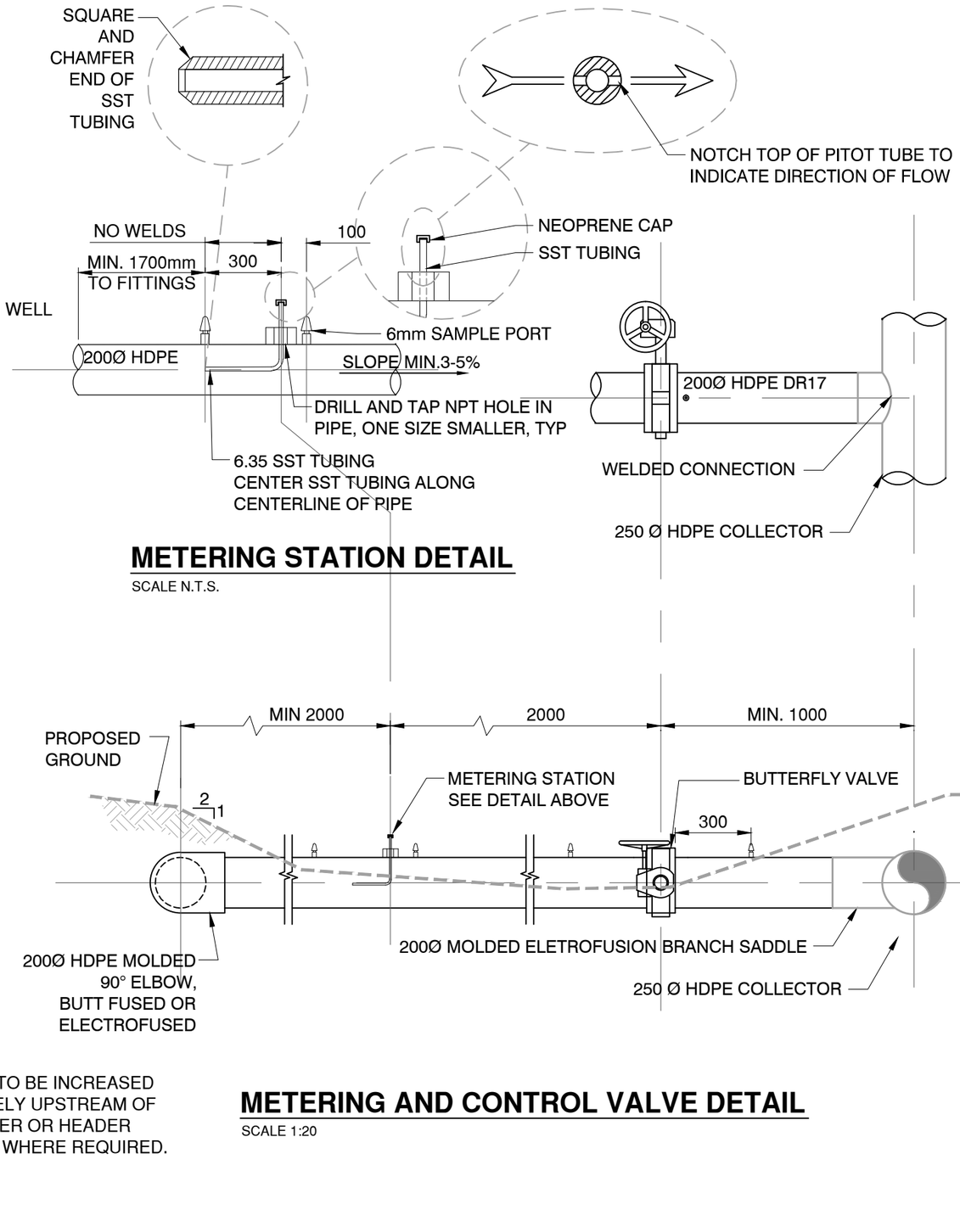
SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 3-6**
CHECKED	TS	



PIPE SIZE TO BE INCREASED IMMEDIATELY UPSTREAM OF SUB-HEADER OR HEADER JUNCTION WHERE REQUIRED.

TYPICAL PIPE NETWORK

SCALE 1:20



METERING STATION DETAIL

SCALE N.T.S.

METERING AND CONTROL VALVE DETAIL

SCALE 1:20

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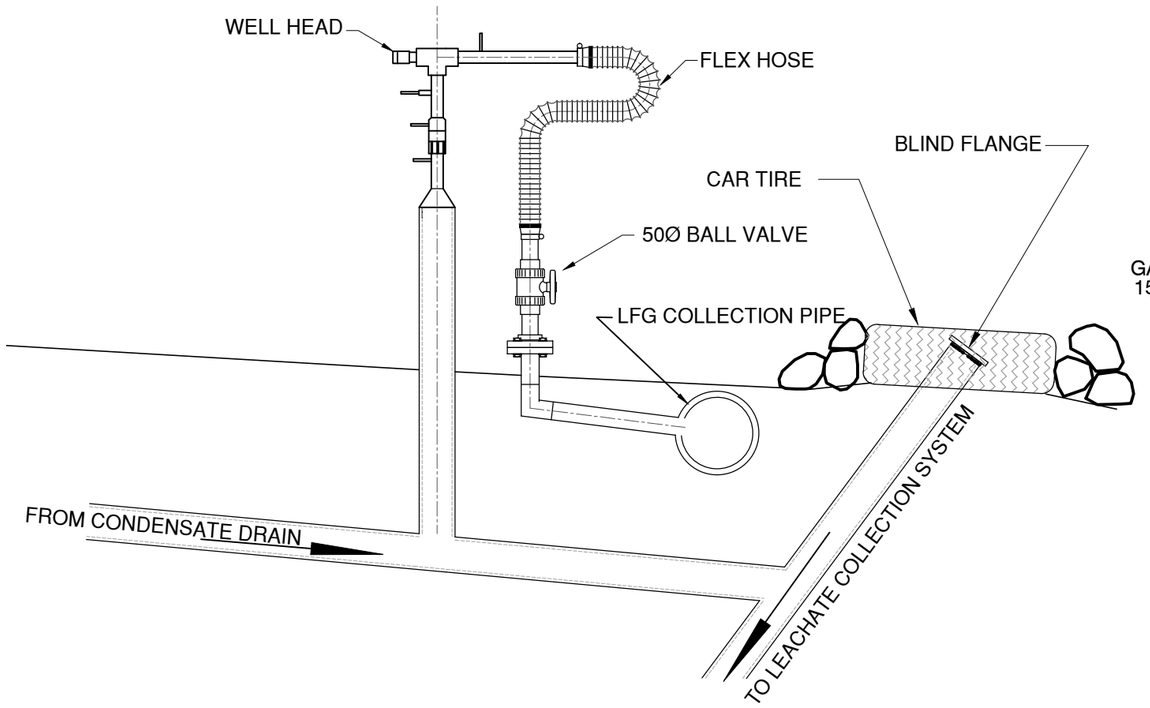
Fax: (604) 986-7734

CLIENT: REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT: CAMPBELL MOUNTAIN LANDFILL LANDFILL GAS MANAGEMENT FACILITIES DESIGN PLAN

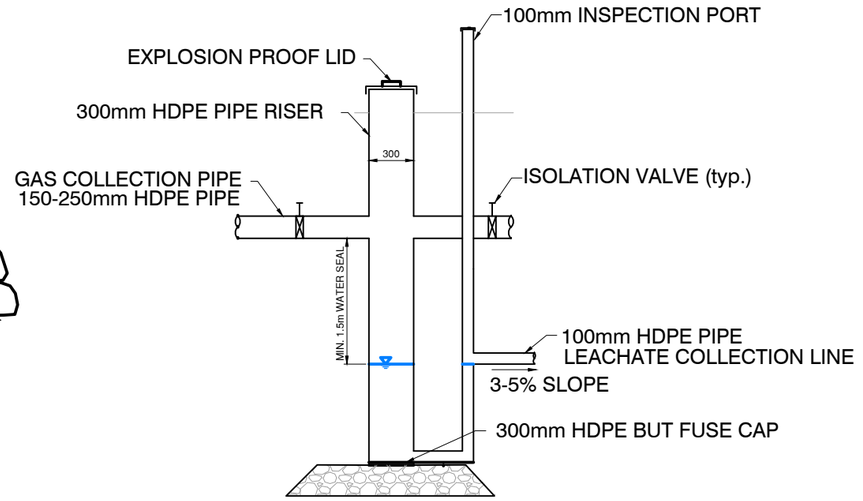
TITLE: TYPICAL PIPE & FLOW METERING STATION DETAILS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	FIGURE 3-7
CHECKED	TS	



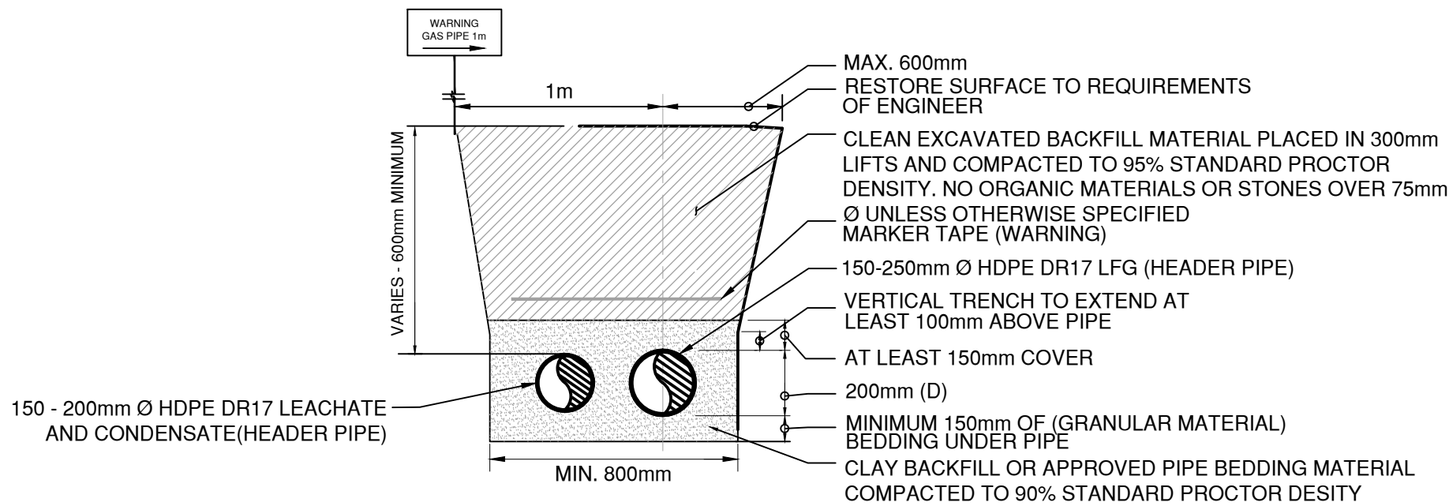
LFG CONDENSATE/LEACHATE CONNECTION

SCALE 1:25



LEACHATE CONDENSATE TRAP DETAIL

SCALE 1:40



TYPICAL LEACHATE AND LFG SOLID PIPE TRENCH DETAIL

SCALE NTS

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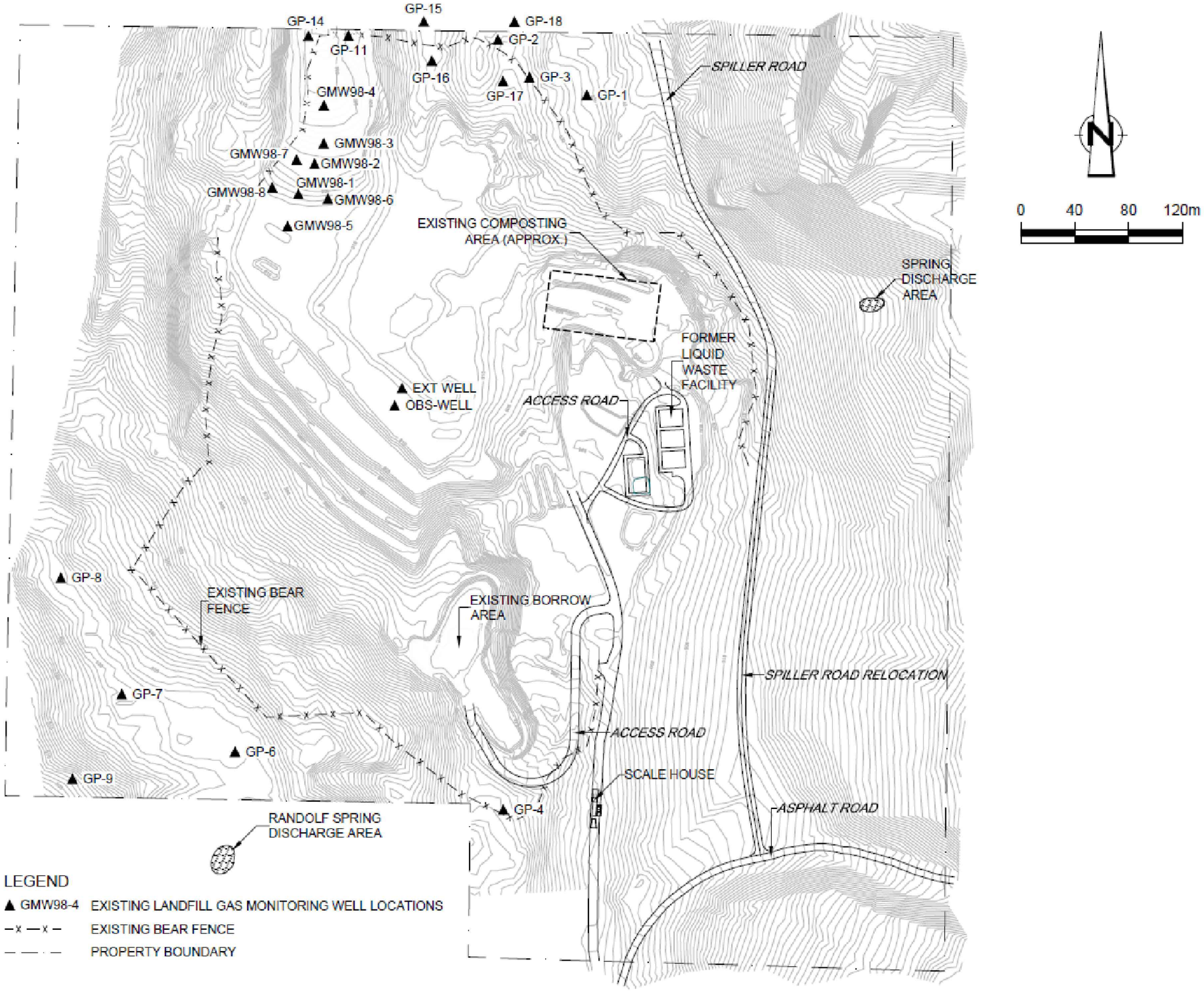
CLIENT:
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
LEACHATE & CONDENSATE COLLECTION SYSTEM CONNECTION DETAILS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 3-8**
CHECKED	TS	



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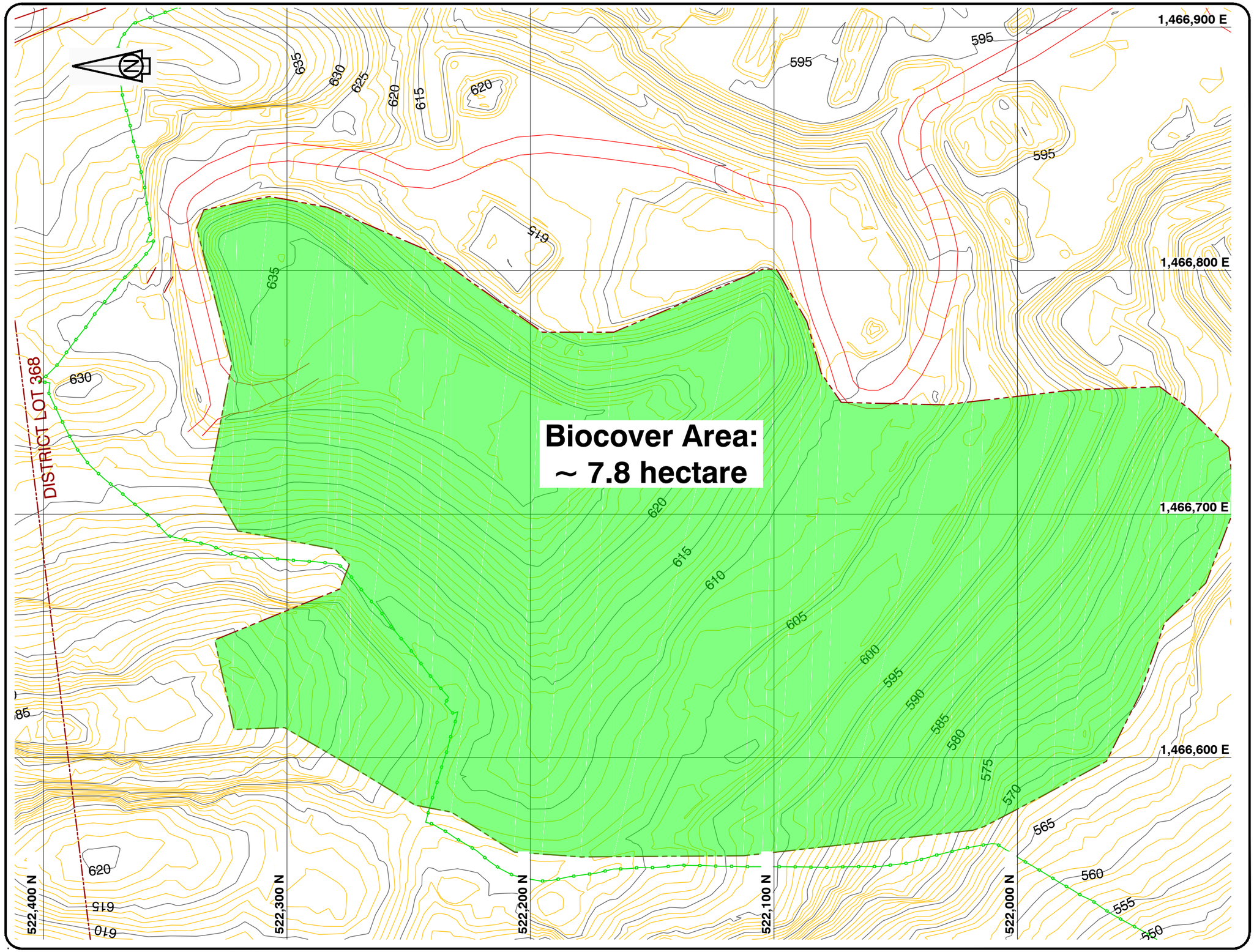
LEGEND:

CLIENT:
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT FACILITIES DESIGN PLAN

TITLE:
SOIL GAS MONITORING PROBE LOCATIONS (CRA, 2012)

SCALE:	DATE:	PROJECT NO:
1:2500	2015/02/19 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 4-1**
CHECKED	TS	



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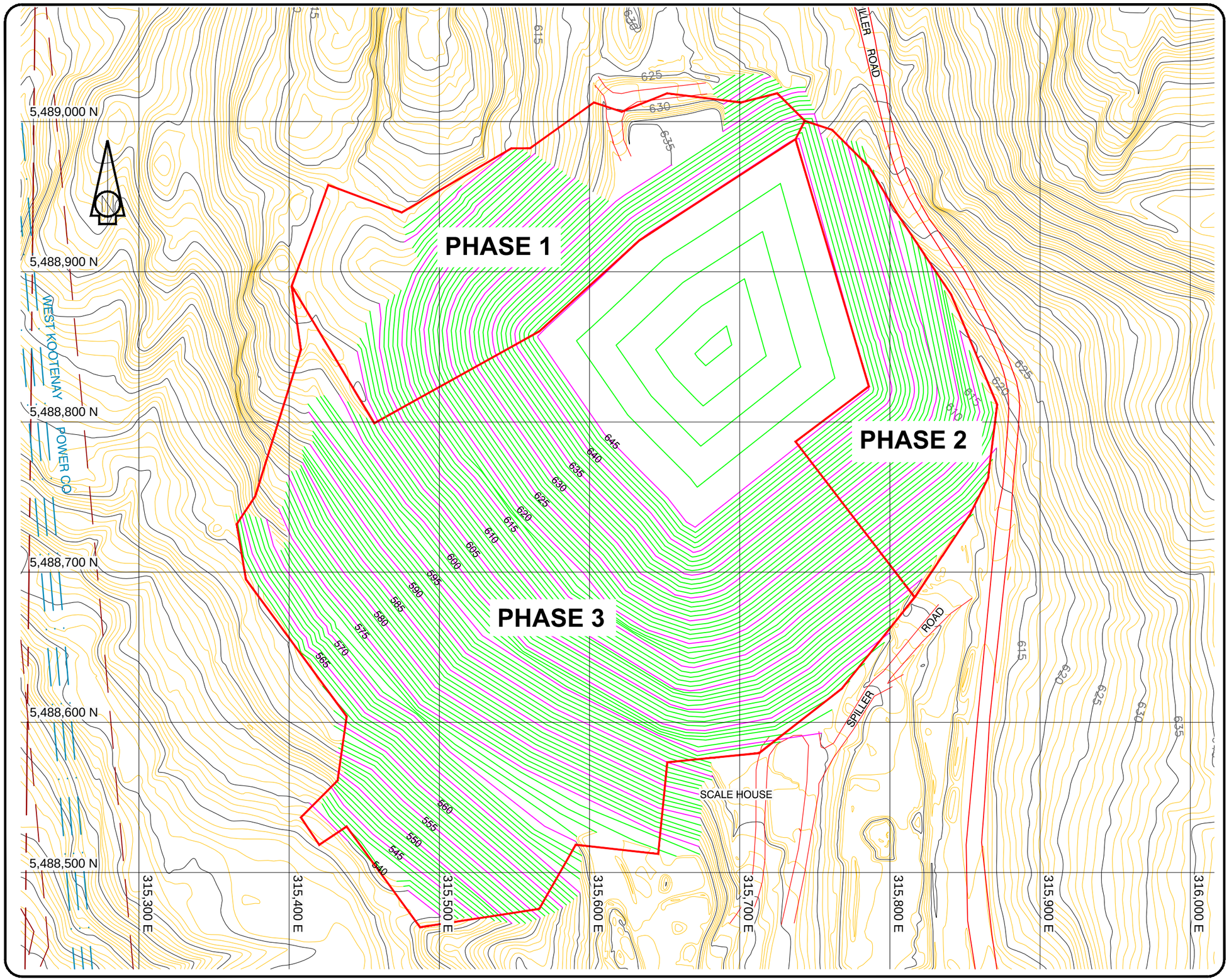
- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- FENCE
- PROPERTY LINE
- BIOCOVER AREA

CLIENT:
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
BIOCOVER PLACEMENT AREA

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 7-7**
CHECKED	TS	



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LEGEND:

- EXISTING 5m CONTOUR
- EXISTING 1m CONTOUR
- DESIGN 5m CONTOUR
- DESIGN 1m CONTOUR
- ROAD
- PROPERTY BOUNDARY
- RIGHT OF WAY

CLIENT:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

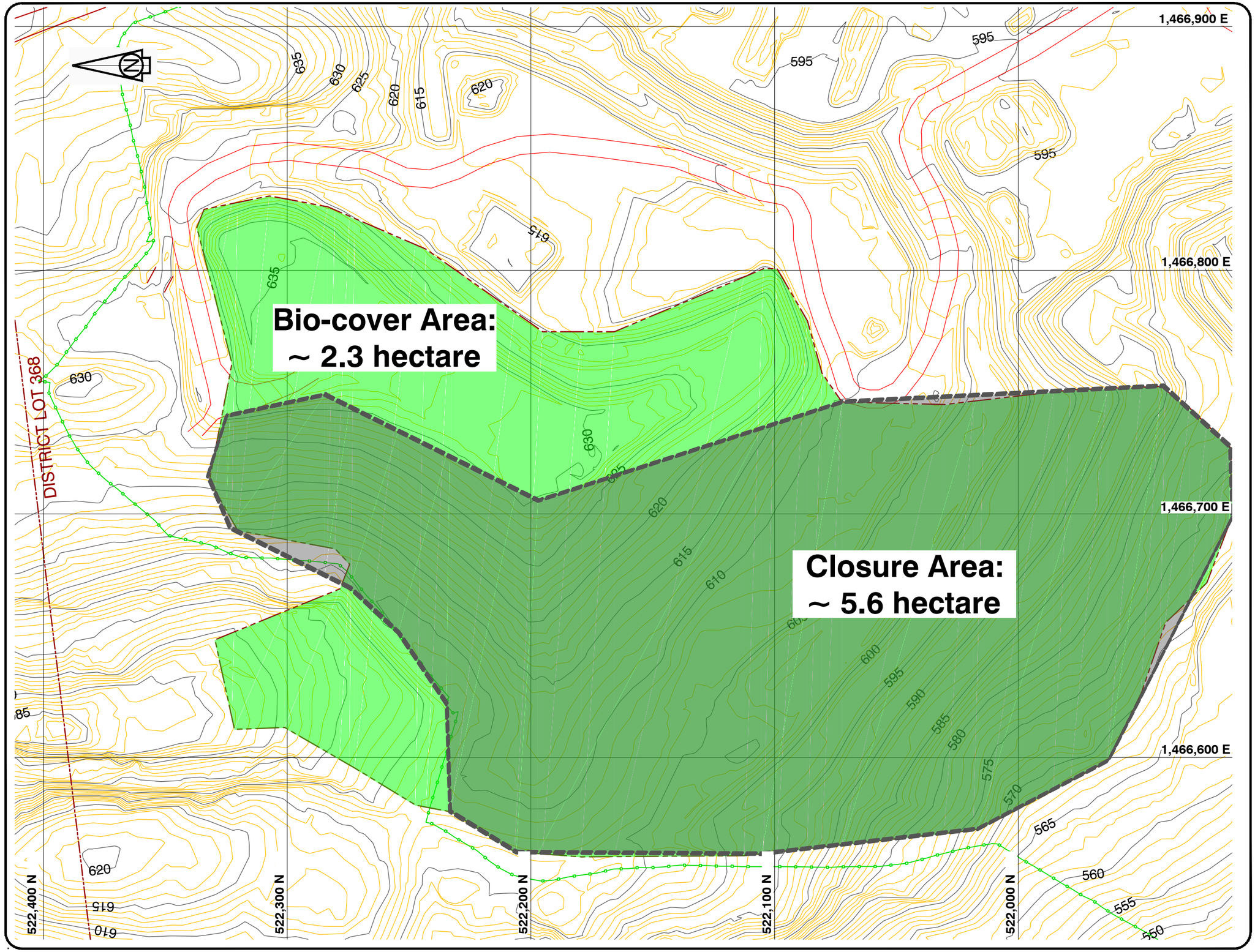
PROJECT:

CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT FACILITIES DESIGN PLAN

TITLE:

2002 GOLDER DESIGN CONTOURS AND PHASING

SCALE:	DATE:	PROJECT NO:
1:2500	2015/02/19 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 7-8**
CHECKED	TS	



SPERLING HANSEN ASSOCIATES

Landfill Services Group

- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 East Keith Road
North Vancouver, B.C. V7J 1J3

Phone: (604) 986-7723
Fax: (604) 986-7734

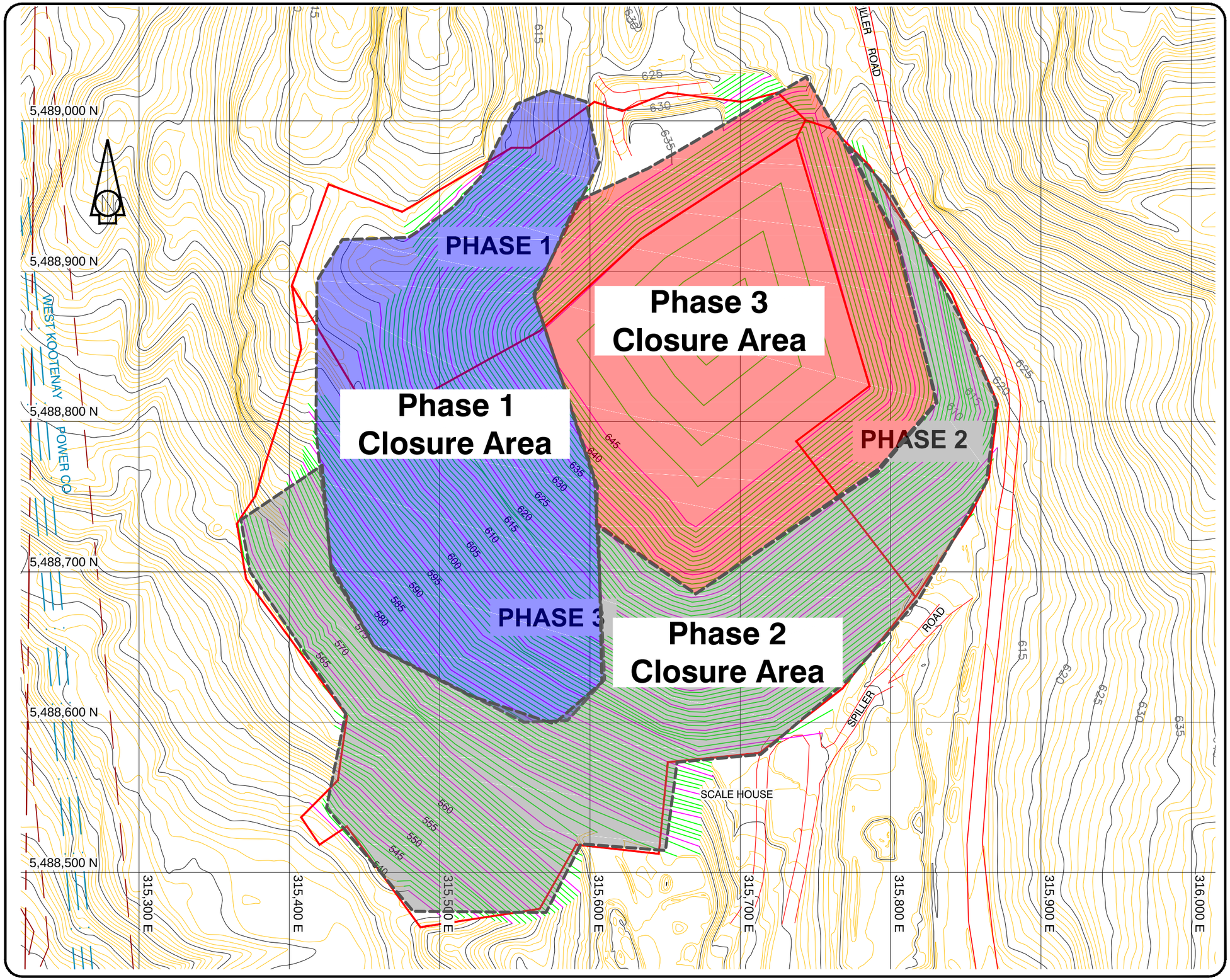
- 5m EXISTING CONTOUR
- 1m EXISTING CONTOUR
- ROAD
- FENCE
- PROPERTY LINE
- BIOCOVER AREA
- CLOSURE AREA

CLIENT: REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:
CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:
PHASE 1 CLOSURE AND BIOCOVER PLACEMENT AREAS

SCALE:	DATE:	PROJECT NO:
1:1500	2015/01/09 yyyy/mm/dd	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 7-9**
CHECKED	TS	



SPERLING HANSEN ASSOCIATES

Landfill Services Group

- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 East Keith Road
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Phone: (604) 986-7723
Fax: (604) 986-7734

LEGEND:

- EXISTING 5m CONTOUR
- EXISTING 1m CONTOUR
- DESIGN 5m CONTOUR
- DESIGN 1m CONTOUR
- ROAD
- PROPERTY BOUNDARY
- RIGHT OF WAY

CLIENT: REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

PROJECT:

CAMPBELL MOUNTAIN LANDFILL
LANDFILL GAS MANAGEMENT
FACILITIES DESIGN PLAN

TITLE:

CLOSURE AREAS BASED ON 2002 GOLDER DESIGN FINAL CONTOURS

SCALE:	DATE: (yyyy/mm/dd)	PROJECT NO:
1:2500	2015/02/19	PRJ12019
DESIGNED	AA	DRAWING NO:
DRAWN	AA	**FIGURE 7-10**
CHECKED	TS	

APPENDICES

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Appendix A

Lifespan Analysis and Waste Tonnage Projection (Geogrid Berm Design)

TABLE A - PROJECTED WASTE DISPOSAL TONNAGES FOR CAMPBELL MOUNTAIN LANDFILL
ASSUMING POPULATION GROWTH RATES OF 1.0% PER YEAR

Year		Projected Growth Rate	Service Population	Waste Generation per Capita (inc. Soil)	Residual Waste				Percent Diversion as of 2011	Landfilled Residual Waste	Volume after Settlement reduction of 10%	Cover volume req @ 4:1	Air Space Required	Cum. Req.'d Air Space Vol. Starting Jan-11
					Landfilled Waste	Recycled Waste	Soil Waste	Total Waste						
		(%)		tonnes/year	tonnes/year	tonnes/year	tonnes/year	tonnes/year	%	m^3/year	m^3	m^3	m^3	m^3
2011	1	1.0	46,130	0.97	24,906	12,053	07,663	44,622	27%	29,301	26,371	7,325	33,697	***33,697***
2012	2	1.0	46,591	0.97	25,155	12,174	07,739	45,068	27%	29,594	26,635	7,399	34,034	***67,730***
2013	3	1.0	47,057	0.97	25,407	12,295	07,817	45,519	27%	29,890	26,901	7,473	34,374	***102,104***
2014	4	1.0	47,528	0.97	25,661	12,418	07,895	45,974	27%	30,189	27,170	7,547	34,718	***136,822***
2015	5	1.0	48,003	0.97	25,917	12,542	07,974	46,434	27%	30,491	27,442	7,623	35,065	***171,887***
2016	6	1.0	48,483	0.97	26,177	12,668	08,054	46,898	27%	30,796	27,716	7,699	35,415	***207,302***
2017	7	1.0	48,968	0.97	26,438	12,795	08,134	47,367	27%	31,104	27,994	7,776	35,770	***243,072***
2018	8	1.0	49,458	0.97	26,703	12,922	08,215	47,841	27%	31,415	28,274	7,854	36,127	***279,199***
2019	9	1.0	49,952	0.97	26,970	13,052	08,298	48,319	27%	31,729	28,556	7,932	36,489	***315,688***
2020	10	1.0	50,452	0.97	27,240	13,182	08,381	48,802	27%	32,047	28,842	8,012	36,854	***352,541***
2021	11	1.0	50,956	0.97	27,512	13,314	08,464	49,290	27%	32,367	29,130	8,092	37,222	***389,763***
2022	12	1.0	51,466	0.97	27,787	13,447	08,549	49,783	27%	32,691	29,422	8,173	37,594	***427,358***
2023	13	1.0	51,980	0.97	28,065	13,582	08,635	50,281	27%	33,018	29,716	8,254	37,970	***465,328***
2024	14	1.0	52,500	0.97	28,346	13,717	08,721	50,784	27%	33,348	30,013	8,337	38,350	***503,678***
2025	15	1.0	53,025	0.97	28,629	13,855	08,808	51,292	27%	33,681	30,313	8,420	38,733	***542,411***
2026	16	1.0	53,555	0.97	28,915	13,993	08,896	51,805	27%	34,018	30,616	8,505	39,121	***581,532***
2027	17	1.0	54,091	0.97	29,204	14,133	08,985	52,323	27%	34,358	30,922	8,590	39,512	***621,044***
2028	18	1.0	54,632	0.97	29,497	14,274	09,075	52,846	27%	34,702	31,232	8,675	39,907	***660,951***
2029	19	1.0	55,178	0.97	29,791	14,417	09,166	53,374	27%	35,049	31,544	8,762	40,306	***701,257***
2030	20	1.0	55,730	0.97	30,089	14,561	09,257	53,908	27%	35,399	31,859	8,850	40,709	***741,966***
2031	21	1.0	56,287	0.97	30,390	14,707	09,350	54,447	27%	35,753	32,178	8,938	41,116	***783,082***
2032	22	1.0	56,850	0.97	30,694	14,854	09,443	54,992	27%	36,111	32,500	9,028	41,527	***824,610***
2033	23	1.0	57,419	0.97	31,001	15,003	09,538	55,542	27%	36,472	32,825	9,118	41,943	***866,553***
2034	24	1.0	57,993	0.97	31,311	15,153	09,633	56,097	27%	36,837	33,153	9,209	42,362	***908,915***
2035	25	1.0	58,573	0.97	31,624	15,304	09,730	56,658	27%	37,205	33,485	9,301	42,786	***951,700***
2036	26	1.0	59,159	0.97	31,941	15,457	09,827	57,225	27%	37,577	33,819	9,394	43,214	***994,914***
2037	27	1.0	59,750	0.97	32,260	15,612	09,925	57,797	27%	37,953	34,158	9,488	43,646	***1,038,560***
2038	28	1.0	60,348	0.97	32,583	15,768	10,024	58,375	27%	38,332	34,499	9,583	44,082	***1,082,642***
2039	29	1.0	60,951	0.97	32,908	15,926	10,125	58,959	27%	38,716	34,844	9,679	44,523	***1,127,165***
2040	30	1.0	61,561	0.97	33,237	16,085	10,226	59,548	27%	39,103	35,193	9,776	44,968	***1,172,133***
2041	31	1.0	62,176	0.97	33,570	16,246	10,328	60,144	27%	39,494	35,544	9,873	45,418	***1,217,551***
2042	32	1.0	62,798	0.97	33,905	16,408	10,431	60,745	27%	39,889	35,900	9,972	45,872	***1,263,423***
2043	33	1.0	63,426	0.97	34,245	16,572	10,536	61,352	27%	40,288	36,259	10,072	46,331	***1,309,754***
2044	34	1.0	64,060	0.97	34,587	16,738	10,641	61,966	27%	40,691	36,622	10,173	46,794	***1,356,549***
2045	35	1.0	64,701	0.97	34,933	16,905	10,748	62,586	27%	41,097	36,988	10,274	47,262	***1,403,811***
2046	36	1.0	65,348	0.97	35,282	17,074	10,855	63,212	27%	41,508	37,358	10,377	47,735	***1,451,545***
2047	37	1.0	66,001	0.97	35,635	17,245	10,964	63,844	27%	41,924	37,731	10,481	48,212	***1,499,757***
2048	38	1.0	66,661	0.97	35,991	17,418	11,073	64,482	27%	42,343	38,109	10,586	48,694	***1,548,452***
2049	39	1.0	67,328	0.97	36,351	17,592	11,184	65,127	27%	42,766	38,490	10,692	49,181	***1,597,633***
2050	40	1.0	68,001	0.97	36,715	17,768	11,296	65,778	27%	43,194	38,874	10,798	49,673	***1,647,306***
2051	41	1.0	68,681	0.97	37,082	17,945	11,409	66,436	27%	43,626	39,263	10,906	50,170	***1,697,475***
2052	42	1.0	69,368	0.97	37,453	18,125	11,523	67,100	27%	44,062	39,656	11,016	50,671	***1,748,147***
2053	43	1.0	70,062	0.97	37,827	18,306	11,638	67,771	27%	44,503	40,052	11,126	51,178	***1,799,325***
2054	44	1.0	70,762	0.97	38,206	18,489	11,754	68,449	27%	44,948	40,453	11,237	51,690	***1,851,015***
2055	45	1.0	71,470	0.97	38,588	18,674	11,872	69,133	27%	45,397	40,857	11,349	52,207	***1,903,222***
2056	46	1.0	72,185	0.97	38,973	18,861	11,991	69,825	27%	45,851	41,266	11,463	52,729	***1,955,950***
2057	47	1.0	72,907	0.97	39,363	19,049	12,111	70,523	27%	46,310	41,679	11,577	53,256	***2,009,206***
2058	48	1.0	73,636	0.97	39,757	19,240	12,232	71,228	27%	46,773	42,095	11,693	53,789	***2,062,995***
2059	49	1.0	74,372	0.97	40,154	19,432	12,354	71,941	27%	47,241	42,516	11,810	54,327	***2,117,322***
2060	50	1.0	75,116	0.97	40,556	19,626	12,478	72,660	27%	47,713	42,942	11,928	54,870	***2,172,192***
2061	51	1.0	75,867	0.97	40,962	19,823	12,602	73,387	27%	48,190	43,371	12,048	55,419	***2,227,610***
2062	52	1.0	76,626	0.97	41,371	20,021	12,728	74,120	27%	48,672	43,805	12,168	55,973	***2,283,583***
2063	53	1.0	77,392	0.97	41,785	20,221	12,856	74,862	27%	49,159	44,243	12,290	56,532	***2,340,115***
2064	54	1.0	78,166	0.97	42,203	20,423	12,984	75,610	27%	49,650	44,685	12,413	57,098	***2,397,213***
2065	55	1.0	78,947	0.97	42,625	20,628	13,114	76,366	27%	50,147	45,132	12,537	57,669	***2,454,882***
2066	56	1.0	79,737	0.97	43,051	20,834	13,245	77,130	27%	50,648	45,583	12,662	58,245	***2,513,127***
2067	57	1.0	80,534	0.97	43,481	21,042	13,378	77,901	27%	51,155	46,039	12,789	58,828	***2,571,955***
2068	58	1.0	81,340	0.97	43,916	21,253	13,511	78,680	27%	51,666	46,500	12,917	59,416	***2,631,371***
2069	59	1.0	82,153	0.97	44,355	21,465	13,647	79,467	27%	52,183	46,965	13,046	60,010	***2,691,382***
2070	60	1.0	82,974	0.97	44,799	21,680	13,783	80,262	27%	52,705	47,434	13,176	60,610	***2,751,992***
2071	61	1.0	83,804	0.97	45,247	21,897	13,921	81,064	27%	53,232	47,909	13,308	61,217	***2,813,209***
2072	62	1.0	84,642	0.97	45,699	22,116	14,060	81,875	27%	53,764	48,388	13,441	61,829	***2,875,037***
2073	63	1.0	85,489	0.97	46,156	22,337	14,201	82,694	27%	54,302	48,872	13,575	62,447	***2,937,484***
2074	64	1.0	86,344	0.97	46,618	22,560	14,343	83,521	27%	54,845	49,360	13,711	63,071	***3,000,556***
2075	65	1.0	87,207	0.97	47,084	22,786	14,486	84,356	27%	55,393	49,854	13,848	63,702	***3,064,258***
2076	66	1.0	88,079	0.97	47,555	23,014	14,631	85,200	27%	55,947	50,352	13,987	64,339	***3,128,597***
2077	67	1.0	88,960	0.97	48,031	23,244	14,777	86,052	27%	56,507	50,856	14,127	64,983	***3,193,580***
2078	68	1.0	89,849	0.97	48,511	23,476	14,925	86,912	27%	57,072	51,365	14,268	65,632	***3,259,212***
2079	69	1.0	90,748	0.97	48,996	23,711	15,074	87,781	27%	57,642	51,878	14,411	66,289	***3,325,501***
2080	70	1.0	91,655	0.97	49,486	23,948	15,225	88,659	27%	58,219	52,397	14,555	66,952	***3,392,453***
2081	71	1.0	92,572	0.97	49,981	24,188	15,377	89,546	27%	58,801	52,921	14,700	67,621	***3,460,074***
2082	72	1.0	93,498	0.97	50,481	24,429	15,531	90,441	27%	59,389	53,450	14,847	68,297	***3,528,371***
2083	73	1.0	94,433	0.97	50,985	24,674	15,686	91,345	27%	59,983	53,985	14,996	68,980	***3,597,351***
2084	74	1.0	95,377	0.97	51,495	24,920	15,843	92,259	27%	60,583	54,524	15,146	69,670	***3,667,022***
2085	75	1.0	96,331	0.97	52,010	25,170	16,002	93,182	27%	61,189	55,070	15,297	70,367	***3,737,388***
2086	76	1.0	97,294	0.97	52,530	25,421	16,162	94,113	27%	61,800	55,620	15,450	71,071	***3,808,459***
2087	77	1.0	98,267	0.97	53,056	25,676	16,323	95,054	27%	62,418	56,177	15,605	71,781	***3,880,240***
2088	78	1.0	99,250	0.97	53,586	25,932	16,486	96,005	27%	63,043	56,738	15,761	72,499	***3,952,739***
2089	79	1.0	100,242	0.97	54,122	26,192	16,651	96,965	27%	63,673	57,306	15,918	73,224	***4,025,963***
2090	80	1.0	101,245	0.97	54,663	26,454	16,818	97,935	27%	64,310	57,879	16,077	73,956	***4,099,919***
2091	81	1.0	102,257	0.97	55,210	26,718	16,986	98,914	27%	64,953	58,458	16,238	74,696	***4,174,615***

Assumptions:

Soild Portion of the incoming waste which are used as cover material are excluded from Landfilled Waste Volume

Population Growth Rate =	1.00	%
Bulk Density (BC Typical) =	0.85	tonnes/m^3
Waste to Cover Ratio =	4	vol/vol
Settlement =	10	%
Waste Generation per Capita =	0.97	tonnes/year
Waste Diversion =	27.00	% (Excluding Soils used as cover soil)

SPERLING HANSEN ASSOCIATES

Appendix B

Historical Waste Composition Data

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	1989									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.87%	3.78%	17.89%	16.02%	5.80%	0.32%	37.31%	100.00%
Asbestos	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	8.4	0.02%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	119.0	0.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	24,008.6	60.54%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,850.0	9.71%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,000.0	22.70%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,668.4	6.73%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	39,654.4	100%								
Total Filled (Waste and Soil)	39,654.4	100%								

NOTES: 1990 TO 1996 (RESIDENTIAL, COMMERICAL & MISC) WHERE COMBINED UNDER MUNICIPAL. For These years, looking at 97-2000 data, we assumed about 8000-9500 tonnes Municipal, 2000-2500 Miscellaneous and the rest were added to industrial Wastes

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1990							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	19.02%	3.84%	17.96%	15.56%	5.82%	0.33%	37.47%	100.00%
Asbestos	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	9.9	0.03%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	133.8	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	22,732.2	59.99%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,663.3	9.67%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,000.0	23.75%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,354.8	6.21%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	37,894.0	100%								
Total Filled (Waste and Soil)	37,894.0	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1991							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.70%	3.72%	17.70%	16.17%	5.74%	0.32%	37.65%	100.00%
Asbestos	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	32.9	0.09%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	381.5	1.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	22,871.7	60.32%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,980.4	7.86%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,000.0	23.73%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,649.6	6.99%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	2.9	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	37,919.0	100%								
Total Filled (Waste and Soil)	37,919.0	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1992							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.82%	3.56%	17.86%	15.80%	5.82%	0.28%	37.87%	100.00%
Asbestos	74.4	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	135.6	0.34%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	208.8	0.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	25,465.4	64.48%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,000.0	5.06%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,000.0	22.79%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,606.6	6.60%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	39,490.8	100%								
Total Filled (Waste and Soil)	39,490.8	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	1993									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	19.28%	3.58%	17.83%	15.24%	5.81%	0.28%	37.99%	100.00%
Asbestos	114.0	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	319.0	0.79%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	256.7	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	25,969.4	63.94%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,500.0	6.16%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,000.0	22.16%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,453.1	6.04%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	40,612.2	100%								
Total Filled (Waste and Soil)	40,612.2	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1994							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	22.15%	3.54%	17.35%	14.23%	5.64%	0.29%	36.79%	100.00%
Asbestos	8.3	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	1,704.6	4.06%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	-	0.00%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	312.4	0.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	25,648.0	61.10%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,500.0	5.96%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	9,592.4	22.85%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	2,210.1	5.27%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	41,975.8	100%								
Total Filled (Waste and Soil)	41,975.8	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	1995									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	19.94%	3.43%	16.15%	17.93%	5.24%	0.30%	37.03%	100.00%
Asbestos	11.9	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	109.2	0.29%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,244.1	8.70%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	291.0	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	20,287.4	54.41%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,500.0	6.70%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	8,500.0	22.80%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	1,286.0	3.45%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	975.4	2.62%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	81.0	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	37,285.8	100%								
Total Filled (Waste and Soil)	37,285.8	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1996							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	19.51%	3.43%	16.03%	14.18%	5.20%	0.30%	41.34%	100.00%
Asbestos	23.5	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	49.3	0.14%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)		0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	1,934.2	5.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste		0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	1,930.3	5.50%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	228.2	0.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse		0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping		0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	18,757.6	53.46%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds		0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin		0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,500.0	7.12%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	8,000.0	22.80%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	698.0	1.99%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)		0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	847.2	2.41%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	119.6	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	35,087.8	100%								
Total Filled (Waste and Soil)	35,087.8	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	1997									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.65%	3.69%	17.02%	15.72%	5.51%	0.33%	37.08%	100.00%
Asbestos	5.8	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	160.3	0.45%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	2.0	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	220.6	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	842.1	2.35%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	136.7	0.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	20,057.3	55.96%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	4,126.1	11.51%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	7,584.1	21.16%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	1,863.9	5.20%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	763.7	2.13%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	82.3	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	35,845.0	100%								
Total Filled (Waste and Soil)	35,845.0	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			1998							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.81%	3.53%	17.37%	14.19%	5.65%	0.28%	38.17%	100.00%
Asbestos	0.4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	108.4	0.34%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	103.8	0.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	67.2	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	877.7	2.71%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	164.0	0.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	19,896.8	61.54%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,502.4	7.74%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	6,678.0	20.65%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	1,072.9	3.32%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	778.7	2.41%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	81.2	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	32,331.4	100%								
Total Filled (Waste and Soil)	32,331.4	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	1999									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	16.50%	2.95%	14.63%	10.14%	4.76%	0.23%	50.79%	100.00%
Asbestos	7.0	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	97.7	0.26%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	57.5	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	7,275.8	19.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	530.2	1.39%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	170.5	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	19,942.3	52.23%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,799.3	7.33%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	6,171.0	16.16%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	616.7	1.62%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	402.8	1.05%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	110.6	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	38,181.4	100%								
Total Filled (Waste and Soil)	38,181.4	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2000							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.71%	3.32%	16.55%	14.15%	5.39%	0.26%	41.63%	100.00%
Asbestos	953.4	3.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	97.6	0.31%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	98.6	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	86.9	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	-	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	2,535.6	7.99%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	245.0	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	18,829.0	59.36%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,469.0	7.78%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,856.3	18.46%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	6.9	0.02%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	394.8	1.24%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	145.0	0.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	31,717.9	100%								
Total Filled (Waste and Soil)	31,717.9	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2001									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	17.68%	3.23%	16.00%	16.36%	5.21%	0.26%	41.26%	100.00%
Asbestos	7.4	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	119.7	0.40%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	586.4	1.98%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	13.2	0.04%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,279.3	11.06%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	683.9	2.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	16,933.2	57.10%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,338.0	7.88%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,296.3	17.86%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	96.5	0.33%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	-	0.00%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	194.6	0.66%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	107.7	0.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	29,656.0	100%								
Total Filled (Waste and Soil)	29,656.0	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2002							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	17.09%	3.15%	15.53%	17.02%	5.02%	0.26%	41.93%	100.00%
Asbestos	10.5	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	133.5	0.43%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	135.6	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	966.0	3.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	27.2	0.09%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,963.6	12.71%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	595.5	1.91%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	15,997.3	51.30%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,277.6	10.51%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,832.0	15.50%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	79.7	0.26%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	1,013.3	3.25%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	151.6	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	31,183.3	100%								
Total Filled (Waste and Soil)	31,183.3	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2003									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	15.07%	2.93%	14.05%	13.65%	4.56%	0.25%	49.49%	100.00%
Asbestos	12.3	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	112.9	0.32%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	-	0.00%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	154.4	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	5,669.5	16.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	48.9	0.14%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,155.3	8.95%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	378.9	1.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	-	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	17,024.7	48.29%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	-	0.00%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,565.7	10.11%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,080.4	14.41%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	-	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	38.5	0.11%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	10.7	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	35,252.2	100%								
Total Filled (Waste and Soil)	35,252.2	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2004							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	17.74%	3.13%	15.92%	16.23%	5.18%	0.24%	41.56%	100.00%
Asbestos	45.2	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	107.0	0.31%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	57.2	0.17%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	517.9	1.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	795.9	2.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	49.3	0.14%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	4,058.4	11.77%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	329.1	0.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	-	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	0.3	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	18,412.9	53.41%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	4.6	0.01%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	97.0	0.28%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,966.6	8.60%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,265.6	15.27%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	-	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	1,648.8	4.78%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	111.7	0.32%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	8.5	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	34,476.0	100%								
Total Filled (Waste and Soil)	34,476.0	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2005									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	17.93%	3.11%	15.92%	15.02%	5.18%	0.24%	42.60%	100.00%
Asbestos	127.5	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	505.9	1.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	142.3	0.37%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	77.3	0.20%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	271.3	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	1,252.8	3.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	11.1	0.03%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,947.6	10.31%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	283.1	0.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	0.7	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	0.4	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	20,123.9	52.54%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	13.5	0.04%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	719.8	1.88%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,185.7	8.32%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,185.7	13.54%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	-	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	2,324.8	6.07%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	111.8	0.29%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	20.3	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	38,305.5	100%								
Total Filled (Waste and Soil)	38,305.5	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2006							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.31%	3.20%	16.18%	14.51%	5.28%	0.25%	42.27%	100.00%
Asbestos	25.4	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	1,197.2	3.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	116.3	0.31%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	108.8	0.29%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	429.2	1.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	286.0	0.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	24.4	0.06%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	3,532.8	9.30%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	265.6	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	1.0	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	0.7	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	20,036.7	52.76%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	11.2	0.03%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	808.6	2.13%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,474.7	9.15%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,103.9	13.44%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	6.0	0.02%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	2,374.8	6.25%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	153.5	0.40%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	16.8	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	37,973.6	100%								
Total Filled (Waste and Soil)	37,973.6	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2007									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	19.65%	3.55%	16.59%	11.44%	5.42%	0.30%	43.05%	100.00%
Asbestos	18.1	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	1,230.6	3.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	91.6	0.26%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	171.2	0.48%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	942.3	2.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	153.8	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	27.7	0.08%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	1,550.0	4.38%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	267.8	0.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	0.9	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	6.3	0.02%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	17,531.1	49.54%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	16.8	0.05%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	652.9	1.84%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	4,557.6	12.88%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	5,454.5	15.41%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	24.8	0.07%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	2,351.9	6.65%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	327.4	0.93%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	10.9	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	35,388.2	100%								
Total Filled (Waste and Soil)	35,388.2	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2008							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.83%	3.78%	17.64%	10.54%	5.73%	0.31%	41.17%	100.00%
Asbestos	171.4	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	0.7	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	98.9	0.32%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	100.1	0.33%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	532.1	1.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	225.9	0.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	76.0	0.25%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	571.8	1.88%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	283.7	0.93%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	60.9	0.20%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	7.0	0.02%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	16,150.5	53.06%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	14.5	0.05%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	650.0	2.14%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	4,193.0	13.78%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,588.5	15.08%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	110.6	0.36%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	2,333.0	7.66%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	263.3	0.87%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	5.7	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	30,437.6	100%								
Total Filled (Waste and Soil)	30,437.6	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2009									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	18.91%	3.70%	15.08%	9.67%	4.85%	0.30%	47.50%	100.00%
Asbestos	34.4	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	128.4	0.41%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	46.1	0.15%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	1,107.4	3.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	3,632.2	11.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	600.3	1.91%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	134.6	0.43%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	177.2	0.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	0.7	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	357.5	1.14%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	13,052.2	41.46%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	24.8	0.08%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	666.1	2.12%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	4,140.5	13.15%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,492.7	14.27%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	155.8	0.49%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	2,430.5	7.72%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	263.3	0.84%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	37.2	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	31,481.9	100%								
Total Filled (Waste and Soil)	31,481.9	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2010							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.70%	4.44%	17.42%	11.55%	6.30%	0.33%	39.25%	100.00%
Asbestos	27.0	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	1.9	0.01%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	908.6	3.55%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	303.1	1.18%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	262.8	1.03%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	248.8	0.97%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	4.2	0.02%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	3.3	0.01%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	13,233.2	51.64%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	50.7	0.20%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	430.9	1.68%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,659.2	14.28%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,489.5	17.52%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	129.3	0.50%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	1,459.5	5.70%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	306.9	1.20%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	108.8	0.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	25,627.6									
Total Filled (Waste and Soil)	25,627.6									

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year	2011									
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.84%	4.28%	17.43%	11.16%	6.27%	0.31%	39.72%	100.00%
Asbestos	57.1	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	2.0	0.01%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	833.8	3.35%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	305.8	1.23%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	138.4	0.56%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	434.2	1.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	2.5	0.01%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	1.1	0.00%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	13,150.2	52.80%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	13.4	0.05%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	439.5	1.76%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	3,007.1	12.07%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,347.8	17.46%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	134.5	0.54%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	1,625.9	6.53%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	381.2	1.53%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	32.0	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	24,906.2	100%								
Total Filled (Waste and Soil)	24,906.2	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

Year			2012							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.89%	4.10%	17.86%	10.63%	6.23%	0.30%	39.98%	100.00%
Asbestos	36.1	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	2.5	0.01%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	589.4	2.44%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	179.4	0.74%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	53.3	0.22%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	418.5	1.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	0.4	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	2.2	0.01%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	13,477.7	55.70%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	1.9	0.01%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	435.9	1.80%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,670.6	11.04%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,220.3	17.44%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	153.3	0.63%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	1,628.8	6.73%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	307.0	1.27%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	17.6	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	24,194.9	100%								
Total Filled (Waste and Soil)	24,194.9	100%								

Campbell Mountain Landfill Historical Waste Data (1989 - 2011)

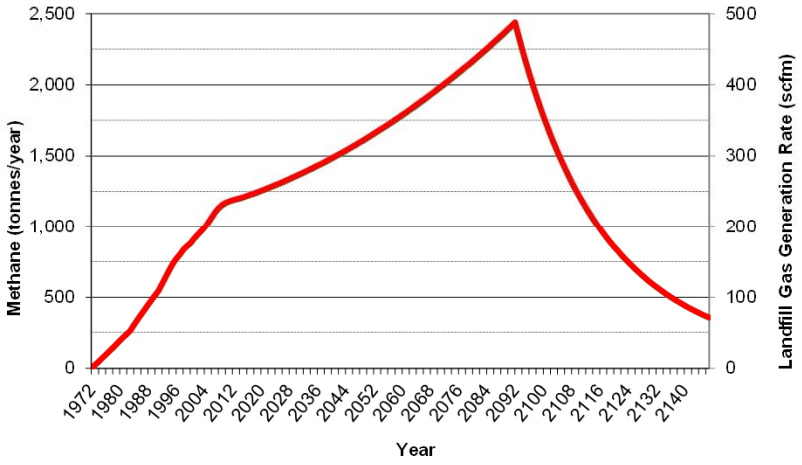
Year			2013							
Waste Components for LFG Model			Food	Garden	Paper&L	Wood	Textile	Nappies	inert	**Total**
	tonnes	%	20.54%	4.34%	17.67%	10.98%	6.42%	0.30%	39.75%	100.00%
Asbestos	146.8	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Asphalt (Source Seperated)	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Carcasses+Condemned Foods+Food Waste	4.2	0.02%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas A,B,C,G & Village of Keremeos (Bulky)	845.1	3.56%	0.00%	20.00%	0.00%	20.00%	20.00%	0.00%	40.00%	100.00%
Clean Earth Fill	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Contaminated Soil	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Controlled Waste	258.4	1.09%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%	100.00%
Machine Demolition (Demolition Waste)	28.3	0.12%	0.00%	0.00%	0.00%	70.00%	0.00%	0.00%	30.00%	100.00%
Foundry Dust + Metals + Tires + White Goods	224.1	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Highway Refuse	3.1	0.01%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	50.00%	100.00%
Illegal Dumping	1.4	0.01%	40.00%	40.00%	0.00%	0.00%	0.00%	0.00%	20.00%	100.00%
Industrial (Commercial)	13,646.8	57.47%	18.29%	2.50%	19.91%	9.73%	6.64%	0.00%	42.93%	100.00%
Infested vegetation and Noxous Weeds	-	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Keremeos Transfer Bin	446.1	1.88%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Miscellaneous	2,615.5	11.01%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Municipal Residential	4,159.1	17.52%	24.00%	7.00%	18.00%	10.50%	5.50%	1.00%	34.00%	100.00%
Preserved Wood/ timber waste (Landfilled)	104.3	0.44%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
Curbside Areas D, E, F & Rural Penticton (Rural)	906.0	3.82%	31.82%	1.47%	19.58%	2.37%	5.66%	0.00%	39.10%	100.00%
Sod/Brush/Yardwaste/ Prunings!	354.7	1.49%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Sewage Screen	1.4	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Used as Cover Soil		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Landfilled Waste	23,745.3	100%								
Total Filled (Waste and Soil)	23,745.3	100%								

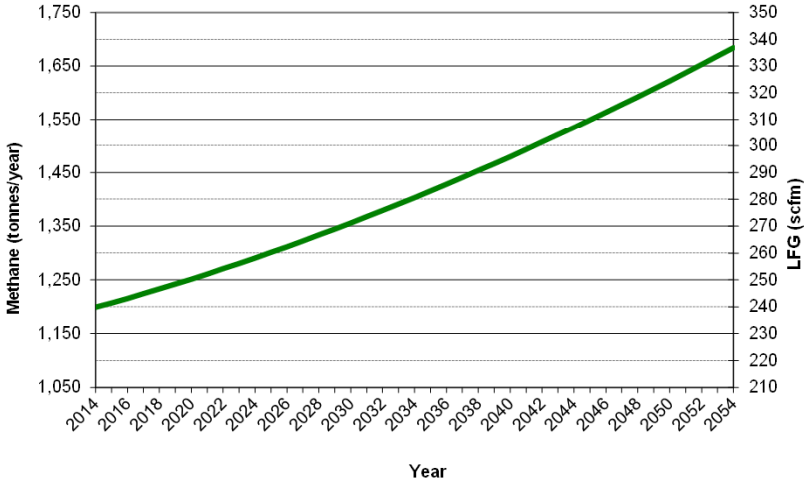
Appendix C

Landfill Gas Generation Modeling Results (IPCC FOD)

Table C.1- Landfill Gas Generation Modeling Results for the Campbell Mountain Landfill (Geo-Grid Berm Plan)

Year	CH4	CH4	CH4	CO2-e	LFG
	Mg (tonne)	m3	scfm	Mg (tone)	scfm
1972	0	0	0	0	0
1973	24	35167	2	495	5
1974	47	70225	5	988	9
1975	71	105233	7	1481	14
1976	94	140251	9	1973	19
1977	118	175399	12	2468	24
1978	142	211473	14	2975	28
1979	167	248808	17	3501	33
1980	192	286011	19	4024	38
1981	216	323092	22	4546	43
1982	240	358713	24	5047	48
1983	263	392938	26	5529	53
1984	302	450084	30	6333	60
1985	338	504970	34	7105	68
1986	374	557695	37	7847	75
1987	409	610375	41	8588	82
1988	443	660997	44	9300	89
1989	477	711672	48	10013	96
1990	512	763725	51	10746	103
1991	543	810126	54	11398	109
1992	589	879737	59	12378	118
1993	637	950693	64	13376	128
1994	685	1021707	69	14375	137
1995	734	1094787	74	15404	147
1996	771	1150512	77	16188	155
1997	799	1193054	80	16786	160
1998	832	1242176	83	17477	167
1999	857	1279095	86	17997	172
2000	878	1310399	88	18437	176
2001	910	1358349	91	19112	183
2002	937	1397821	94	19667	188
2003	964	1439205	97	20250	193
2004	990	1478320	99	20800	199
2005	1024	1528057	103	21500	205
2006	1063	1586204	107	22318	213
2007	1100	1642084	110	23104	221
2008	1131	1687372	113	23741	227
2009	1152	1719308	116	24191	231
2010	1167	1741743	117	24506	234
2011	1178	1758139	118	24737	236
2012	1187	1771027	119	24918	238
2013	1193	1781186	120	25061	239
2014	1199	1789615	120	25180	240
2015	1207	1801790	121	25351	242
2016	1216	1,814,325	122	25528	244
2017	1224	1827211	123	25709	246
2018	1233	1840442	124	25895	247
2019	1242	1854009	125	26086	249
2020	1251	1867908	126	26281	251
2021	1261	1882132	126	26482	253
2022	1271	1896677	127	26686	255
2023	1281	1911536	128	26895	257
2024	1291	1926706	129	27109	259
2025	1301	1942182	130	27326	261
2026	1312	1957960	132	27548	263
2027	1323	1974036	133	27775	265
2028	1334	1990408	134	28005	267
2029	1345	2007071	135	28239	270
2030	1356	2024024	136	28478	272
2031	1368	2041264	137	28721	274
2032	1379	2058788	138	28967	277
2033	1391	2076594	140	29218	279
2034	1403	2094681	141	29472	281
2035	1416	2113047	142	29731	284
2036	1428	2131690	143	29993	286
2037	1441	2150609	144	30259	289
2038	1454	2169803	146	30529	292
2039	1467	2189272	147	30803	294





Sperling Hansen Associates

Year	CH4	CH4	CH4	CO2-e	LFG
	Mg (tonne)	m3	scfm	Mg (tone)	scfm
2040	1480	2209013	148	31081	297
2041	1493	2229028	150	31362	300
2042	1507	2249315	151	31648	302
2043	1521	2269874	153	31937	305
2044	1535	2290705	154	32230	308
2045	1549	2311808	155	32527	311
2046	1563	2333183	157	32828	314
2047	1578	2354831	158	33132	316
2048	1592	2376751	160	33441	319
2049	1607	2398944	161	33753	322
2050	1622	2421411	163	34069	325
2051	1638	2444153	164	34389	328
2052	1653	2467170	166	34713	332
2053	1669	2490462	167	35041	335
2054	1684	2514032	169	35372	338
2055	1700	2537880	171	35708	341
2056	1717	2562008	172	36047	344
2057	1733	2586416	174	36391	348
2058	1749	2611105	175	36738	351
2059	1766	2636078	177	37090	354
2060	1783	2661336	179	37445	358
2061	1800	2686880	181	37804	361
2062	1818	2712712	182	38168	365
2063	1835	2738833	184	38535	368
2064	1853	2765246	186	38907	372
2065	1871	2791952	188	39283	375
2066	1889	2818953	189	39663	379
2067	1907	2846251	191	40047	382
2068	1925	2873848	193	40435	386
2069	1944	2901746	195	40828	390
2070	1963	2929947	197	41224	394
2071	1982	2958454	199	41625	398
2072	2001	2987268	201	42031	401
2073	2021	3016392	203	42441	405
2074	2041	3045829	205	42855	409
2075	2061	3075580	207	43273	413
2076	2081	3105648	209	43696	417
2077	2101	3136036	211	44124	421
2078	2122	3166747	213	44556	426
2079	2143	3197782	215	44993	430
2080	2164	3229145	217	45434	434
2081	2185	3260838	219	45880	438
2082	2206	3292864	221	46331	442
2083	2228	3325226	223	46786	447
2084	2250	3357926	226	47246	451
2085	2272	3390969	228	47711	456
2086	2294	3424355	230	48181	460
2087	2317	3458090	232	48655	465
2088	2340	3492175	235	49135	469
2089	2363	3526613	237	49619	474
2090	2386	3561409	239	50109	479
2091	2410	3596564	242	50604	483
2092	2433	3632083	244	51103	488
2093	2339	3490722	235	49114	469
2094	2248	3355469	225	47211	451
2095	2161	3226042	217	45390	434
2096	2078	3102169	208	43648	417
2097	1999	2983593	200	41979	401
2098	1923	2870069	193	40382	386
2099	1850	2761366	186	38852	371
2100	1780	2657261	179	37388	357
2101	1714	2557545	172	35985	344
2102	1650	2462016	165	34641	331
2103	1588	2370484	159	33353	319
2104	1529	2282767	153	32119	307
2105	1473	2198694	148	30936	295
2106	1419	2118098	142	29802	285
2107	1367	2040825	137	28714	274
2108	1318	1966724	132	27672	264
2109	1270	1895655	127	26672	255
2110	1224	1827481	123	25713	246

Year	CH4	CH4	CH4	CO2-e	LFG
	Mg (tonne)	m3	scfm	Mg (tone)	scfm
2111	1181	1762073	118	24792	237
2112	1139	1699310	114	23909	228
2113	1098	1639075	110	23062	220
2114	1059	1581255	106	22248	212
2115	1022	1525745	103	21467	205
2116	987	1472444	99	20717	198
2117	952	1421256	95	19997	191
2118	919	1372087	92	19305	184
2119	888	1324851	89	18641	178
2120	857	1279465	86	18002	172
2121	828	1235848	83	17388	166
2122	800	1193924	80	16799	160
2123	773	1153622	78	16231	155
2124	747	1114871	75	15686	150
2125	722	1077606	72	15162	145
2126	698	1041763	70	14658	140
2127	675	1007284	68	14172	135
2128	653	974109	65	13706	131
2129	631	942185	63	13257	127
2130	611	911460	61	12824	122
2131	591	881882	59	12408	119
2132	572	853405	57	12007	115
2133	553	825983	55	11622	111
2134	536	799573	54	11250	107
2135	519	774132	52	10892	104
2136	502	749622	50	10547	101
2137	486	726004	49	10215	98
2138	471	703242	47	9895	95
2139	456	681301	46	9586	92
2140	442	660148	44	9288	89
2141	429	639751	43	9001	86
2142	415	620081	42	8725	83
2143	403	601107	40	8458	81
2144	390	582803	39	8200	78
2145	379	565142	38	7952	76
2146	367	548098	37	7712	74
2147	356	531647	36	7480	71

Appendix D

Lifespan Analysis and Phasing Closure Year Projection (Golder 2002 D&O Plan)

TABLE D.1 - PROJECTED WASTE DISPOSAL TONNAGES FOR THE CAMPBELL MOUNTAIN LANDFILL BASED ON GOLDER DESIGN VOLUME (ASSUMING POPULATION GROWTH RATES OF 1.0% PER YEAR)

Year		Projected Growth Rate	Service Population	Waste Generation per Capita (inc. Soil)	Residual Waste				Percent Diversion as of 2011	Landfilled Residual Waste	Volume after Settlement reduction of 10%	Cover volume req @ 4:1	Air Space Required	Cum. Req.'d Air Space Vol. Starting Jan-11	
					Landfilled Waste	Recycled Waste	Soil Waste	Total Waste							
		(%)		tonnes/year	tonnes/year	tonnes/year	tonnes/year	tonnes/year	%	m^3/year	m^3	m^3	m^3	m^3	
2011	1	1.0	46,130	0.97	24,906	12,053	07,663	44,622	27%	29,301	26,371	7,325	33,697	***33,697***	
2012	2	1.0	46,591	0.97	25,155	12,174	07,739	45,068	27%	29,594	26,635	7,399	34,034	***67,730***	
2013	3	1.0	47,057	0.97	25,407	12,295	07,817	45,519	27%	29,890	26,901	7,473	34,374	***102,104***	
2014	4	1.0	47,528	0.97	25,661	12,418	07,895	45,974	27%	30,189	27,170	7,547	34,718	***136,822***	
2015	5	1.0	48,003	0.97	25,917	12,542	07,974	46,434	27%	30,491	27,442	7,623	35,065	***171,887***	
2016	6	1.0	48,483	0.97	26,177	12,668	08,054	46,898	27%	30,796	27,716	7,699	35,415	***207,302***	**Phase 1 Closure**
2017	7	1.0	48,968	0.97	26,438	12,795	08,134	47,367	27%	31,104	27,994	7,776	35,770	***243,072***	
2018	8	1.0	49,458	0.97	26,703	12,922	08,215	47,841	27%	31,415	28,274	7,854	36,127	***279,199***	
2019	9	1.0	49,952	0.97	26,970	13,052	08,298	48,319	27%	31,729	28,556	7,932	36,489	***315,688***	
2020	10	1.0	50,452	0.97	27,240	13,182	08,381	48,802	27%	32,047	28,842	8,012	36,854	***352,541***	
2021	11	1.0	50,956	0.97	27,512	13,314	08,464	49,290	27%	32,367	29,130	8,092	37,222	***389,763***	
2022	12	1.0	51,466	0.97	27,787	13,447	08,549	49,783	27%	32,691	29,422	8,173	37,594	***427,358***	
2023	13	1.0	51,980	0.97	28,065	13,582	08,635	50,281	27%	33,018	29,716	8,254	37,970	***465,328***	
2024	14	1.0	52,500	0.97	28,346	13,717	08,721	50,784	27%	33,348	30,013	8,337	38,350	***503,678***	
2025	15	1.0	53,025	0.97	28,629	13,855	08,808	51,292	27%	33,681	30,313	8,420	38,733	***542,411***	
2026	16	1.0	53,555	0.97	28,915	13,993	08,896	51,805	27%	34,018	30,616	8,505	39,121	***581,532***	
2027	17	1.0	54,091	0.97	29,204	14,133	08,985	52,323	27%	34,358	30,922	8,590	39,512	***621,044***	
2028	18	1.0	54,632	0.97	29,497	14,274	09,075	52,846	27%	34,702	31,232	8,675	39,907	***660,951***	
2029	19	1.0	55,178	0.97	29,791	14,417	09,166	53,374	27%	35,049	31,544	8,762	40,306	***701,257***	
2030	20	1.0	55,730	0.97	30,089	14,561	09,257	53,908	27%	35,399	31,859	8,850	40,709	***741,966***	
2031	21	1.0	56,287	0.97	30,390	14,707	09,350	54,447	27%	35,753	32,178	8,938	41,116	***783,082***	
2032	22	1.0	56,850	0.97	30,694	14,854	09,443	54,992	27%	36,111	32,500	9,028	41,527	***824,610***	
2033	23	1.0	57,419	0.97	31,001	15,003	09,538	55,542	27%	36,472	32,825	9,118	41,943	***866,553***	
2034	24	1.0	57,993	0.97	31,311	15,153	09,633	56,097	27%	36,837	33,153	9,209	42,362	***908,915***	
2035	25	1.0	58,573	0.97	31,624	15,304	09,730	56,658	27%	37,205	33,485	9,301	42,786	***951,700***	
2036	26	1.0	59,159	0.97	31,941	15,457	09,827	57,225	27%	37,577	33,819	9,394	43,214	***994,914***	
2037	27	1.0	59,750	0.97	32,260	15,612	09,925	57,797	27%	37,953	34,158	9,488	43,646	***1,038,560***	
2038	28	1.0	60,348	0.97	32,583	15,768	10,024	58,375	27%	38,332	34,499	9,583	44,082	***1,082,642***	
2039	29	1.0	60,951	0.97	32,908	15,926	10,125	58,959	27%	38,716	34,844	9,679	44,523	***1,127,165***	
2040	30	1.0	61,561	0.97	33,237	16,085	10,226	59,548	27%	39,103	35,193	9,776	44,968	***1,172,133***	
2041	31	1.0	62,176	0.97	33,570	16,246	10,328	60,144	27%	39,494	35,544	9,873	45,418	***1,217,551***	
2042	32	1.0	62,798	0.97	33,905	16,408	10,431	60,745	27%	39,889	35,900	9,972	45,872	***1,263,423***	
2043	33	1.0	63,426	0.97	34,245	16,572	10,536	61,352	27%	40,288	36,259	10,072	46,331	***1,309,754***	
2044	34	1.0	64,060	0.97	34,587	16,738	10,641	61,966	27%	40,691	36,622	10,173	46,794	***1,356,549***	
2045	35	1.0	64,701	0.97	34,933	16,905	10,748	62,586	27%	41,097	36,988	10,274	47,262	***1,403,811***	
2046	36	1.0	65,348	0.97	35,282	17,074	10,855	63,212	27%	41,508	37,358	10,377	47,735	***1,451,545***	
2047	37	1.0	66,001	0.97	35,635	17,245	10,964	63,844	27%	41,924	37,731	10,481	48,212	***1,499,757***	
2048	38	1.0	66,661	0.97	35,991	17,418	11,073	64,482	27%	42,343	38,109	10,586	48,694	***1,548,452***	
2049	39	1.0	67,328	0.97	36,351	17,592	11,184	65,127	27%	42,766	38,490	10,692	49,181	***1,597,633***	
2050	40	1.0	68,001	0.97	36,715	17,768	11,296	65,778	27%	43,194	38,874	10,798	49,673	***1,647,306***	
2051	41	1.0	68,681	0.97	37,082	17,945	11,409	66,436	27%	43,626	39,263	10,906	50,170	***1,697,475***	
2052	42	1.0	69,368	0.97	37,453	18,125	11,523	67,100	27%	44,062	39,656	11,016	50,671	***1,748,147***	
2053	43	1.0	70,062	0.97	37,827	18,306	11,638	67,771	27%	44,503	40,052	11,126	51,178	***1,799,325***	
2054	44	1.0	70,762	0.97	38,206	18,489	11,754	68,449	27%	44,948	40,453	11,237	51,690	***1,851,015***	
2055	45	1.0	71,470	0.97	38,588	18,674	11,872	69,133	27%	45,397	40,857	11,349	52,207	***1,903,222***	
2056	46	1.0	72,185	0.97	38,973	18,861	11,991	69,825	27%	45,851	41,266	11,463	52,729	***1,955,950***	
2057	47	1.0	72,907	0.97	39,363	19,049	12,111	70,523	27%	46,310	41,679	11,577	53,256	***2,009,206***	
2058	48	1.0	73,636	0.97	39,757	19,240	12,232	71,228	27%	46,773	42,095	11,693	53,789	***2,062,995***	
2059	49	1.0	74,372	0.97	40,154	19,432	12,354	71,941	27%	47,241	42,516	11,810	54,327	***2,117,322***	
2060	50	1.0	75,116	0.97	40,556	19,626	12,478	72,660	27%	47,713	42,942	11,928	54,870	***2,172,192***	
2061	51	1.0	75,867	0.97	40,962	19,823	12,602	73,387	27%	48,190	43,371	12,048	55,419	***2,227,610***	
2062	52	1.0	76,626	0.97	41,371	20,021	12,728	74,120	27%	48,672	43,805	12,168	55,973	***2,283,583***	
2063	53	1.0	77,392	0.97	41,785	20,221	12,856	74,862	27%	49,159	44,243	12,290	56,532	***2,340,115***	**Phase 2 Closure**
2064	54	1.0	78,166	0.97	42,203	20,423	12,984	75,610	27%	49,650	44,685	12,413	57,098	***2,397,213***	
2065	55	1.0	78,947	0.97	42,625	20,628	13,114	76,366	27%	50,147	45,132	12,537	57,669	***2,454,882***	
2066	56	1.0	79,737	0.97	43,051	20,834	13,245	77,130	27%	50,648	45,583	12,662	58,245	***2,513,127***	
2067	57	1.0	80,534	0.97	43,481	21,042	13,378	77,901	27%	51,155	46,039	12,789	58,828	***2,571,955***	
2068	58	1.0	81,340	0.97	43,916	21,253	13,511	78,680	27%	51,666	46,500	12,917	59,416	***2,631,371***	
2069	59	1.0	82,153	0.97	44,355	21,465	13,647	79,467	27%	52,183	46,965	13,046	60,010	***2,691,382***	
2070	60	1.0	82,974	0.97	44,799	21,680	13,783	80,262	27%	52,705	47,434	13,176	60,610	***2,751,992***	
2071	61	1.0	83,804	0.97	45,247	21,897	13,921	81,064	27%	53,232	47,909	13,308	61,217	***2,813,209***	
2072	62	1.0	84,642	0.97	45,699	22,116	14,060	81,875	27%	53,764	48,388	13,441	61,829	***2,875,037***	
2073	63	1.0	85,489	0.97	46,156	22,337	14,201	82,694	27%	54,302	48,872	13,575	62,447	***2,937,484***	**Phase 3 Closure**

Assumptions:

Soild Portion of the incoming waste which are used as cover material are excluded from Landfilled Waste Volume

Population Growth Rate =	1.00 %
Bulk Density (BC Typical) =	0.85 tonnes/m^3
Waste to Cover Ratio =	4 vol/vol
Settlement =	10 %
Waste Generation per Capita =	0.97 tonnes/year
Waste Diversion =	27.00 % (Excluding Soils used as cover soil)

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BOARD of DIRECTORS MEETING
Thursday, June 18, 2015
2:00 p.m.

REGULAR AGENDA

A. APPROVAL OF AGENDA

RECOMMENDATION 1 (Unweighted Corporate Vote – Simple Majority)
That the Agenda for the RDOS Board Meeting of [date] be adopted.

1. Consent Agenda – Corporate Issues

a. Corporate Services Committee – June 4, 2015
THAT the Minutes of the June 4, 2015 Corporate Services Committee be received.

THAT the Board adopt the Corporate Performance Management Rating Worksheet as presented.

b. Community Services Committee – June 4, 2015
THAT the Minutes of the June 4, 2015 Community Services Committee be received.

c. RDOS Regular Board Meeting – June 4, 2015
THAT the minutes of the June 4, 2015 RDOS Regular Board meeting be adopted.

RECOMMENDATION 2 (Unweighted Corporate Vote – Simple Majority)
That the Consent Agenda – Corporate Issues be adopted.

B. DEVELOPMENT SERVICES – Rural Land Use Matters

1. OCP & Zoning Bylaw Amendment — Electoral Area "A"

a. Bylaw No. 2450.08
b. Bylaw No. 2451.14

RECOMMENDATION 3 (Unweighted Participant Vote – Simple Majority)
THAT First and Second Reading of Bylaw No. 2450.08, 2013, Electoral Area "A" Official Community Plan Bylaw Amendment, and, Bylaw No. 2451.14, 2013, Electoral Area "A" Zoning Bylaw Amendment be rescinded and the Bylaws be abandoned.

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2. **Temporary Use Permit Application — Electoral Area "E", A & C Taylor, 380 Gwendoline Avenue, Naramata**
   a. Permit
   b. Responses Received

   RECOMMENDATION 4 (Unweighted Participant Vote – Simple Majority)
   THAT the Board of Directors approve Temporary Use Permit No. E2015.018-TUP

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3. **Temporary Use Permit Application — Electoral Area "D", R & C Huitikka, 100 Spruce Avenue, Kaleden**
   a. Permit
   b. Responses Received

   RECOMMENDATION 5 (Unweighted Participant Vote – Simple Majority)
   THAT the Board of Directors approve Temporary Use Permit No. D2015.042-TUP

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4. **Floodplain Exemption Application — Electoral Area "H", A. & F. Folino, 176 Rivers End Road**

   RECOMMENDATION 6 (Unweighted Participant Vote – Simple Majority)
   THAT the Board of Directors approve an Exemption to the Floodplain Regulations prescribed at Sections 8.2.2 and 8.3.3.3(a)(i) of the Electoral Area "H" Zoning Bylaw No. 2498, 2012, in order to:

   i) reduce the floodplain setback from the west tributary of Bonnevier Creek from 15.0 metres to 14.3 metres;

   ii) reduce the floodplain setback from the east tributary of Bonnevier Creek from 15.0 metres to 8.8 metres; and

   iii) reduce the requirement to locate the wooden floor system of a dwelling unit from 1.0 metre to 0.0 metres above the natural ground elevation taken at any point on the perimeter of the building

   applied to buildings and structures on the legal parcel described as Lot 5, Plan KAP20249, District Lot 902, YDYD;

   AND THAT this Exemption to the Floodplain Regulations be conditional upon registration of a statutory covenant against the legal parcel described as Lot 5, Plan KAP20249, District Lot 902, YDYD, that will "save harmless" the Regional District against any damages as a result of a flood occurrence.

C. ENGINEERING SERVICES

1. Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw

a. **Bylaw No. 2486.01**

RECOMMENDATION 7 (Unweighted Corporate Vote – Simple Majority)

THAT Bylaw No. 2486.01, "Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw" be adopted.

D. PUBLIC WORKS

1. Update on Regional Invasive Plant Program

E. FINANCE

1. Electoral Area 'H' Community Facilities Capital Reserve Fund Expenditure Bylaw

a. **Bylaw No. 2699**

RECOMMENDATION 8 (Unweighted Corporate Vote – 2/3 Majority)

THAT Bylaw No. 2699, 2015, Electoral Area 'H' Community Facilities Capital Reserve Fund Expenditure Bylaw be read a first, second and third time and be adopted.

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2. Okanagan Falls & District Parkland Acquisition Temporary Borrowing Bylaw

a. **Bylaw No. 2694**

RECOMMENDATION 9 (Weighted Corporate Vote – 2/3 Majority)

THAT Bylaw No. 2694, 2015 Okanagan Falls & District Parkland Acquisition Temporary Borrowing Bylaw be read a first, second and third time and be adopted.

F. INFORMATION SERVICES

1. Information Systems Policies

a. **Information Systems Use and Social Media Policy**
b. **Directors Mobile Computer Policy**
c. **Electronic Mobile Communications Policy**
d. **Personal Device Agreement**

RECOMMENDATION 10 (Unweighted Corporate Vote – Simple Majority)
THAT the Board of Directors adopt the Information Systems Use and Social Media Policy, Directors Mobile Computer Policy, Electronic Mobile Communications Policy and the Personal Device Agreement as presented to the Corporate Services Committee on June 4, 2015; and further,

THAT Policy P1070.00.01 Directors Laptop and Policy P1070.00.02 Directors Laptop-Software, Hardware & Support, be rescinded.

G. OFFICE OF THE CAO

1. Okanagan Falls Parks and Recreation Service Establishment Amendment Bylaw

a. Bylaw No. 2684

RECOMMENDATION 11 (Unweighted Corporate Vote – Simple Majority)
THAT Bylaw No. 2684, 2015 Okanagan Falls & District Recreation Service Establishment Amendment Bylaw be read a first, second and third time and forwarded to the Inspector of Municipalities for approval.

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2. Regional Economic Development Service

b. **Bylaw No. 2695**

RECOMMENDATION 12 (Unweighted Corporate Vote – Simple Majority)
THAT the Board authorize consent be given on behalf of the electoral participating areas by the Electoral Area Director pursuant to Section 801.5(2) of the *Local Government Act*.

RECOMMENDATION 13 (Unweighted Corporate Vote – Simple Majority)
THAT Regional District of Okanagan-Similkameen Regional Economic Development Service Establishment Bylaw No. 2695, 2015 be read a first, second and third time prior to being forwarded to the Inspector of Municipalities for approval.

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3. Electoral Area "D" Governance Study

RECOMMENDATION 14 (Unweighted Corporate Vote – Simple Majority)
THAT the Board of Directors endorse the Terms of Reference for the Electoral Area "D" Governance Study as attached to the June 18, 2015 administrative report; and further,

THAT the following residents of Electoral Area "D" be appointed as Chair and members of the Ad Hoc Committee:

- **Bob Daly, Chair**
- **Myleen Mallach, member**
- **Larry Kenyon, member**
- **Eleanor Walker, member**
- **Sam Hancheroff, member**
- **Doug Lychak, member**
- **Navid Chaudry, member**
- **Gerry Stewart, member**
- **Tamara Brown, member**
- **Leslie D'Andrea, member**

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4. Olalla Local Community Commission Appointment

RECOMMENDATION 15 (Unweighted Corporate Vote – Simple Majority)
THAT the Board rescind the appointment of Daniel Banman to the Olalla Local Community Commission; and further

THAT a letter be forwarded to Mr. Banman thanking him for his contribution to the Olalla Local Community Commission; and further,

THAT the Board of Directors appoint Bev Fraser to the Olalla Local Community Commission for the remainder of a four year term ending with the next local government election in October, 2018

H. CAO REPORTS

1. Verbal Update

I. OTHER BUSINESS

1. Chair's Report

2. Board Representation

a. Municipal Finance Authority (MFA) - *Pendergraft*
b. Okanagan Basin Water Board (OBWB) – *McKortoff, Martin, Waterman*
c. Okanagan-Kootenay Sterile Insect Release Board (SIR) - *Bush*
d. Okanagan Regional Library (ORL) - *Kozakevich*
e. Okanagan Film Commission (OFC) - *Jakubeit*
f. Southern Interior Beetle Action Coalition (SIBAC) *Armitage*
g. Southern Interior Municipal Employers Association (SIMEA) *Kozakevich*
h. Southern Interior Local Government Association (SILGA) – *Konanz*
i. Starling Control - *Bush*
j. UBC Water Chair Advisory Committee - *Bauer*

3. Directors Motions

4. Board Members Verbal Update

J. ADJOURNMENT

Minutes are in DRAFT form and are subject to change pending approval by Regional District Board

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Corporate Services Committee

Thursday, June 4, 2015
10:36 a.m.

Minutes

MEMBERS PRESENT:

Vice Chair A. Jakubeit, City of Penticton
Director F. Armitage, Town of Princeton
Director T. Boot, District of Summerland
Director M. Brydon, Electoral Area "F"
Director R. Mayer, Alt. Electoral Area "G"
Director B. Coyne, Electoral Area "H"
Director R. Hovanes, Town of Oliver
Director H. Konanz, City of Penticton
Director K. Kozakevich, Electoral Area "E"
Director A. Martin, City of Penticton
Director S. McKortoff, Town of Osoyoos
Director D. Potter, Alt. Electoral Area "A"
Director T. Schafer, Electoral Area "C"
Director J. Sentes, City of Penticton
Director T. Siddon, Electoral Area "D"
Director P. Waterman, District of Summerland

MEMBERS ABSENT:

Chair M. Pendergraft, Electoral Area "A"
Director M. Bauer, Village of Keremeos
Director E. Christensen, Electoral Area "G"
Director G. Bush, Electoral Area "B"

STAFF PRESENT:

B. Newell, Chief Administrative Officer
C. Malden, Manager of Legislative Services

A. APPROVAL OF AGENDA

It was MOVED and SECONDED

THAT the agenda for the Corporate Services Committee Meeting of June 4, 2015 be adopted. - **CARRIED**

B. Regional Economic Development Service Establishment

1. Draft Bylaw No. 2695
2. February 19, 2015 Report to Committee

RECOMMENDATION 1

It was MOVED and SECONDED

THAT the Corporate Services Committee recommend that the Board of Directors consider adoption of a proposed Regional Economic Development Service Establishment Bylaw as provided in the draft attached to the report of June 4, 2015. – **CARRIED**

Opposed: Director Mayer

C. Policy Review:

1. Directors Mobile Computer
2. Information Systems Use and Social Media
3. Electronic Mobile Communication Device
4. Personal Device Usage Agreement

RECOMMENDATION 2

It was MOVED and SECONDED

THAT the Corporate Services Committee recommend that Board of Directors endorse the proposed changes to the Information Systems Use and Social Media Policy, Directors Mobile Computer Policy, Electronic Mobile Communications Policy and the Personal Device Agreement as presented to the Corporate Services Committee on June 4, 2015.

CARRIED

D. Performance Management Plan

1. Performance Planning Worksheet

RECOMMENDATION 3

It was MOVED and SECONDED

THAT the Board adopt the Corporate Performance Management Rating Worksheet as presented. - **CARRIED**

E. ADJOURNMENT

By consensus, the meeting adjourned at 11:46 a.m.

APPROVED:

_____

A. Jakubeit
RDOS Board Vice Chair

CERTIFIED CORRECT:

_____

B. Newell
Corporate Officer

Minutes are in DRAFT form and are subject to change pending approval by Regional District Board

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

Community Services Committee

Thursday, June 4, 2015
9:01 a.m.

Minutes

MEMBERS PRESENT:

Chair K. Kozakevich, Electoral Area "E"
Vice Chair R. Hovanes, Town of Oliver
Director F. Armitage, Town of Princeton
Director T. Boot, District of Summerland
Director M. Brydon, Electoral Area "F"
Director R. Mayer, Alt. Electoral Area "G"
Director B. Coyne, Electoral Area "H"
Director A. Jakubeit, City of Penticton
Director H. Konanz, City of Penticton
Director A. Martin, City of Penticton
Director S. McKortoff, Town of Osoyoos
Director D. Potter, Alt. Electoral Area "A"
Director T. Schafer, Electoral Area "C"
Director J. Sentes, City of Penticton
Director T. Siddon, Electoral Area "D"
Director P. Waterman, District of Summerland

MEMBERS ABSENT:

Director M. Pendergraft, Electoral Area "A"
Director E. Christensen, Electoral Area "G"
Director M. Bauer, Village of Keremeos
Director G. Bush, Electoral Area "B"

STAFF PRESENT:

B. Newell, Chief Administrative Officer
C. Malden, Manager of Legislative Services
M. Woods, Manager of Community Services
L. Bourque, Rural Projects Coordinator

A. APPROVAL OF AGENDA

It was MOVED and SECONDED

THAT the agenda of the Community Services Committee meeting of June 4, 2015 be adopted. - **CARRIED**

B. Closed Session [*Community Charter* Section 90(1)(j)]

RECOMMENDATION 1 (Unweighted Corporate Vote – Simple Majority)

It was MOVED and SECONDED

THAT in accordance with Section 90(1)(j) of the *Community Charter*, the Committee close the meeting to the public on the basis of information that is prohibited, or information that if it were presented in a document would be prohibited, from disclosure under Section 21 of the *Freedom of Information and Protection of Privacy Act*. - **CARRIED**

The meeting was closed to the public at 9:02 a.m.
The meeting was opened to the public at 9:26 a.m.

By consensus, the Committee brought forward Item D Transit Advisory Committee.

D. Transit Advisory Committee

C. Heritage Presentation

a. Granite Creek
   i. Statement of Significance for the Granite Creek Town Site and Cemetery
   ii. Map
   iii. Letter from Granite Creek Preservation Society
b. Haynes Ranch

E. ADJOURNMENT

By consensus, the Community Services Committee meeting of June 4, 2015 adjourned at 10:23 a.m.

APPROVED:

_____

K. Kozakevich
Community Services Committee Chair

CERTIFIED CORRECT:

_____

B. Newell
Chief Administrative Officer

Minutes are in DRAFT form and are subject to change pending approval by Regional District Board

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BOARD of DIRECTORS MEETING

Minutes of the Board Meeting of the Regional District of Okanagan-Similkameen (RDOS) Board of Directors held at 1:01 pm Thursday, June 4, 2015 in the Boardroom, 101 Martin Street, Penticton, British Columbia.

MEMBERS PRESENT:

Vice Chair A. Jakubeit, City of Penticton
Director F. Armitage, Town of Princeton
Director T. Boot, District of Summerland
Director M. Brydon, Electoral Area "F"
Director R. Mayer, Alt. Electoral Area "G"
Director B. Coyne, Electoral Area "H"
Director R. Hovanes, Town of Oliver
Director H. Konanz, City of Penticton
Director K. Kozakevich, Electoral Area "E"
Director A. Martin, City of Penticton
Director S. McKortoff, Town of Osoyoos
Director D. Potter, Alt. Electoral Area "A"
Director T. Schafer, Electoral Area "C"
Director J. Sentes, City of Penticton
Director T. Siddon, Electoral Area "D"
Director P. Waterman, District of Summerland

MEMBERS ABSENT:

Chair M. Pendergraft, Electoral Area "A"
Director M. Bauer, Village of Keremeos
Director E. Christensen, Electoral Area "G"
Director G. Bush, Electoral Area "B"

STAFF PRESENT:

B. Newell, Chief Administrative Officer
C. Malden, Manager of Legislative Services
S. Croteau, Manager of Finance
R. Huston, Manager of Public Works
D. Butler, Manager of Development Services
M. Woods, Manager of Community Services

A. APPROVAL OF AGENDA

RECOMMENDATION 1 **(Unweighted Corporate Vote – Simple Majority)**
It was MOVED and SECONDED
That the Agenda for the RDOS Board Meeting of June 4, 2015 be adopted.

1. Consent Agenda – Corporate Issues

a. Corporate Services Committee – May 21, 2015
THAT the Minutes of the May 21, 2015 Corporate Services Committee be received.

b. Environment and Infrastructure Committee – May 21, 2015
THAT the Minutes of the May 21, 2015 Environment and Infrastructure Committee be received.

c. Planning and Development Committee – May 21, 2015
THAT the Minutes of the May 21, 2015 Planning and Development Committee be received.

THAT the Board of Directors resolves to initiate an amendment bylaw to the Electoral Area "D-1" Official Community Plan and the Electoral Area "D-1" Zoning Bylaws to amend Resort Mixed Use (RMU) zone and designations on a number of

properties to Residential Medium Density (MR) and a new Residential Multiple Family zoning.

d. RDOS Regular Board Meeting – May 21, 2015
THAT the minutes of the May 21, 2015 RDOS Regular Board meeting be adopted.

RECOMMENDATION 2 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
That the Consent Agenda – Corporate Issues be adopted. - **CARRIED**

B. DELEGATIONS

1. Penticton BC Winter Games
Tim Broesche and Edgar Yost, Friends of the Games
Mr. Broesche and Mr. Yost addressed the Board regarding the Penticton 2016 BC Winter Games.

C. DEVELOPMENT SERVICES – Rural Land Use Matters

1. Official Community Plan and Zoning Bylaw Amendment – Electoral Area "C" Parkbridge Lifestyle Communities Inc, 8487 Highway 97

a. Bylaw No. 2452.14, 2015
b. Bylaw No. 2453.24, 2015
c. Responses Received

To adjust the zone boundary between the CT4 and RSM1 zoned parts of the property and to introduce cabins as a permitted form of campground use.

RECOMMENDATION 3 (Unweighted Participant Vote – Simple Majority)
It was MOVED and SECONDED

THAT Bylaw No. 2452.14, 2015, Electoral Area "C" Official Community Plan Amendment Bylaw and Bylaw No. 2453.24, 2015, Electoral Area "C" Zoning Amendment Bylaw be read a first and second time and proceed to a public hearing;

AND THAT the Board considers the process, as outlined in the report from the Chief Administrative Officer dated June 4, 2015, to be appropriate consultation for the purpose of Section 879 of the *Local Government Act*;

AND THAT, in accordance with Section 882 of the *Local Government Act*, the Board has considered Amendment Bylaw No. 2452.14, 2015, in conjunction with its Financial and applicable Waste Management Plans;

AND THAT the holding of the public hearing be delegated to Director Schafer or delegate;

AND THAT staff schedule the date, time, and place of the public hearing in consultation with Director Schafer;

AND THAT staff give notice of the public hearing in accordance with the requirements of the *Local Government Act*. - **CARRIED**

2. Land Use Contract Termination / OCP & Zoning Bylaw Amendment — Electoral Area "E", 2800 Aikens Loop

a. Bylaw No. 2458.08
b. Bylaw No. 2459.15
c. Public Hearing Report – May 21, 2015
d. Responses Received

To terminate Land Use Contract No. LU-2-E (being Bylaw No. 407) from the the property at 2800 Aikens Loop (being Lot A, Plan KAP27210, District Lot 209, SDYD) and to designate and zone the property under the Electoral Area "E" OCP and Zoning Bylaws.

Director Kozakevich advised the Board that the Public Hearing report was an accurate reflection of what took place at the public hearing held May 21, 2015 regarding Bylaw Nos. 2458.08 and 2459.15.

RECOMMENDATION 4 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the public hearing report be received. - **CARRIED**

RECOMMENDATION 5 (Unweighted Participant Vote – 2/3 Majority)
It was MOVED and SECONDED
THAT Bylaw No. 2458.08, 2015, Electoral Area "E" Official Community Plan Amendment Bylaw and Bylaw No. 2459.15, 2015, Electoral Area "E" Zoning Amendment Bylaw be read a third time and adopted. - **CARRIED**

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3. Development Procedures Bylaw Amendment

a. Bylaw No. 2500.05

To introduce an application requirement that vacation rental TUP proposals be accompanied by a Health and Safety Inspection and that TUP applications be referred to Advisory Planning Commissions (APCs) prior to Board consideration in order to facilitate the convening of Public Information Meetings.

RECOMMENDATION 6 (Unweighted Participant Vote – Simple Majority)
It was MOVED and SECONDED
THAT Bylaw No. 2500.05, 2015, Regional District of Okanagan-Similkameen Development Procedures Amendment Bylaw be adopted.
CARRIED

Opposed: Director Brydon

D. COMMUNITY SERVICES – Rural Projects

1. License of Occupation – Granite Creek Townsite
   a. Statement of Significance
   b. Application Area Map
   c. Request from Granite Creek Preservation Society

To secure a License of Occupation to facilitate improvements and maintenance of the site by the Granite Creek Preservation Society

RECOMMENDATION 7 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors make application to the Province of British Columbia for a License of Occupation over the former Granite Creek townsite, legally described as Lot 781, Blocks A–F and Lot 731, on behalf of the Granite Creek Preservation Society, for a period of 30 year. - **CARRIED**

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2. Heritage Register Boundary adjustment for Haynes Barn listing
   a. Revised Statement of Significance
   b. Map

To expand the boundaries of the historical site to more accurately reflect the historic use of working ranch as a whole.

RECOMMENDATION 8 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors approve the adjustment of the Haynes Barn heritage register listing to include the buildings on the south side of Road 22. - **CARRIED**

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3. Frank Venables Theatre – Lease and Operating Agreement
   a. Frank Venables Theater Lease
   b. Frank Venables Theater operating agreement

To allow the Oliver Community Theater Society to operate the Frank Venables Theater.

RECOMMENDATION 9 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors authorize the Chair and Chief Administrative Officer to execute the Frank Venables Theatre Lease between the Regional District of Okanagan-Similkameen and School District 53 and,

THAT the Board of Directors authorize the Chair and Chief Administrative Officer to

execute the Frank Venables Theatre Operating Agreement between the Regional District of Okanagan-Similkameen, School District 53, and the Oliver Community Theatre Society. - **CARRIED**

E. FINANCE

1. Statement of Financial Information – Year Ended December 31, 2014
a. Report

RECOMMENDATION 10 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors approve the Regional District of Okanagan-Similkameen Statement of Financial Information for the year ended December 31, 2014 pursuant to the Financial Information Act Financial Information Regulation Schedule 1, subsection 9(2). - **CARRIED**

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2. Osoyoos Museum Debt Reserve Fund Expenditure Bylaw
a. Bylaw No. 2693, 2015
b. Osoyoos Museum Funding Request Letter

The purpose of the bylaw is to remove funds from the capital reserve

RECOMMENDATION 11 (Weighted Corporate Vote – 2/3 Majority)
It was MOVED and SECONDED
THAT Bylaw 2693, 2015 Osoyoos Museum Debt Reserve Fund Expenditure Bylaw be read a first, second and third time and adopted. - **CARRIED**

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3. Grant Policies
   a. Community Works Gas Tax Funding Policy
   b. Electoral Area Community Grant in Aid Policy
      i. Electoral Area Community Grant in Aid Application Form
      ii. Electoral Area Community Grants – Community Grant Guidelines
      iii. Electoral Area Community Grants – Guidelines for Individual Electoral Area Directors
   c. Regional Grant in Aid Policy
      i. Regional Grant in Aid Application Form

RECOMMENDATION 12 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors adopt the Community Works Gas Tax Funding Policy attached to the Administrative Report dated June 4, 2015 from B. Newell**. - CARRIED**
Opposed: Director Mayer

RECOMMENDATION 13 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors rescind Policy No P1850-00.01 Electoral Area Grant in Aid and adopt the Electoral Area Community Grant in Aid Policy attached to the Administrative Report dated June 4, 2015 from B. Newell. - **CARRIED**

RECOMMENDATION 14 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors rescind Policy No P1850.02 Regional Grant in Aid Requests and adopt the Regional Grant in Aid Policy attached to the Administrative Report dated June 4, 2015 from B. Newell. - **CARRIED**

F. OFFICE OF THE CAO

1. Naramata Water System Back-up Power Loan Authorization Bylaw
   a. Bylaw No. 2696, 2015

To provide for back-up power to the Naramata Water System

RECOMMENDATION 15 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT Naramata Water System Back-Up Power Loan Authorization Bylaw No. 2696, 2015 be read a first, second and third time and be forwarded to the Inspector of Municipalities for Ministry approval prior to electoral approval; and,

THAT the Board of Directors authorize that elector approval for the adoption of the bylaw be obtained through an alternative approval process. - **CARRIED**

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2. Naramata Fire Truck Acquisition Loan Authorization Bylaw

a. Bylaw No. 2698, 2015

To purchase a new fire engine, increasing pumping capacity by 1250GPM.

RECOMMENDATION 16 (Unweighted Corporate Vote – Simple Majority)

It was MOVED and SECONDED

THAT Naramata Fire Truck Acquisition Loan Authorization Bylaw No. 2698, 2015 be read a first, second and third time and be forwarded to the Inspector of Municipalities for Ministry approval prior to electoral approval; and,

THAT the Board of Directors authorize that elector approval for the adoption of the bylaw be obtained through an alternative approval process. - **CARRIED**

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3. Electoral Area "C" Advisory Planning Commission Appointment

RECOMMENDATION 17 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT the Board of Directors appoint Jessica Murphy as a member of the Electoral Area "C" Advisory Planning Commission for a term ending November 30, 2018.
CARRIED

G. CAO REPORTS

1. Verbal Update

H. OTHER BUSINESS

1. Chair's Report

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2. Directors Motions

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3. Board Members Verbal Update

I. CLOSED SESSION

RECOMMENDATION 18 (Unweighted Corporate Vote – Simple Majority)
It was MOVED and SECONDED
THAT in accordance with Section 90(1)(j) and (2)(b)of the *Community Charter*, the Board close the meeting to the public on the basis of information that is prohibited, or information that if it were presented in a document would be prohibited, from disclosure under section 21 of the *Freedom of Information and Protection of Privacy Act*; and, the consideration of information received and held in confidence relating to negotiations between the Regional District and a provincial government or the federal government or both, or between a provincial government or the federal government or both and a third party. - **CARRIED**

The meeting was closed to the public at 2:18 p.m.
The meeting was opened to the public at 2:28 p.m.

J. ITEMS COMING OUT OF CLOSED SESSION COMMITTEE OF MAY 21, 2015

1. Planning and Development Committee of May 21, 2015
   The record reflects that at the May 21, 2015 Planning and Development Committee, the following resolution was passed and subsequently endorsed by the Board of Directors:

   "*THAT the Board of Directors resolves to initiate amendments to the Electoral Area "D" Official Community Plan (OCP) Bylaw No. 2603, 2013, and Electoral Area "D" Zoning Bylaw No. 2455, 2008, in order to discharge and terminate Land Use Contract No. LU-3-D. – CARRIED*"

K. ADJOURNMENT

By consensus, the meeting adjourned at 2:29 p.m.

APPROVED:

_____
A. Jakubeit
RDOS Board Vice Chair

CERTIFIED CORRECT:

_____
B. Newell
Corporate Officer

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

TYPE: OCP & Zoning Bylaw Amendment — Electoral Area "A"

Administrative Recommendation:

THAT First and Second Reading of Bylaw No. 2450.08, 2013, Electoral Area "A" Official Community Plan Bylaw Amendment, and, Bylaw No. 2451.14, 2013, Electoral Area "A" Zoning Bylaw Amendment be rescinded and the Bylaws be abandoned.

Background:

The subject Bylaw Amendments were to amend the Electoral Area "A" Official Community Plan and Zoning Bylaws from Large Holdings to Industrial in order to allow for a gravel processing operation.

At its April 8, 2013, the Electoral Area "A" Advisory Planning Commission resolved to recommend to the Board to approve the subject application.

At the June 6, 2013 meeting, The Board of Directors approved first and second reading of the Amendment Bylaws No. 2450.08, 2013 and No. 2451.14, 2013.

A public hearing was held on June 27, 2013 at which approximately 30 members of the public were in attendance.

A second public hearing was held on October 7, 2014, at which approximately 7 members of the public attended.

At the November 6, 2014 meeting, the Board of Directors defeated the motion to give third reading to the amendment bylaws; thereby effectively abandoning the bylaws.

Analysis:

Administration has been reviewing RDOS bylaws and has expressed a desire to remove bylaws that are technically 'sitting' at second reading. It is understood that a number of bylaws will be forthcoming to the Board for action.

Respectfully submitted:

E. Riechert

E. Riechert, Planner

Endorsed by:

C. Garrish, Planning Supervisor

Endorsed by:

Donna Butler

D. Butler, Development Services Manager

Project No: A2013.012-ZONE

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Temporary Use Permit Application — Electoral Area "E"

Administrative Recommendation:

THAT the Board of Directors approve Temporary Use Permit No. E2015.018-TUP

Purpose:	To allow for the operation of a short-term vacation rental		
Owner:	Alan and Carol Taylor	Applicant: Alan and Carol Taylor	Folio: E-00609.000
Civic:	380 Gwendoline Ave, Naramata	Legal: Lots 15 & 16, Plan KAP519, District Lot 210, SDYD	
OCP:	Low Density Residential (LR)	Zoning: Residential Single Family One (RS1)	

Proposal:

The application seeks approval for the operation of a short-term vacation rental use at the subject property from the months of June 15th to September 15th.

The applicant has indicated that "we have owned this property since the mid 1970's … and we use our Naramata property as our year round cottage. We also permit it to be used by our Family and Friends. We charge a nominal fee for the usage of the cottage to assist in offsetting the cost of taxes, water and other expenses. We allow usage to take place from June 15-September 15 and rentals are generally on a weekly basis. The rental would be for the House only. No tents or other camping vehicles are permitted on the property … adequate parking is located on the south side near the back alley."

Site Context:

The subject parcel is approximately 555 m^2 in area, is situated at the south-west corner of the intersection of Gwendoline Avenue and Fourth Street in Naramata. The property is seen to be comprised of a single detached dwelling.

The surrounding pattern of development is characterised by low density residential parcels with two seniors housing complexes situated on the north side of Gwendoline Avenue and former orchard lands associated with Naramata Centre to the east and Manitou Park to the south-east.

Background:

The property was created by subdivision in 1908, while the development of the existing dwelling is believed to predate the establishment of the Regional District in 1966.

Under the Electoral Area "E" Zoning Bylaw No. 2459, 2008, the property is currently zoned Residential Single Family One (RS1) which only allows for "single detached dwellings" as a principal permitted

use, with a limited accommodation of commercial uses in the form of "home occupations" and "bed and breakfast operations" as permitted secondary uses.

Under the Electoral Area "E" Official Community Plan (OCP) Bylaw No. 2458, 2008, an objective of the Board in relation to residential areas is generally to maintain the character of an area, however, "the provision of paid accommodation for visitors through the short-term rental of residences provided that community and neighbourhood residential needs and other land use needs can be addressed" is also supported.

The property is also the subject of a Watercourse Development Permit (WDP), Environmentally Sensitive Development Permit (ESDP) Area under the OCP and is shown as being within a limited or no geological hazard classification.

Public Process:

At its meeting of April 13, 2015, the Electoral Area "E" Advisory Planning Commission (APC) resolved to recommend to the RDOS Board that the subject development application be approved subject to the following conditions:

a) THAT the health and safety recommendations be followed up on or carried out.

b) Proof of septic be provided.

c) AND THAT the term of this TUP be valid to December 31st, 2015.

Under Section 5.1.1 of the Regional District's Development Procedures Bylaw No. 2500, 2011, the Board may require that a Public Information Meeting be held prior to the consideration of a TUP, "if it considers the proposal to be of a significant scale or nature warranting an additional opportunity for the public to access information and inquire about the proposal beyond that available through the regular application referral and public hearing process."

In this instance, Administration notes that this property has not previously been the subject of a written complaint related to vacation rental uses and considers the direct notification of adjacent neighbours to be sufficient.

In accordance with Section 2.5 of Schedule '5' of the Development Procedures Bylaw, this proposal has been referred to the external agencies listed at Attachment No. 2. To date, comments have been received from Interior Health Authority (IHA), Archaeological Branch (Ministry of Forest, Lands and Natural Resource Operation) and Fortis, are compiled and included as a separate item on the Board Agenda.

Alternatives:

1. THAT the Regional Board of Directors deny Temporary Use Permit No. E2015.018-TUP; OR
2. THAT the Regional Board of Directors defer consideration of Temporary Use Permit No. E2015.018-TUP subject to the completion of a Public Information Meeting to be organised by the applicant.

Analysis:

In assessing this proposal, Administration notes that the OCP Bylaw contains a number of criteria against which the Board will consider an application for a TUP related to a vacation rental use in a residential neighbourhood. These include:

a) *capability of accommodating on-site domestic water and sewage disposal;*

b) *mitigating measures such as screening and fencing;*

c) *provision of adequate off-street parking;*

d) *confirmation that the structure proposed for use as a vacation rental meets a minimum standard for health and safety; and*

e) *benefits that such accommodation may provide to the community*

In response, the applicant has stated that "we have the Septic Tank Pumped out every 3-5 years, the last time being approximately 3 years ago. The field lines were functioning properly at that time and still are. We are ever vigilant about maintaining a properly working system." Administration notes that IHA has further recommended that:

> *maintenance of the onsite sewerage dispersal system serving the dwelling is up to date in that the septic tank has been pumped out and inspected by an Authorized Person (AP) in the past 3 to 5 years. It should also be confirmed by an AP that the dispersal field is functioning properly and that the dispersal system has the capacity for and is suitable for the change in use of the property.*

In response, a 2012 invoice from ABC Septic Services Limited in relation to the servicing of the septic system was provided. While Administration recognises that this does not address whether the field is functioning properly, it is recommended that this be completed prior to the renewal of any approved TUP.

With regard to landscaping and screening, the property is joined on three sides by road (with the rear boundary fronting a laneway), is "fully fenced", while mature vegetation is seen to exist along the shared boundary with the adjacent property at 360 Gwendoline Avenue.

On the requirement for parking, the applicant has further indicated that "adequate parking is located on the south side near the back alley."

The Board is asked to be aware that the applicant completed a Health and Safety (H&S) Inspection and is in the process of addressing the deficiencies identified (which included an undersized bedroom window and absence of a carbon monoxide detector, amongst other things).

Administration will be further working with the applicant in relation to establishing permit conditions related the provision of a manager's contact to surrounding property owners and the posting of appropriate information for guests (i.e. noise bylaws, water conservation, fire safety regulations, etc…).

Given the OCP Bylaw supports vacation rental uses subject to the aforementioned criteria generally being satisfied, Administration is supportive of this proposal.

Under the Regional District's "Vacation Rental Temporary Use Permit Policy", a term limit not exceeding 18 months shall be applied to Temporary Use Permit being issued for a vacation rental use

on land which has not been the subject of such an approved use previously (or which is being proposed by new owners of the land).

The intent of this Policy is to allow for a new vacation rental use to operate for one "season" in order to determine if such a use is inappropriate, incompatible or unviable at a particular location and, if so, to allow for the permit to lapse or not be renewed within a relatively short period.

Due to delays associated with the processing of TUPs for vacation rental uses due to recent Board directions involving the requirement for health and safety inspections, Administration is recommending that the term of TUP's received since the beginning of the year be to December 31, 2016.

Respectfully submitted:

C. Garrish, Planning Supervisor

Endorsed by:

Donna Butler

D. Butler, Development Services Manager

Attachments: No. 1 – Agency Referral List

No. 2 – Site Photo (Google Streetview)

Attachment No. 1 – Agency Referral List

Referrals have been sent to the following agencies as highlighted with a ☑, prior to Board consideration of TUP No. E2015.018-TUP:

☐	Agricultural Land Commission (ALC)	☐	City of Penticton
☑	Interior Health Authority (IHA)	☐	District of Summerland
☐	Ministry of Agriculture	☐	Town of Oliver
☐	Ministry of Community, Sport and Cultural Development	☐	Town of Osoyoos
☐	Ministry of Energy & Mines	☐	Town of Princeton
☑	Ministry of Environment	☐	Village of Keremeos
☐	Ministry of Forests, Lands & Natural Resource Operations	☑	Okanagan Nation Alliance (ONA)
☑	Archaeology Branch	☑	Penticton Indian Band (PIB)
☑	Ministry of Transportation and Infrastructure	☐	Osoyoos Indian Band (OIB)
☐	Integrated Land Management Bureau	☐	Upper Similkameen Indian Bands (USIB)
☐	BC Parks	☐	Lower Similkameen Indian Bands (LSIB)
☐	School District #53 (Okanagan Similkameen)	☐	Environment Canada
☐	School District #58 (Nicola Similkameen)	☐	Fisheries and Oceans Canada
☐	School District #67 (Okanagan Skaha)	☑	Fortis

Attachment No. 2 – Site Photo (Google Streetview)

TEMPORARY USE PERMIT

FILE NO.: E2015.018-TUP

TO: Alan & Carol Taylor
2925 Southern Crescent
Abbotsford, BC, V2T-5H6

GENERAL CONDITIONS

1. This Temporary Use Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.

2. The land described shall be developed strictly in accordance with the terms and conditions of this Permit, and any plans and specifications attached to this Permit which shall form a part thereof.

3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.

4. This Temporary Use Permit is not a Building Permit.

APPLICABILITY

5. This Temporary Use Permit applies to, and only to, those lands, including any and all buildings, structures and other development thereon, within the Regional District as shown on Schedules 'A' and 'B', and described below:

Legal Description:	Lots 15 & 16, Plan KAP519, District Lot 210, SDYD
Civic Address/location:	380 Gwendoline Avenue, Naramata
Parcel Identifier (PID):	012-280-097 Folio: E-00609.000

TEMPORARY USE

6. In accordance with Section 19.0 of the Electoral Area "E" Official Community Plan Bylaw No. 2458, 2008, the land specified in Section 5 may be used for a vacation rental use as defined in the Electoral Area "E" Zoning Bylaw, being the use of a

residential dwelling unit for the accommodation of paying guests occupying the dwelling unit for a period of less than 30 days.

CONDITIONS OF TEMPORARY USE

7. The vacation rental use of the land is subject to the following conditions:
   (a) the vacation rental use shall occur only between June 15th and September 15th;
   (b) the following information must be posted within the dwelling unit while the vacation rental use is occurring:
      i) the location of property lines by way of a map;
      ii) a copy of the Regional District's Electoral Area "E" Noise Regulation and Prohibition Bylaw;
      iii) measures to address water conservation;
      iv) instructions on the use of appliances that could cause fires, and for evacuation of the building in the event of fire;
      v) instructions on the storage and management of garbage;
      vi) instructions on septic system care; and
      vii) instructions on the control of pets (if pets are permitted by the operator) in accordance with the Regional District's Animal Control Bylaw.
   (c) the maximum number of bedrooms that may be occupied by paying guests shall be two (2);
   (d) the number of paying guests that may be accommodated at any time shall not exceed four (4);
   (e) a minimum of two (2) on-site vehicle parking spaces shall be provided for paying guests, in accordance with Schedule 'B';
   (f) camping and the use of recreational vehicles, accessory buildings and accessory structures on the property for vacation rental occupancy are not permitted; and
   (g) current telephone contact information for a site manager or the property owner, updated from time to time as necessary, as well as a copy of this Temporary Use Permit shall be provided to the owner of each property situated within 100 metres of the land and to each occupant of such property if the occupier is not the owner.

COVENANT REQUIREMENTS

8. Not applicable.

SECURITY REQUIREMENTS

9. Not applicable.

EXPIRY OF PERMIT

10. This Permit shall expire on the 31st day of December, 2016.

Authorising resolution passed by the Regional Board on _____, 2015.

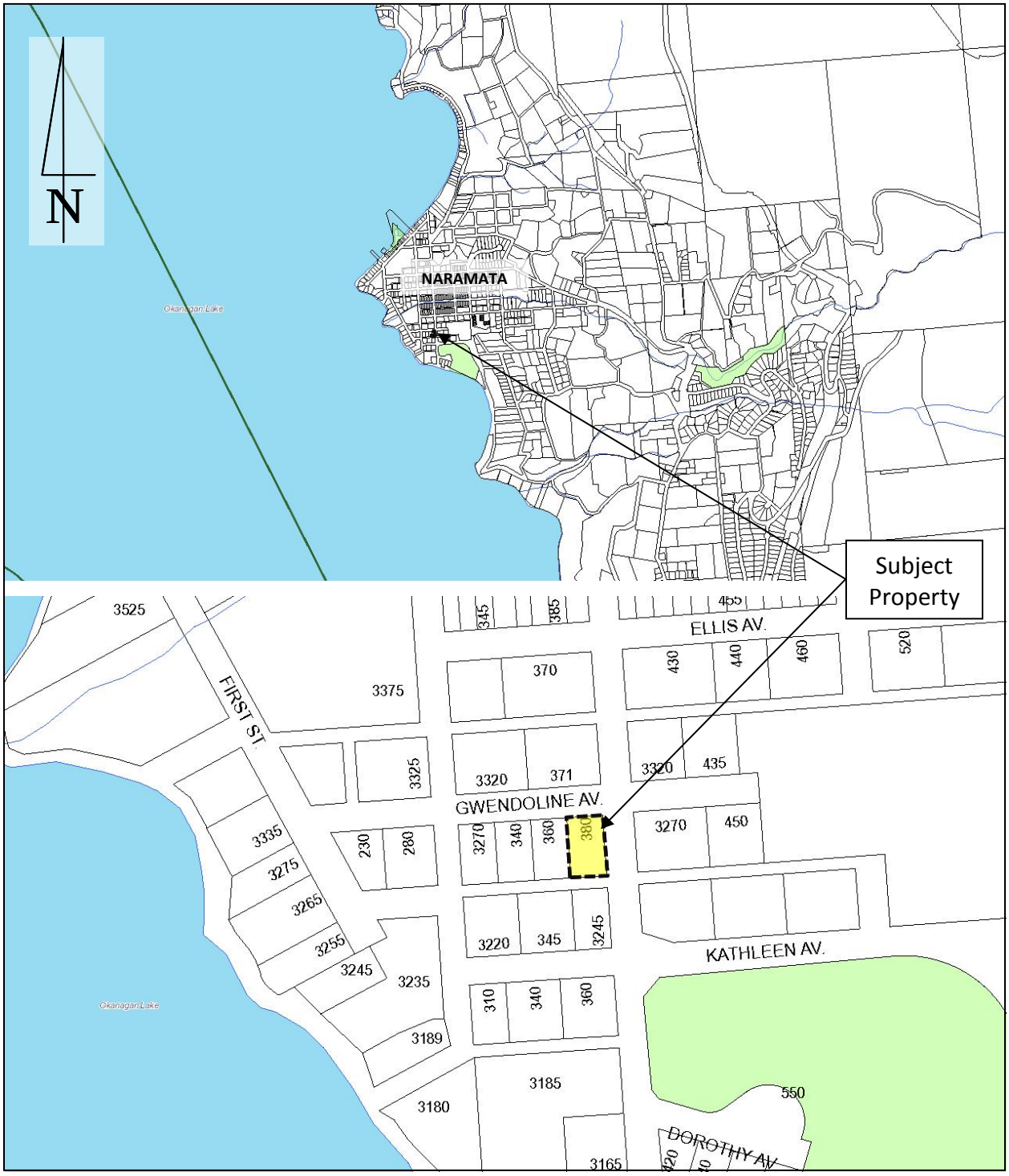
_____

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit File No. E2015.018-TUP

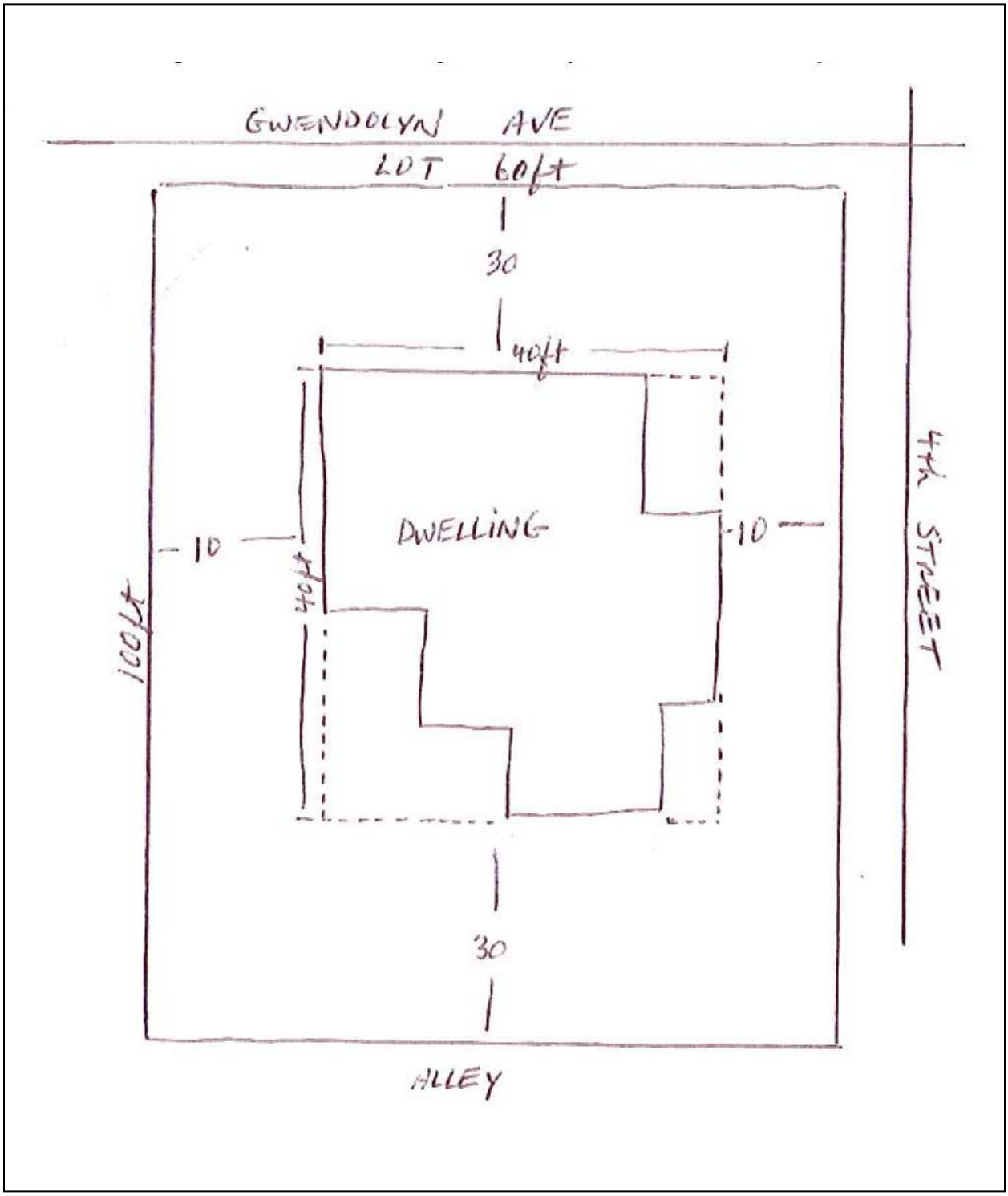
Schedule 'A'



Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit File No. E2015.018-TUP

Schedule 'B'



Lauri Feindell

TAYLOR
E2015.039.000

From: Beaupre, John <John.Beaupre@interiorhealth.ca>
Sent: March-19-15 12:17 PM
To: Planning
Subject: Temporary Use Permit - RDOS File: E2015.018-TUP IHA File: NX0190039229001

Attention Christopher Garrish, MCIP RPP
Regional District of Okanagan-Similkameen
101 Martin Street, Penticton, BC
V2A 5J9

Dear Mr. Garrish:

Re: Temporary Use Permit for Short-Term Vacation Rental
Lots 15 & 16, Plan KAP519, District Lot 210, SDYD
380 Gwendoline, Naramata, Electoral Area "E"

Thank you for the opportunity to provide comment on the above referenced TUP from the viewpoint of our policies and regulations governing water supply and wastewater.

This office has no objection to the issuance of the TUP however we do recommend that the owners of the subject property ensure that maintenance of the onsite sewerage dispersal system serving the dwelling is up to date in that the septic tank has been pumped out and inspected by an Authorized Person in the past 3 to 5 years. It should also be confirmed by an AP that the dispersal field is functioning properly and that the dispersal system has the capacity for and is suitable for the change in use of the property.

Please contact me with any questions you may have.

Thank you.

John C. Beaupre, C.P.H.I.(C)
Environmental Health Officer
Interior Health Authority
Penticton Health Protection
105 – 550 Carmi Avenue, Penticton, BC, V2A 3G6
Bus: (250) 770-5540
Direct: (250) 492-4000 Ext: 2744
Cell: (250) 809-7356
Fax: (250) 770-5541
Email: john.beaupre@interiorhealth.ca
Web: www.interiorhealth.ca

Lauri Feindell

TAYLOR,
E00609.000

From: Danielson, Steven <Steven.Danielson@fortisbc.com>
Sent: April-17-15 3:53 PM
To: Planning
Cc: Mirsky, Nicholas
Subject: Gwendoline Ave 380 Naramata (E2015-018-TUP)

With respect to the above noted file,

There are primary distribution facilities along Gwendoline Avenue. The applicant is responsible for costs associated with any change to the subject property's existing service, if any, as well as the provision of appropriate land rights where required.

Otherwise, FortisBC Inc. (Electric) has no concerns with this circulation.

In order to initiate the design process, the customer must call 1-866-4FORTIS (1-866-436-7847). It should be noted that additional land rights issues may arise from the design process but can be dealt with at that time, prior to construction.

If you have any questions or comments, please contact me at your convenience.

Best Regards,

Steven Danielson,
Contract Land Agent for:

Nicholas Mirsky, B.Comm., AACI, P.App.
Land Agent | Lands & Planning | FortisBC Inc.

2850 Benvoulin Rd
Kelowna, BC V1W 2E3
Office: 250.469.8033
Mobile: 250.718.9398
Fax: 1.866.636.6171
nicholas.mirsky@fortisbc.com

FORTIS BC

Lauri Feindell

From: Cooper, Diana FLNR:EX <Diana.Cooper@gov.bc.ca>
Sent: March-18-15 3:19 PM
To: Planning
Subject: RE: E2015-018-TUP (Taylor)

Hello Christopher,

Thank you for your referral regarding a temporary use permit for 380 Gwendoline Avenue, Naramata, PID 012-280-097, L 16 BK 14 DL 210 SIMILKAMEEN DIVISION YALE DISTRICT PL 519. According to Provincial records there are no known archaeological sites recorded on the subject property. The property is in an area with a high potential for previously unrecorded archaeological sites, but the vacation rental of the property will not have any impact on archaeological sites, if they proved to be present.

There is always a limited possibility for unknown archaeological sites to exist on the property. Archaeological sites (both recorded and unrecorded) are protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. If any land-altering development is planned for the property, owners and operators should be notified that if an archaeological site is encountered during development, activities must be halted and the Archaeology Branch contacted at 250-953-3334 for direction.

Please review the screenshot of the property below (outlined in yellow). If this does not represent the property listed in the referral please contact me.

Kind regards,

Diana

Diana Cooper | Archaeologist/Archaeological Site Inventory Information and Data Administrator

Archaeology Branch | Ministry of Forests, Lands and Natural Resource Operations
Unit 3 - 1250 Quadra St, Victoria BC V8W 2K7 | PO Box 9816 Stn Prov Govt, Victoria BC V8W 9W3
Phone: 250-953-3343 | Fax: 250-953-3340 | Website: http://www.for.gov.bc.ca/archaeology/

Lauri Feindell

Subject: FW: E2015.018-TUP 380 Gwendoline Naramata

From: dennis smith [mailto:dennis58@shaw.ca]
Sent: June-01-15 2:30 PM
To: Christopher Garrish
Subject: E2015.018-TUP 380 Gwendoline Naramata

Hello Mr. Garrish,
I'd like you to know that I support the application for TUP at 380 Gwendoline Naramata. I live at 360 Gwendoline.
Thanks,
Dennis Smith
250-462-5023

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Temporary Use Permit Application — Electoral Area "D"

Administrative Recommendation:

THAT the Board of Directors approve Temporary Use Permit No. D2015.042-TUP

Purpose:	To allow for the operation of a short-term vacation rental		
Owner:	Robert & Catherine Huitikka	Applicant: Robert & Catherine Huitikka	Folio: D-01633.020
Civic:	100 Spruce Avenue, Kaleden	Legal: Lot B, Plan KAP45892, District Lot 103S, SDYD	
OCP:	Agriculture (AG)	Zoning: Agriculture One (AG1)	

Proposal:

The application seeks approval for the operation of a short-term vacation rental use at the subject property which will be comprised of four (4) bedrooms within the existing single detached dwelling and upwards of seven (7) on-site vehicle parking spaces.

The applicant has indicated that they spend the summers in Ontario and during that time rent out their home for short-term vacation rental uses between June 1st and September 15th.

Site Context:

The subject parcel is approximately 0.674 ha in area and is situated at the north-east corner of the intersection of Juniper Avenue and Spruce Avenue in Kaleden. The property is seen to be comprised of a single detached dwelling and garage and is partially in agricultural production.

The surrounding pattern of development is characterised by rural-residential parcels and agricultural operations.

Background:

The property was created by subdivision in 1991, while the development of the existing dwelling and garage is believed to predate the establishment of the Regional District in 1966.

Under the Electoral Area "D-1" Zoning Bylaw No. 2457, 2008, the property is currently zoned Agriculture One (AG1) which only allows for a number of commercial agricultural uses as well as residential (i.e. "single detached dwellings") as principal permitted uses. This zoning also accommodated a limited number of non-agricultural commercial uses associated with the residential use of a parcel, such as "home occupations" and "bed and breakfast operations".

While the Electoral Area "D-1" Official Community Plan (OCP) Bylaw No. 2456, 2008, the subject property is designated as Agriculture (AG) and is not subject to any development permit area designations.

The property is also situated within the Agricultural Land Reserve (ALR) and under Section 3(1) of the *Agricultural Land Reserve Use, Subdivision and Procedure Regulation*, agri-tourism on a farm is a permitted farm use provided that "the accommodation is limited to 10 sleeping units in total of seasonal campsites, seasonal cabins or short term use of bedrooms …" The operation of a "vacation rental" is seen to be akin to an agri-tourism use and as not requiring Agricultural Land Commission (ALC) approval.

Finally, the property is shown as comprising "Limited or no hazard or slumps and slides" geotechnical hazard classification.

Public Process:

At its meeting of May 12, 2015, the Electoral Area "D" Advisory Planning Commission (APC) resolved to recommend to the RDOS Board that the subject development application be approved subject to the following conditions:

1. *Subject to a public information meeting prior to going to the RDOS Board; and*
2. *Registered On-site Wastewater Practitioner to sign off that the septic can handle the additional load.*

Under Section 5.1.1 of the Regional District's Development Procedures Bylaw No. 2500, 2011, the Board may require that a Public Information Meeting be held prior to the consideration of a TUP, "if it considers the proposal to be of a significant scale or nature warranting an additional opportunity for the public to access information and inquire about the proposal beyond that available through the regular application referral and public hearing process."

In this instance, Administration notes that this property has not previously been the subject of a written complaint related to vacation rental uses and considers the direct notification of adjacent neighbours to be sufficient.

In accordance with Section 2.5 of Schedule '5' of the Development Procedures Bylaw, this proposal has been referred to the external agencies listed at Attachment No. 2. To date, comments have been received from Interior Health Authority (IHA) and are compiled and included as a separate item on the Board Agenda.

Alternatives:

1. THAT the Regional Board of Directors deny Temporary Use Permit No. D2015.042-TUP; OR
2. THAT the Regional Board of Directors defer consideration of Temporary Use Permit No. D2015.042-TUP subject to the completion of a Public Information Meeting to be organised by the applicant.

Analysis:

In assessing this proposal, Administration notes that the OCP Bylaw is silent on the operation of "vacation rental" uses in the Agricultural (AG) designation, but does support property owners being able to diversify and enhance uses secondary to agricultural uses, other "value-added" uses such as

agri-tourism for the purpose of diversifying and enhancing farm income, provided they do not present a potential land use conflict with surrounding properties.

In addition, this proposal is generally seen to comply with the assessment criteria used to consider applications for a TUP related to a vacation rental use in a residential neighbourhood, these being:

a) capability of accommodating on-site domestic water and sewage disposal;

b) mitigating measures such as screening and fencing;

c) provision of adequate off-street parking;

d) confirmation that the structure proposed for use as a vacation rental meets a minimum standard for health and safety; and

e) benefits that such accommodation may provide to the community.

In response to this criteria, the applicant has stated that water is provided by the Kaleden Irrigation District and that the septic system was last serviced by Dicks Septic in April of 2011 and no issues with its operation identified at that time.

While Administration is aware of the comments received from the APC as well as IHA regarding the septic system, the applicant has proposed to reduce the number of bedrooms from 4 to 5, and it is proposed that this issue be dealt with the next time the septic is scheduled to be serviced and prior to the renewal of any TUP that may be approved by the Board.

With regard to screening and fencing, the applicant has stated that "there is deer fence around the whole property. The property is gated with a private security code. There is a 7ft. hedge on the north and east side of the house."

In terms of on-site vehicle parking, there are approximately "6-7 vehicles on the property. No parking allowed on the street. This property was a B and B for 15 years before …"

A health and safety inspection determined that the windows on one of the proposed bedrooms did not meet building code requirements for egress. In response, the applicant has amended their proposal by excluding this room (i.e. use will be for 4 bedrooms instead of 5).

Finally, the applicant has stated that, in terms of community benefit, "the restaurants, wineries and the fruit/vegetable stand next door in Kaleden will benefit a lot. The grocery stores, restaurants and wineries and gift shops will benefit in Penticton also. The rentals are all families (grandma/grandpa, kids and grandkids). 6 to 8 adult at one time is the most. We scan all our guests before they book. We do not accept a group of young people (party people). This is our home for 7 months of year …"

Given the OCP Bylaw generally supports accessory commercial/residential uses related to tourist accommodation in the Agriculture (AG) designation, Administration is supportive of this proposal.

Under the Regional District's "Vacation Rental Temporary Use Permit Policy", a term limit not exceeding 18 months shall be applied to Temporary Use Permit being issued for a vacation rental use on land which has not been the subject of such an approved use previously (or which is being proposed by new owners of the land).

The intent of this Policy is to allow for a new vacation rental use to operate for one "season" in order to determine if such a use is inappropriate, incompatible or unviable at a particular location and, if so, to allow for the permit to lapse or not be renewed within a relatively short period.

Given delays associated with the issuance of TUPs for vacation rental uses due to the proposal (since abandoned) to amend the Electoral Area "D" OCP Bylaw to remove references to Health & Safety Inspections, Administration is recommending that the term of this TUP be to December 31, 2016.

Respectfully submitted:

C. Garrish, Planning Supervisor

Endorsed by:

D. Butler, Development Services Manager

Attachments: No. 1 – Agency Referral List

No. 2 – Site Photo (Google Streetview)

Attachment No. 1 – Agency Referral List

Referrals have been sent to the following agencies as highlighted with a ☑, prior to Board consideration of TUP No. D2015.042-TUP:

☑	Agricultural Land Commission (ALC)	☐	City of Penticton
☑	Interior Health Authority (IHA)	☐	District of Summerland
☑	Ministry of Agriculture	☐	Town of Oliver
☐	Ministry of Community, Sport and Cultural Development	☐	Town of Osoyoos
☐	Ministry of Energy & Mines	☐	Town of Princeton
☑	Ministry of Environment	☐	Village of Keremeos
☐	Ministry of Forests, Lands & Natural Resource Operations	☑	Okanagan Nation Alliance (ONA)
☑	Archaeology Branch	☑	Penticton Indian Band (PIB)
☐	Ministry of Transportation and Infrastructure	☐	Osoyoos Indian Band (OIB)
☐	Integrated Land Management Bureau	☐	Upper Similkameen Indian Bands (USIB)
☐	BC Parks	☐	Lower Similkameen Indian Bands (LSIB)
☐	School District #53 (Okanagan Similkameen)	☐	Environment Canada
☐	School District #58 (Nicola Similkameen)	☐	Fisheries and Oceans Canada
☐	School District #67 (Okanagan Skaha)	☑	Fortis
☑	Kaleden Irrigation District		

Attachment No. 2 – Site Photo (Google Streetview)

TEMPORARY USE PERMIT

FILE NO.: D2015.042-TUP

TO: Robert & Catherine Huitikka
100 Spruce Avenue
Kaleden, BC, V0H-1K0

GENERAL CONDITIONS

1. This Temporary Use Permit is issued subject to compliance with all of the bylaws of the Regional District of Okanagan-Similkameen applicable thereto, except as specifically varied or supplemented by this Permit.

2. The land described shall be developed strictly in accordance with the terms and conditions of this Permit, and any plans and specifications attached to this Permit which shall form a part thereof.

3. Where there is a conflict between the text of the permit and permit drawings or figures, the drawings or figures shall govern the matter.

4. This Temporary Use Permit is not a Building Permit.

APPLICABILITY

5. This Temporary Use Permit applies to, and only to, those lands, including any and all buildings, structures and other development thereon, within the Regional District as shown on Schedules 'A', 'B', 'C', 'D' and 'E', and described below:

Legal Description:	Lot B, Plan KAP5892, District Lot 103S, SDYD
Civic Address/location:	100 Spruce Avenue, Kaleden
Parcel Identifier (PID):	017-493-277 Folio: D-01633.020

TEMPORARY USE

6. In accordance with Section 18.0 of the Electoral Area "D" Official Community Plan Bylaw No. 2456, 2008, the land specified in Section 5 may be used for a vacation rental use as defined in the Electoral Area "D" Zoning Bylaw, being the use of a

residential dwelling unit for the accommodation of paying guests occupying the dwelling unit for a period of less than 30 days.

CONDITIONS OF TEMPORARY USE

7. The vacation rental use of the land is subject to the following conditions:
   (a) the vacation rental use shall occur only between June 1st and September 15th;
   (b) the following information must be posted within the dwelling unit while the vacation rental use is occurring:
      i) the location of property lines by way of a map;
      ii) a copy of the Regional District's Electoral Area "D" Noise Regulation and Prohibition Bylaw;
      iii) measures to address water conservation;
      iv) instructions on the use of appliances that could cause fires, and for evacuation of the building in the event of fire;
      v) instructions on the storage and management of garbage;
      vi) instructions on septic system care; and
      vii) instructions on the control of pets (if pets are permitted by the operator) in accordance with the Regional District's Animal Control Bylaw.
   (c) the maximum number of bedrooms that may be occupied by paying guests shall be four (4);
   (d) the number of paying guests that may be accommodated at any time shall not exceed eight (8);
   (e) a minimum of four (4) on-site vehicle parking spaces shall be provided for paying guests;
   (f) camping and the use of recreational vehicles, accessory buildings and accessory structures on the property for vacation rental occupancy are not permitted; and
   (g) current telephone contact information for a site manager or the property owner, updated from time to time as necessary, as well as a copy of this Temporary Use Permit shall be provided to the owner of each property situated within 100 metres of the land and to each occupant of such property if the occupier is not the owner.

COVENANT REQUIREMENTS

8. Not applicable.

SECURITY REQUIREMENTS

9. Not applicable.

EXPIRY OF PERMIT

10. This Permit shall expire on the 31st day of December, 2016.

Authorising resolution passed by the Regional Board on _____, 2015.

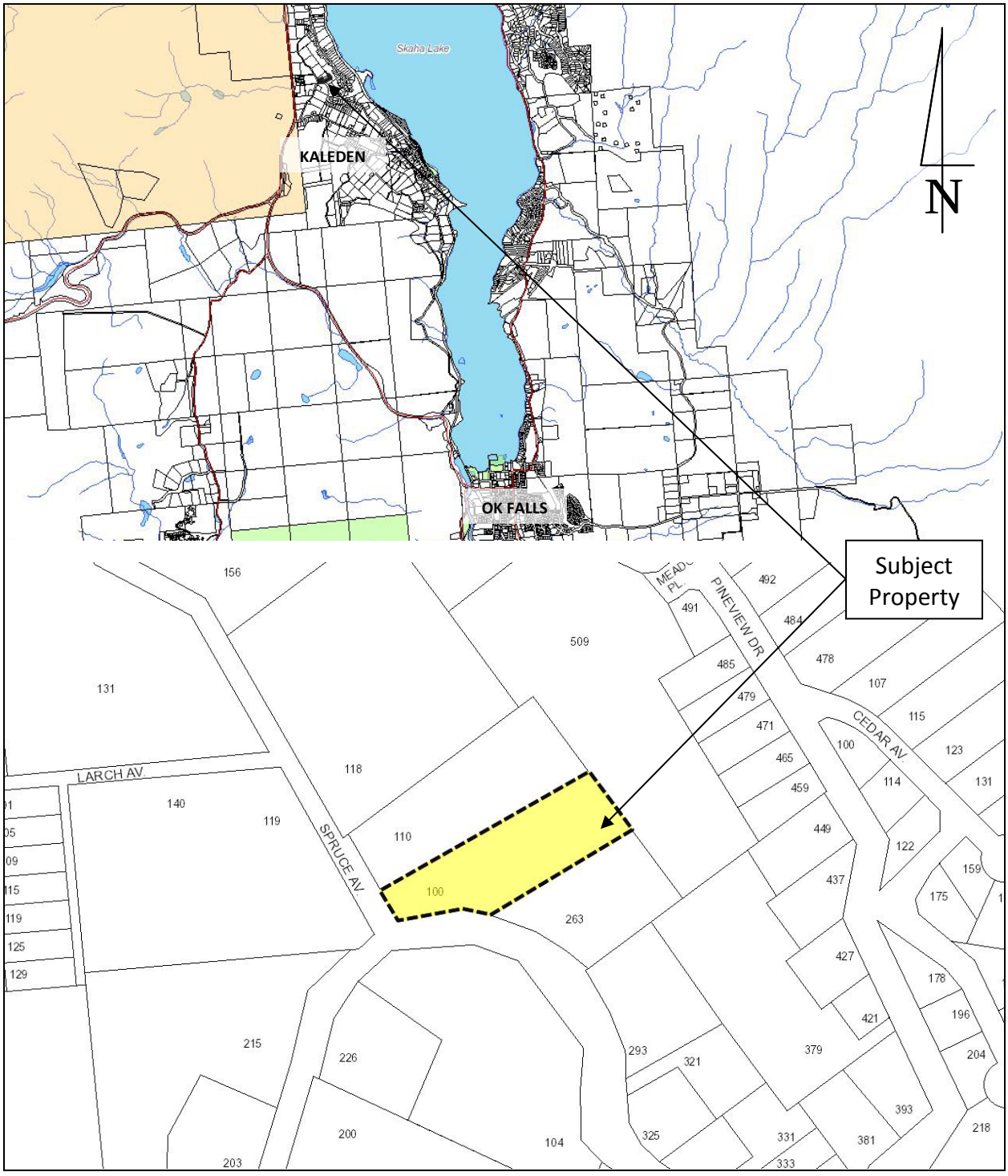
_____

B. Newell, Chief Administrative Officer

Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit File No. D2015.042-TUP

Schedule 'A'

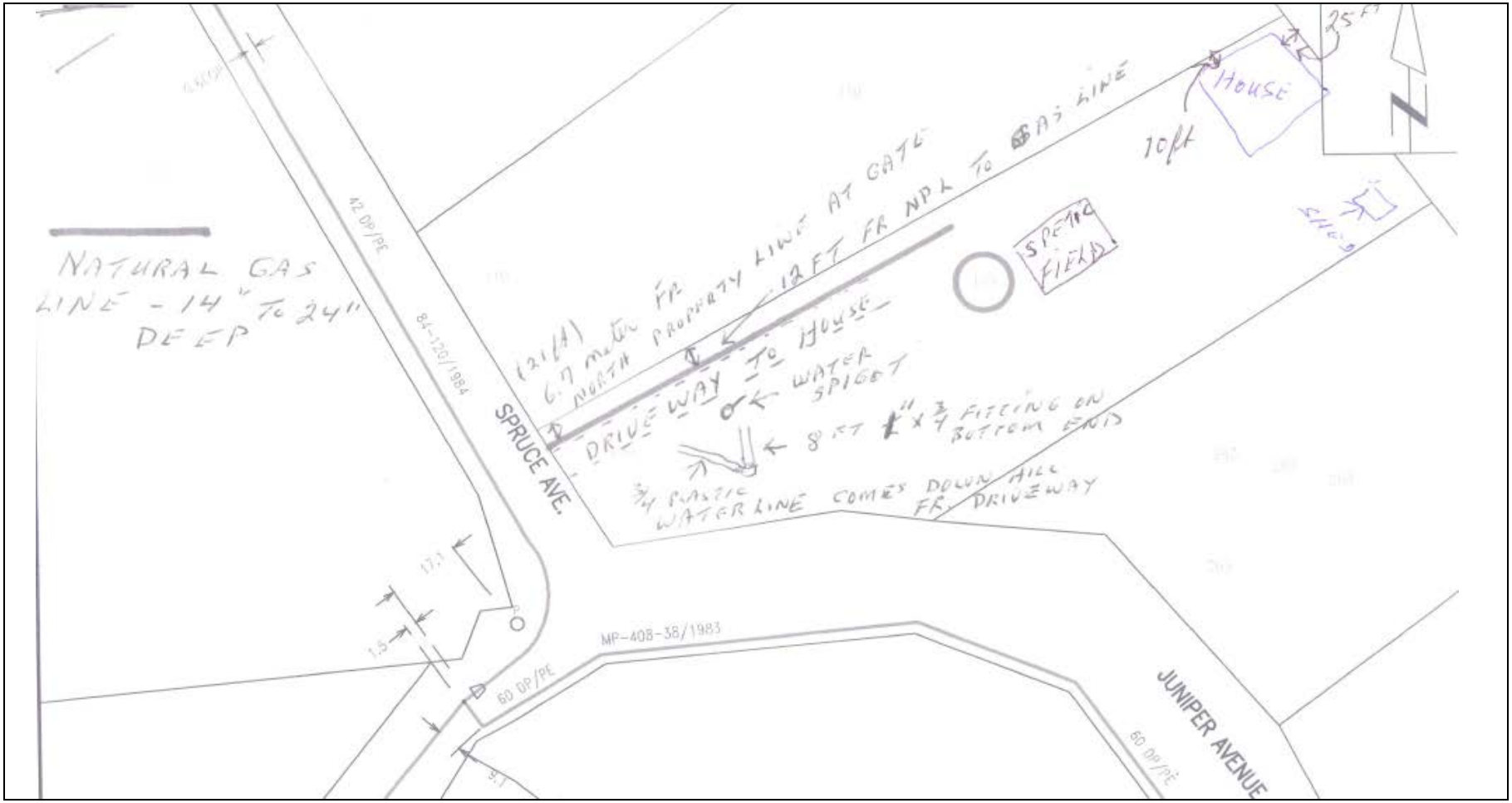


Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit

File No. D2015.042-TUP

Schedule 'B'

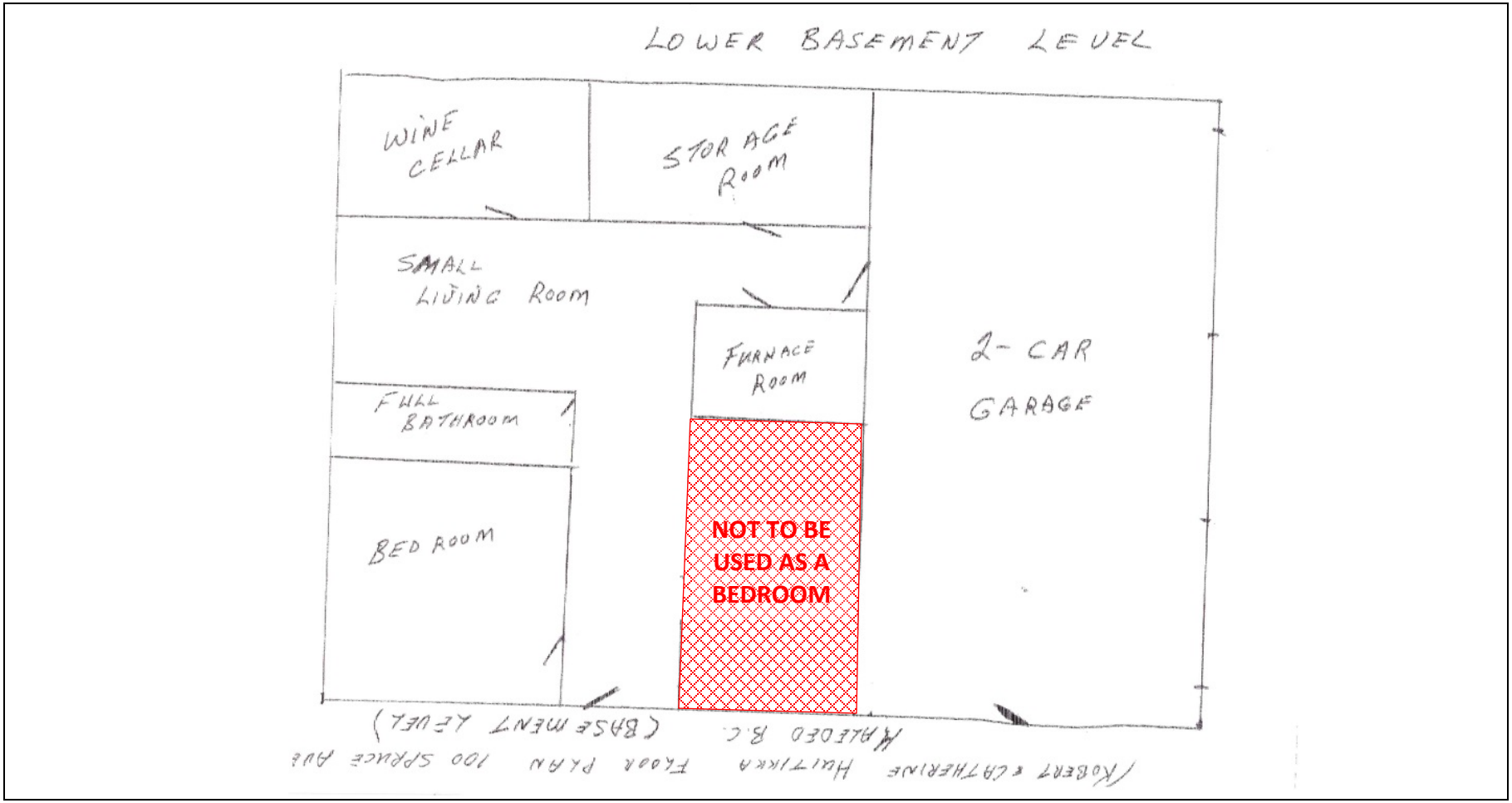


Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit

File No. D2015.042-TUP

Schedule 'C'

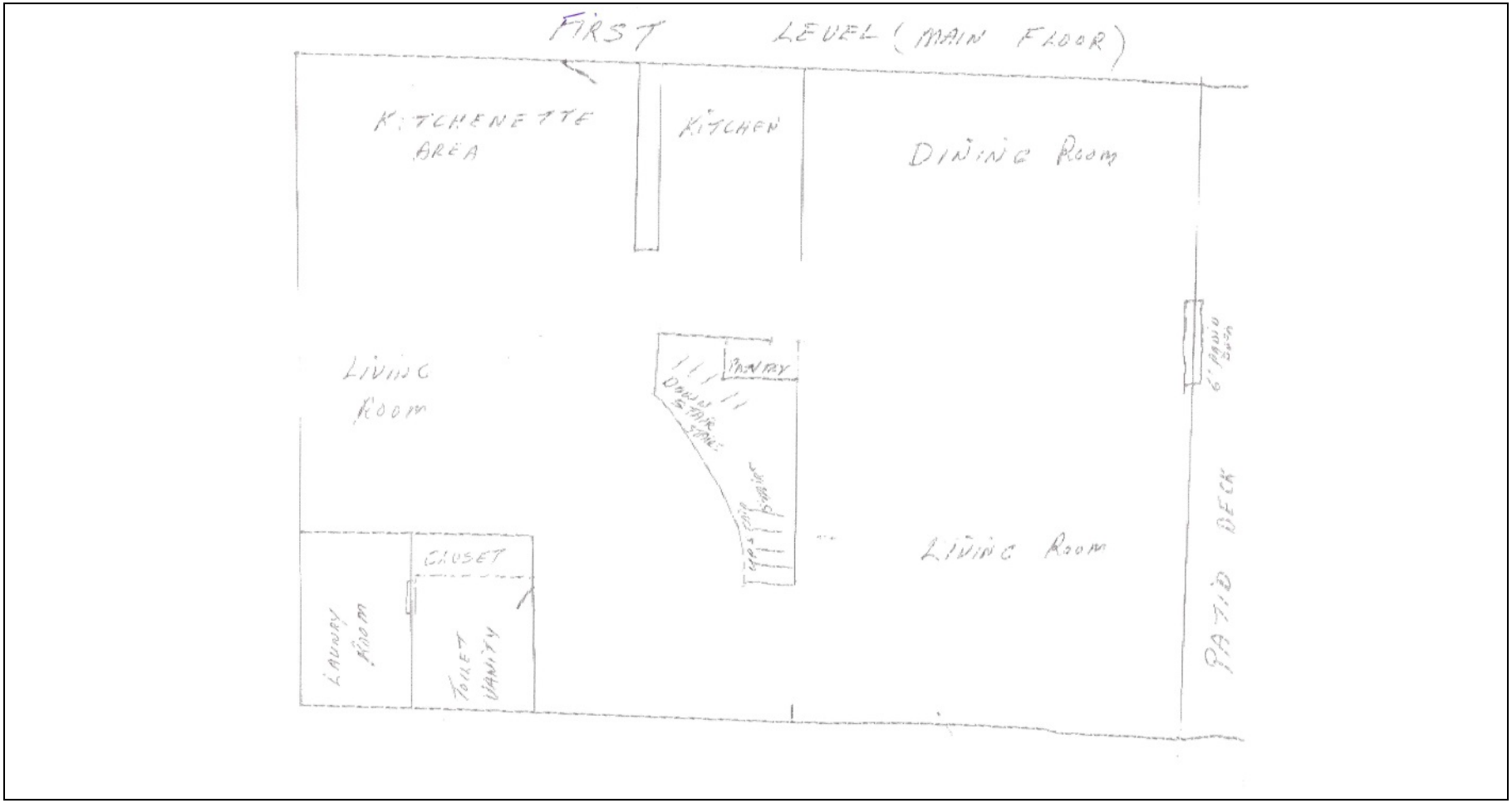


Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit

File No. D2015.042-TUP

Schedule 'D'

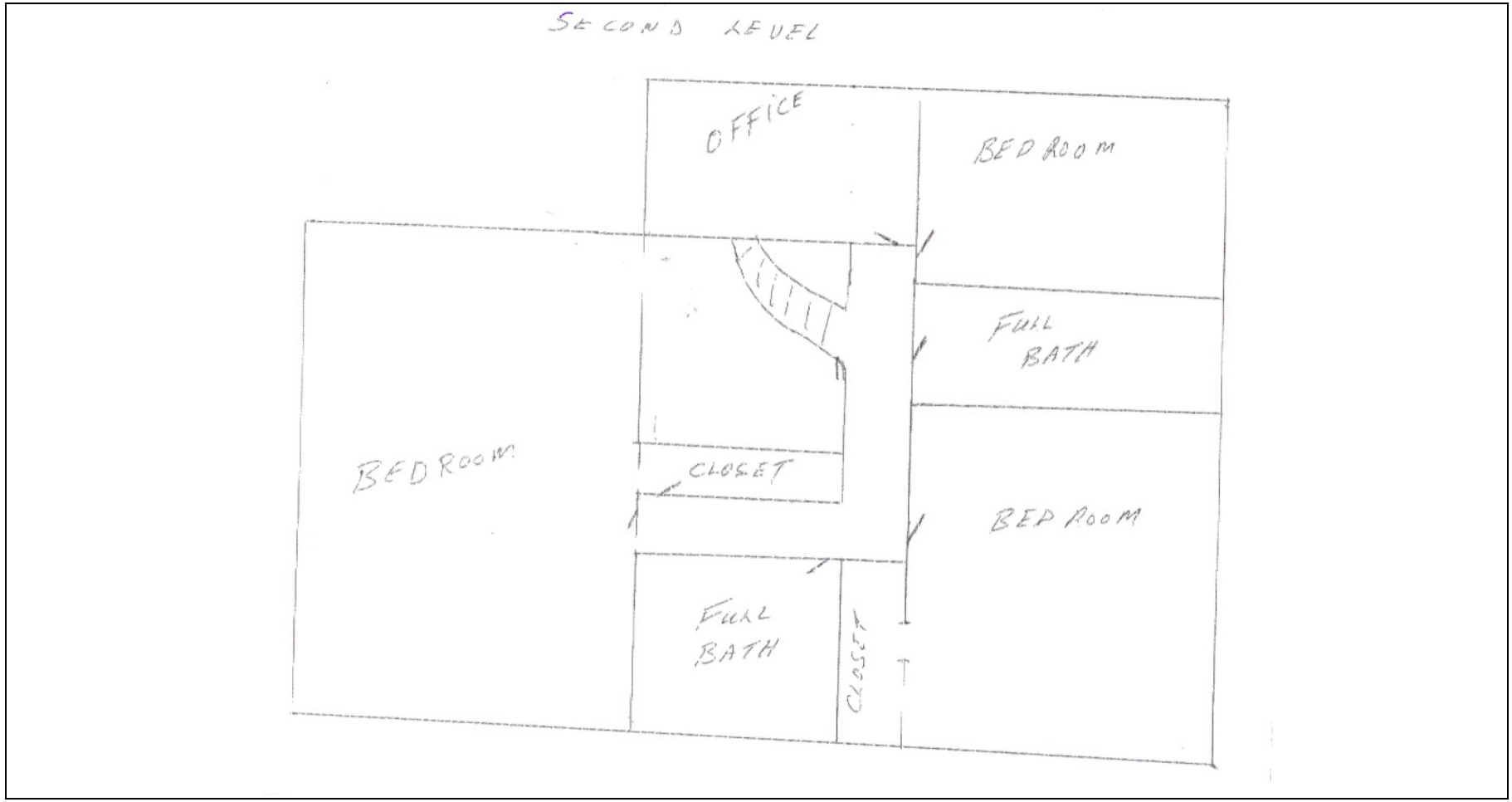


Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC V2A 5J9
Tel: (250) 492-0237 Fax (250) 492-0063

Temporary Use Permit

File No. D2015.042-TUP

Schedule 'E'



Lauri Feindell

From: Beaupre, John <John.Beaupre@interiorhealth.ca>
Sent: May-11-15 12:14 PM
To: Planning
Subject: Temporary Use Permit - RDOS File: D2015.042-TUP

Attention Christopher Garrish, MCIP RPP
Regional District of Okanagan-Similkameen
101 Martin Street, Penticton, BC
V2A 5J9

Dear Mr. Garrish:

Re: TUP For Operation of a Short-Term Vacation Rental
Lot B, Plan KAP45892, District Lot 103S, SDYD
100 Spruce Avenue, Kaleden

Thank you for the opportunity to provide comment on the above referenced TUP Application to undertake the operation of a short-term vacation rental use at the subject property.

Documents we have on file indicate in 1991 an onsite sewage disposal system was installed on the subject property to service a 3 bedroom dwelling. The floor plan of the existing dwelling shows 5 bedrooms in the dwelling. Therefore it appears the existing onsite sewage disposal system is undersized for the sewage flows generated by a 5 bedroom dwelling.

This office recommends that as a condition of approval of the proposed vacation rental use of the dwelling the existing sewage disposal system be enlarged or replaced with a new system sized to accommodate sewage flows generated by the existing 5 bedroom dwelling.

Please contact me with any questions you mat have.

Thank you.

John C. Beaupre, C.P.H.I.(C)
Environmental Health Officer
Interior Health Authority
Penticton Health Protection
105 – 550 Carmi Avenue, Penticton, BC, V2A 3G6
Bus: (250) 770-5540
Direct: (250) 492-4000 Ext: 2744
Cell: (250) 809-7356
Fax: (250) 770-5541
Email: john.beaupre@interiorhealth.ca
Web: www.interiorhealth.ca

Christopher Garrish
Planning Supervisor
101 Martin Street
Penticton, B.C. V2A 5J9

re: vacation rental comments
100 Spruce Avenue, Kaleden

June 5, 2015

The 3 storey house (walkout basement included) is 3000 sq.ft. and has 5 bedrooms. Originally, it is part of a 5 acre parcel that was subdivided into 3 properties. It operates as a vacation rental over the summer and becomes a commercial venture.

The surrounding houses (houses, not property lines) are nearer 100 meters away - from house to house.

Being the closest, around 20 meters away - from house to house - has privacy and security concerns.

Thank you for input to the "temporary use permits" being set up.

Alan Kwok

[redacted]

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Floodplain Exemption Application — Electoral Area "H"

Administrative Recommendation:

THAT the RDOS Board approve an Exemption to the Floodplain Regulations prescribed at Sections 8.2.2 and 8.3.3.3(a)(i) of the Electoral Area "H" Zoning Bylaw No. 2498, 2012, in order to:

i) reduce the floodplain setback from the west tributary of Bonnevier Creek from 15.0 metres to 14.3 metres;

ii) reduce the floodplain setback from the east tributary of Bonnevier Creek from 15.0 metres to 8.8 metres; and

iii) reduce the requirement to locate the wooden floor system of a dwelling unit from 1.0 metre to 0.0 metres above the natural ground elevation taken at any point on the perimeter of the building

applied to buildings and structures on the legal parcel described as Lot 5, Plan KAP20249, District Lot 902, YDYD;

AND THAT this Exemption to the Floodplain Regulations be conditional upon registration of a statutory covenant against the legal parcel described as Lot 5, Plan KAP20249, District Lot 902, YDYD, that will "save harmless" the Regional District against any damages as a result of a flood occurrence.

Purpose: To reduce the floodplain setbacks from the west and east tributaries of Bonnevier Creek from 15.0 metres to 14.3 metres and 8.8 metres, respectively, and to reduce the requirement to locate the wooden floor system of a dwelling unit from 1.0 metre to 0.0 metres above natural ground elevation, in order to facilitate the construction of a proposed house addition.

Owners: Ada and Frank Folino Agent: Franco Tessari Folio: H-00794.120

Civic: 176 Rivers End Road Legal: Lot 5, Plan KAP20249, District Lot 902, YDYD

OCP: Small Holdings (SH) Zone: Small Holdings Four (SH4)

Proposed Development:

This application seeks to reduce the floodplain setbacks from the west and east tributaries of Bonnevier Creek from 15.0 metres to 14.3 metres and 8.8 metres , respectively, and to reduce the requirement to locate the wooden floor system of a dwelling unit from 1.0 metre to 0.0 metres above natural ground elevation, in order to facilitate the construction of a proposed house addition.

Specifically, the applicants propose to construct a new 2-level addition to the east side of the existing single detached dwelling (cottage).

In support of the proposal, the applicant has provided a flood hazard assessment and addendum prepared by Matthew Yip, P. Eng., of Western Geotechnical Consultants Ltd.

Site Context:

Approximately 1,841 m^2 in area, the subject property is located within a residential subdivision at 176 Rivers End Road between Highway 3 and Bonnevier Creek. Existing development is seen to comprise one single detached dwelling (cottage) and one accessory building (storage shed). The surrounding pattern of development is characterised by similar low density residential development.

Background:

Under the Electoral Area "H" Zoning Bylaw No. 2498, 2012, the subject property is zoned Small Holdings Four (SH4), which allows one (1) principal dwelling and accessory buildings and structures.

However, under Section 8.2.2 of the Zoning Bylaw, the property is also subject to floodplain provisions, wherein "no building or structure shall be located within … 15.0 metres of the natural boundary of any other watercourse [other than a lake, pond or marsh] except the Similkameen and Tulameen Rivers …."

Further, Section 8.3.3.3(a)(i) of the Zoning Bylaw requires that the wooden floor system of a dwelling unit be located "no lower than 1.0 metre above the natural ground elevation taken at any point on the perimeter of the building".

Despite this restriction, Section 910(5) of the *Local Government Act* allows the Regional District to consider exempting a specific parcel for its floodplain regulations if the Board considers it advisable on the basis that:

a) *that the exemption is consistent with the Provincial guidelines, or*

b) *has received a report that the land may be used safely for the use intended, which report is certified by a person who is a professional engineer or geoscientist and experienced in geotechnical engineering.*

Under Schedule 'H' of the Electoral Area "H" OCP Bylaw No. 2498, 2012, the subject property has been identified as lands designated as a Watercourse Development Permit (WDP) area. A WDP application has been submitted for the proposal and is currently in process.

Alternative:

.1 THAT the Regional Board deny the Floodplain Exemption request.

Analysis:

In considering this floodplain exemption request against the requirements of Section 910(5) of the Act, Administration notes that the property owners have submitted a flood hazard assessment, dated April 11, 2015, and subsequent addendum, dated May 8, 2015, both prepared by Matthew Yip, P. Eng., of Western Geotechnical Consultants Ltd. This flood hazard assessment states:

> *In summary, based on the findings of this study and provided that all of the recommendations presented herein are implemented, there are no reasonably conceivable flood hazard issues that would preclude re-development of the subject property. The subject property may be safely used for its intended purpose.*

A minimum horizontal geotechnical setback of at least 7.5m from the Natural Boundary of adjacent watercourses is recommended. In addition, a minimum 1.5m Flood Construction Elevation is recommended to the underside of the finished floor system measured from the Natural Boundary of the adjacent watercourses on the property for flood and erosion protection.

The May 8, 2015, addendum states:

Provided the finished floor system is raised by 600mm as recommended in the report, it is our Professional Opinion based on our review of the available information and our assessment, that the intent of both the '1.0 m above natural ground elevation at perimeter of building' and the '1.5 m building elevation above natural boundaries of creeks' will both be satisfied.

Further to the Regional District's Development Procedures Bylaw No. 2500, 2011, a statutory covenant under Section 219 of the Land Title Act is required to be registered on title in order that the Regional District is "saved harmless" as a result of issuing this floodplain exemption.

Based upon the flood hazard assessment and addendum and the limited scope of development, it is recommended that the floodplain exemption request be approved and that the applicant enter into a statutory covenant in order to "save harmless" the Regional District in the event of future flood events.

Respectfully submitted:

Timothy Donegan

T. Donegan, Planning Technician

Endorsed by:

C. Garrish, Planning Supervisor

Endorsed by:

Donna Butler

D. Butler, Development Services Manager

Attachments: Attachment No. 1 – Context Maps

Attachment No. 2 – Applicant's Flood Construction Level Drawing

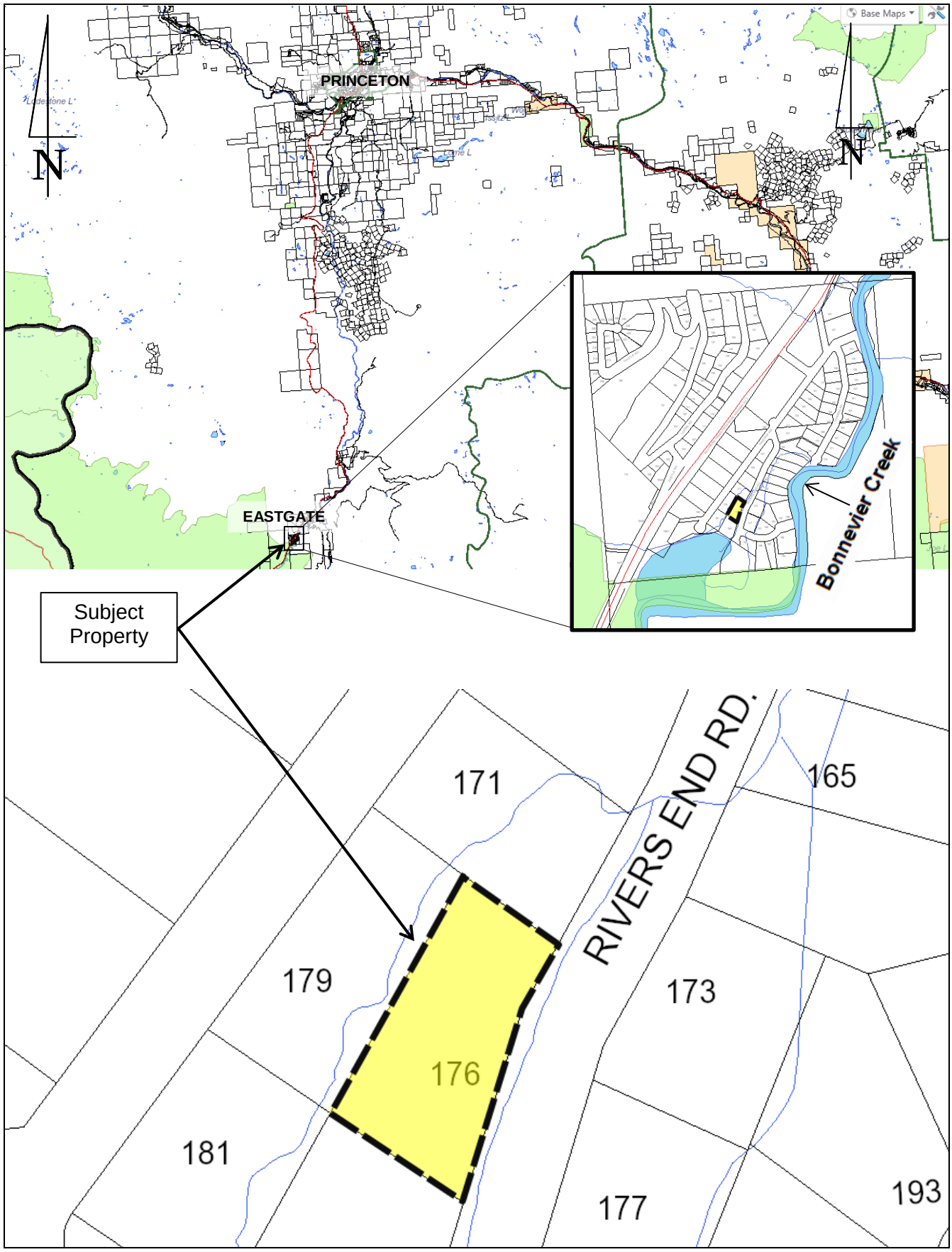
Attachment No. 3 – Applicant's Site Plan

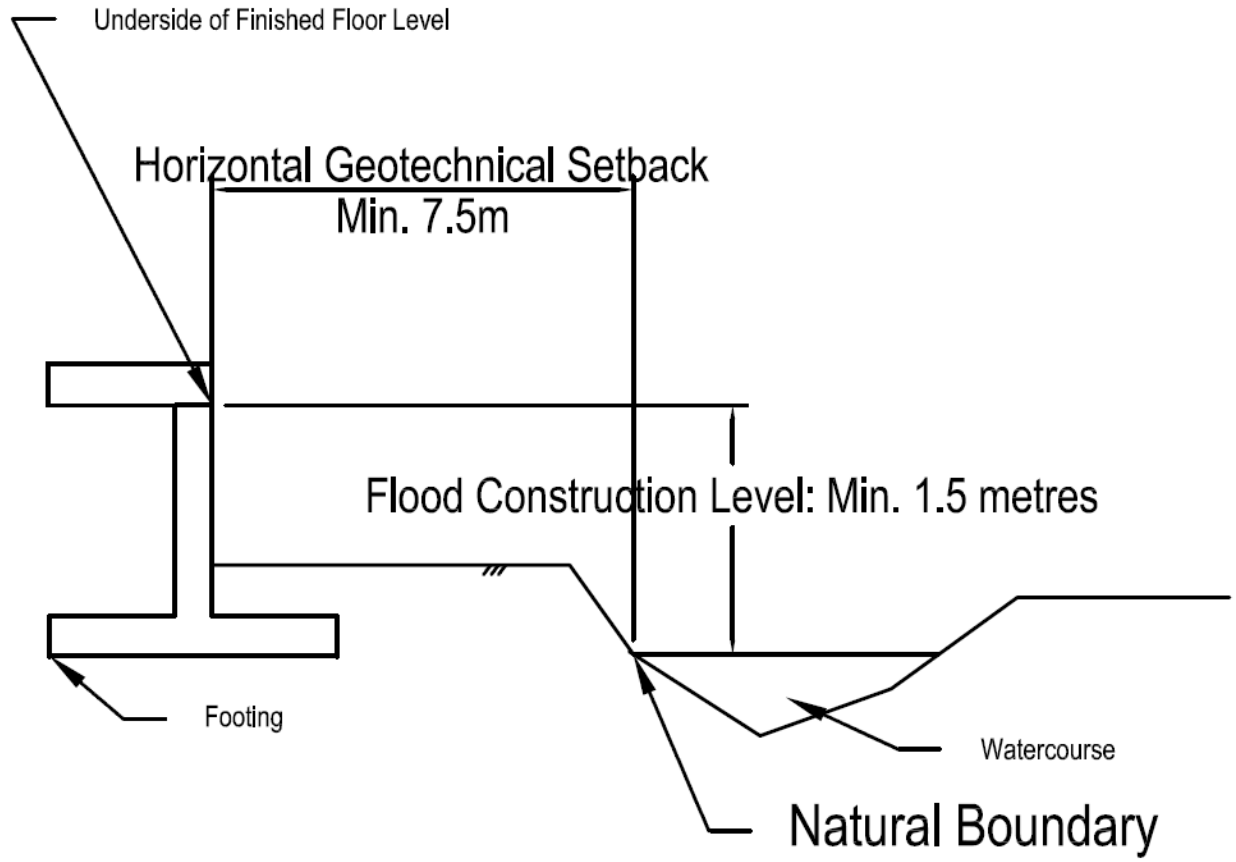
Attachment No. 4 – Applicant's Main Floor Plan

Attachment No. 5 – Applicant's Upper Floor Plan

Attachment No. 6 – Applicant's Elevation Plan

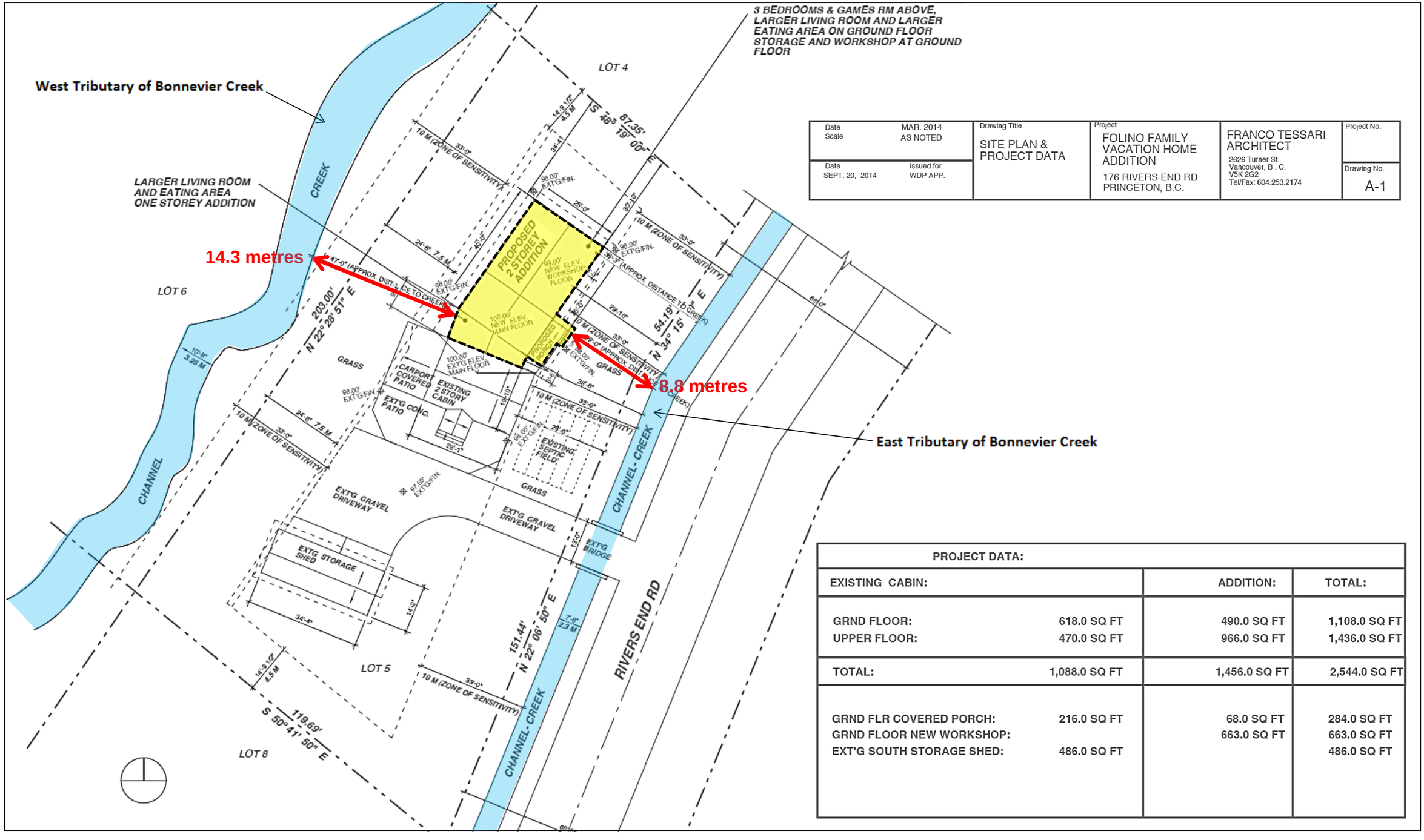
Attachment No. 1 – Context Maps





Flood Construction Level

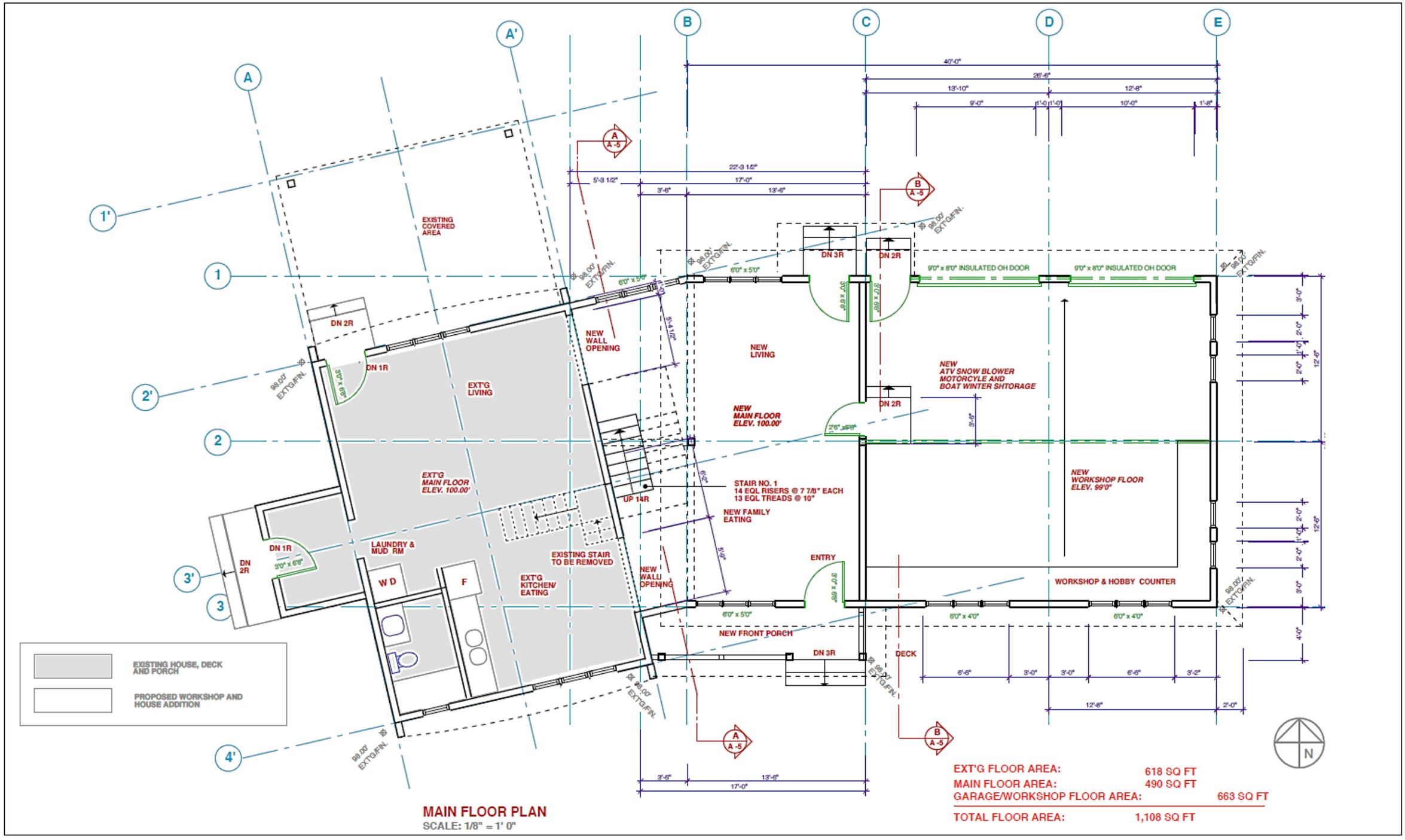
Not-to-scale



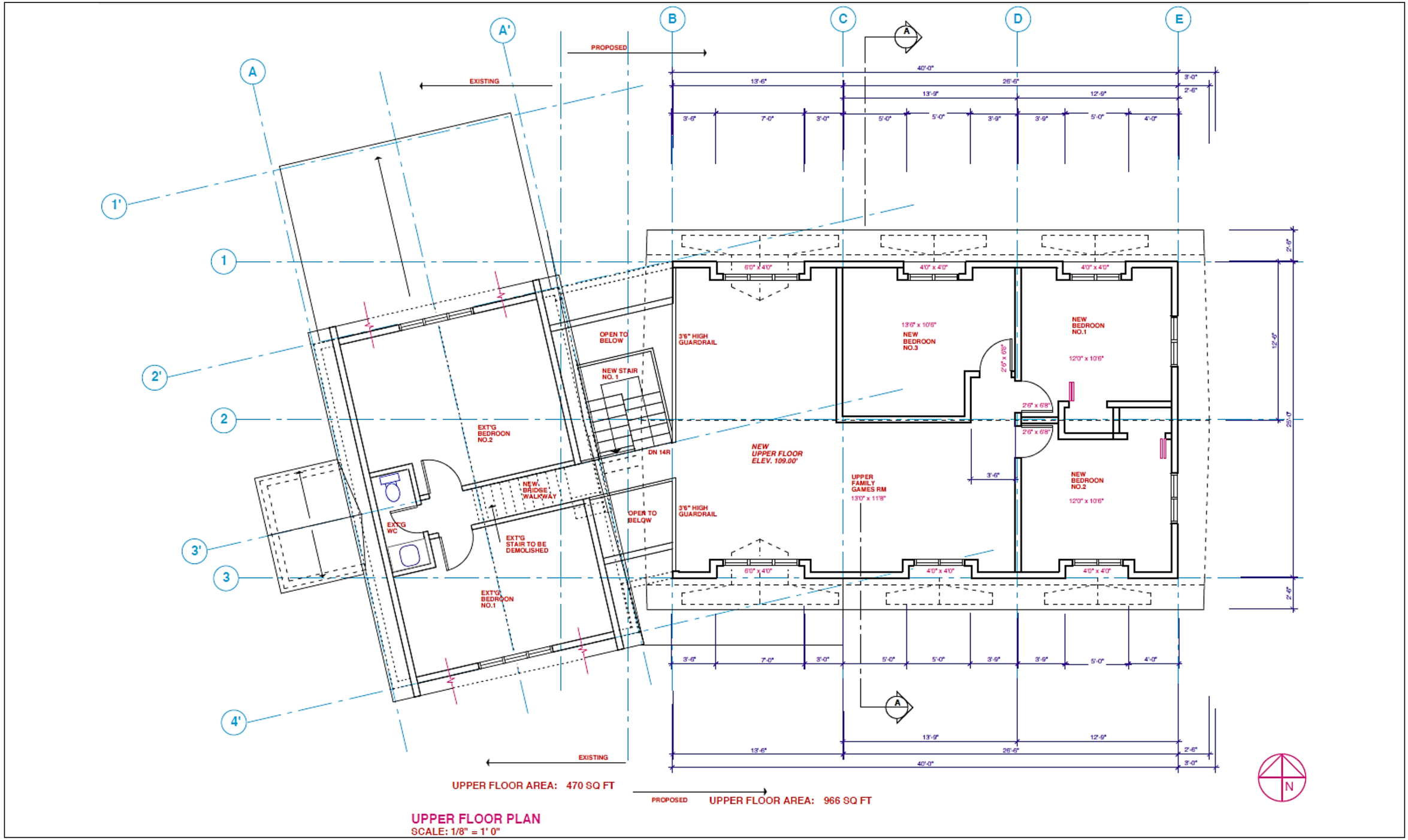
Date MAR. 2014 Scale AS NOTED	Drawing Title SITE PLAN & PROJECT DATA	Project FOLINO FAMILY VACATION HOME ADDITION 176 RIVERS END RD PRINCETON, B.C.	FRANCO TESSARI ARCHITECT 2626 Turner St. Vancouver, B . C. V5K 2G2 Tel/Fax: 604.253.2174	Project No.	
Date SEPT. 20, 2014 Issued for WDP APP.				Drawing No. A-1	

PROJECT DATA:			
EXISTING CABIN:		ADDITION:	TOTAL:
GRND FLOOR:	618.0 SQ FT	490.0 SQ FT	1,108.0 SQ FT
UPPER FLOOR:	470.0 SQ FT	966.0 SQ FT	1,436.0 SQ FT
TOTAL:	1,088.0 SQ FT	1,456.0 SQ FT	2,544.0 SQ FT
GRND FLR COVERED PORCH:	216.0 SQ FT	68.0 SQ FT	284.0 SQ FT
GRND FLOOR NEW WORKSHOP:		663.0 SQ FT	663.0 SQ FT
EXT'G SOUTH STORAGE SHED:	486.0 SQ FT		486.0 SQ FT

Attachment No. 4 –Applicant's Main Floor Plan



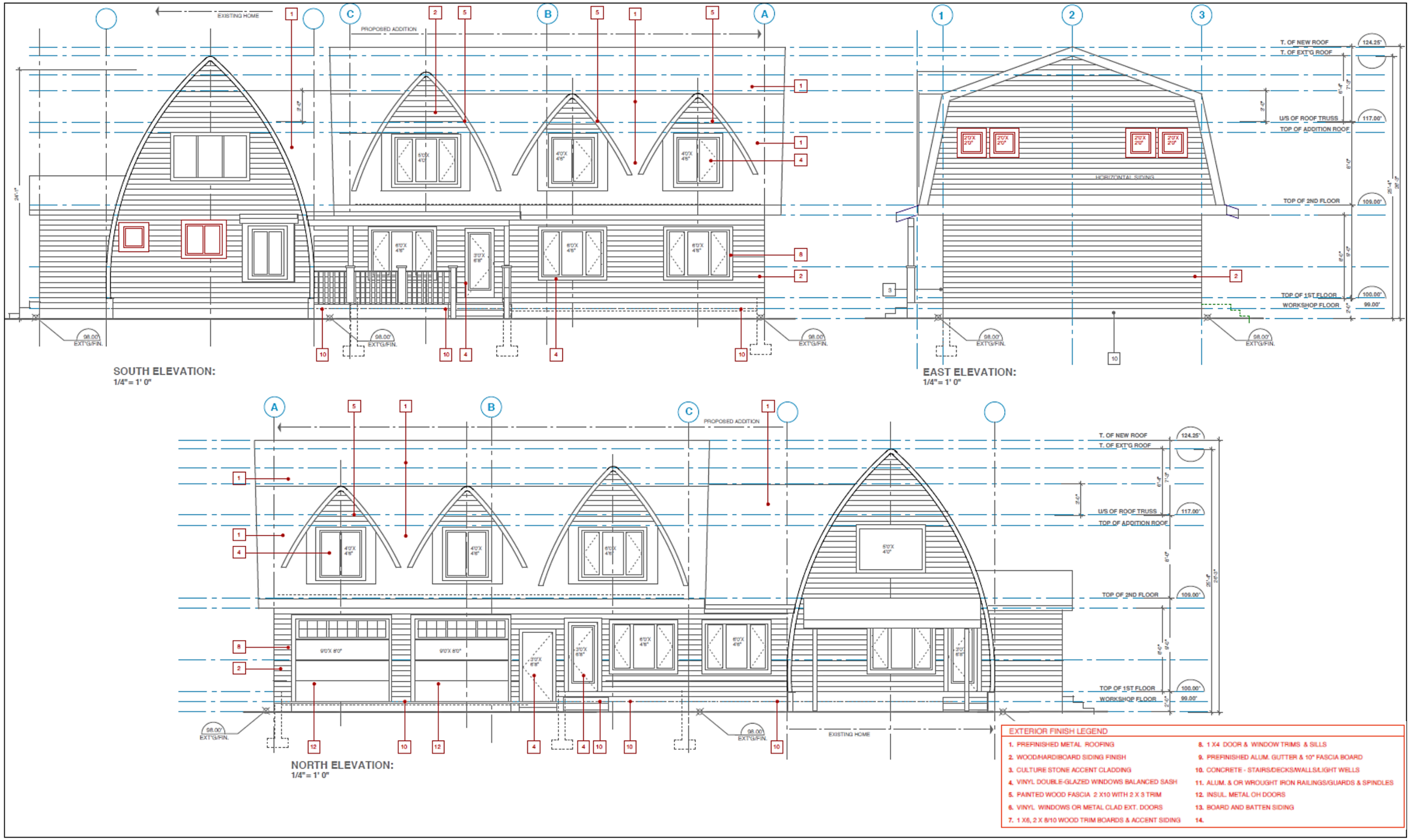
MAIN FLOOR PLAN
SCALE: 1/8" = 1' 0"



UPPER FLOOR AREA: 470 SQ FT

PROPOSED UPPER FLOOR AREA: 966 SQ FT

UPPER FLOOR PLAN
SCALE: 1/8" = 1' 0"


EXISTING HOME
PROPOSED ADDITION
T. OF NEW ROOF
T. OF EXT'G ROOF
U/S OF ROOF TRUSS
TOP OF ADDITION ROOF
TOP OF 2ND FLOOR
TOP OF 1ST FLOOR
WORKSHOP FLOOR
HORIZONTAL SIDING
98.00' EXT'G/FIN.
SOUTH ELEVATION:
1/4"= 1' 0"
EAST ELEVATION:
1/4"= 1' 0"
NORTH ELEVATION:
1/4"= 1' 0"
EXTERIOR FINISH LEGEND
1. PREFINISHED METAL ROOFING
2. WOOD/HARDIBOARD SIDING FINISH
3. CULTURE STONE ACCENT CLADDING
4. VINYL DOUBLE-GLAZED WINDOWS BALANCED SASH
5. PAINTED WOOD FASCIA 2 X10 WITH 2 X 3 TRIM
6. VINYL WINDOWS OR METAL CLAD EXT. DOORS
7. 1 X6, 2 X 8/10 WOOD TRIM BOARDS & ACCENT SIDING
8. 1 X4 DOOR & WINDOW TRIMS & SILLS
9. PREFINISHED ALUM. GUTTER & 10" FASCIA BOARD
10. CONCRETE - STAIRS/DECKS/WALLS/LIGHT WELLS
11. ALUM. & OR WROUGHT IRON RAILINGS/GUARDS & SPINDLES
12. INSUL. METAL OH DOORS
13. BOARD AND BATTEN SIDING
14.

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw No. 2486.01

Administrative Recommendation:

THAT Bylaw No. 2486.01, "Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw" be adopted.

Reference:

Okanagan Falls Sanitary Sewer Development Cost Charge Bylaw No. 2486, 2009
Development Cost Charge (DCC) Guide for Elected Officials, published by the BC Ministry of Community Development
March 19, 2015 Administrative report to the Board

History:

Okanagan Falls Sanitary Sewer Development Cost Charge Bylaw No. 2486, 2009 was adopted by the Board while the Okanagan Falls Wastewater Treatment Plant (WWTP) was in the construction phase of the overall project in 2009.

Analysis:

In 2009, an independent engineering consultant was used to establish the DCC using the best calculated costs for the WWTP at the time. Recently, the RDOS, using the same consultant as in 2009, conducted a review of the costs based on the actual costs of the WWTP and the grants from senior governments. The calculations are contained within the March 19, 2015 Administrative report to the Board.

In that report, administration advised that the proposed DCCs reflected a reduction in every land use category and that adjusting the DCCs would result in a more accurate cost of the WWTP.

An amendment bylaw, reflecting those adjustments was introduced at the March 19 meeting and received three readings. The bylaw was then forwarded to the Inspector of Municipalities for approval and returned to the RDOS for final action. The bylaw is now before the Board for adoption.

Alternatives:

THAT Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw No. 2486.01 not be adopted and first three readings be rescinded.

Respectfully submitted:

"*Christy Malden*"

_____

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OKANAGAN-SIMILKAMEEN
BYLAW NO. 2486.01 2015

A bylaw to amend the Development Cost Charge for the Okanagan Falls Sanitary Sewer Service Area

WHEREAS the Board has adopted a Development Cost Charges Bylaw under s. 933 of the Local Government Act;

AND WHEREAS development cost charges may be imposed for the purposes of providing funds to assist the Regional District of Okanagan-Similkameen to pay the capital costs of providing, constructing, altering or expanding sewer facilities to service, directly or indirectly, the development for which the charge is being imposed; and

AND WHEREAS the Board may, adopt a under s. 933 of the Local Government Act, to amend the current Development Cost Charges Bylaw;

NOW THEREFORE the Board of Directors of the Regional District of Okanagan-Similkameen in open meeting assembled, ENACTS as follows:

CITATION

1. This bylaw may be cited for all purposes as the "Okanagan Falls Sanitary Sewer Development Cost Charge Amendment Bylaw No. 2486.01 2015".

AMENDMENT OF SERVICE

2. "Okanagan Falls Sanitary Sewer Development Cost Charge Bylaw No. 2486, 2009" is amended by:

   (a) deleting Schedule 'A'; and

   (b) adding the attached Schedule 'A'.

READ A FIRST, SECOND AND THIRD TIME this 19 day of March, 2015.

APPROVED BY THE INSPECTOR OF MUNICIPALITIES this 20 day of May, 2015.

ADOPTED this ___ day of _____, __2015___.

Chair

Corporate Officer

FILED WITH THE INSPECTOR OF MUNICIPALITIES this ____ day of _____, 2015.

SCHEDULE 'A'

DEVELOPMENT COST CHARGE BYLAW NO. 2486, 2009

DEVELOPMENT COST CHARGES

Upon approval of a subdivision or the issuance or a building permit for any lands within the Regional District of Okanagan-Similkameen Okanagan Falls Sanitary Sewer Service Area, the following development cost charges shall be paid:

Land Use	Sanitary Sewer DCC	Units	When Payable
Single Detached Dwelling	$5,900.00	per lot/ per dwelling unit	Subdivision approval or if subdivision is not required, then at building permit issue
Duplex	$5,900.00	per dwelling unit	Subdivision approval or if subdivision is not required, then at building permit issue
Townhouse	$4,200.00	per dwelling unit	Building permit issue
Apartment	$4,200.00	per dwelling unit	Building permit issue
Commercial	$19.00	per m^2 gross floor area	Building permit issue
Industrial	$19.00	per m^2 gross floor area	Building permit issue
Institutional	$17.00	per m^2 gross floor area	Building permit issue

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: Z. Kirk

DATE: June 2, 2015

RE: Update on Regional Invasive Plant Program - **For Information Only**

Program Information:
The Okanagan and Similkameen Invasive Species Society (OASISS) held their annual general meeting on April 28 at which time a new Board of Directors was struck. The Board held their first meeting that same day, at which time RDOS staff member Zoe Kirk was appointed Chair of the Society. A field day occurred on April 29, highlighting the successful research project being undertaken by OASISS with financial support from the Sustainable Forestry Initiative. This research project began in 2011 and will continue into 2016. The project endeavours to determine what grass seed mix gives the quickest way to reduce invasive plants to a threshold where they are no longer an environmental threat.

OASISS has confirmed 18 sources of funding for 2015-16, including the RDOS. The Society has increased staffing this year, with five summer students hired in May for a 14-week work term: three are aquatic students, one working in each regional district, while the other two are focused on terrestrial plants in the RDOS only. These students will compliment the work being undertaken by Coordinator Lisa Scott, and two new staff who started in April: a full-time aquatic assistant and a part-time terrestrial assistant. A 3-person work crew will be hired later in the season.

A certified spray contractor hired by OASISS started treatments in May (a full month earlier than previous years), and will continue treating priority sites into the summer months. Treatment locations are agreed upon by a planning sub-committee of OASISS.

OASISS is preparing for many events being held throughout the month of June which has been officially declared as Invasive Species Month by the province of BC.

RDOS staff will be working closely with OASISS staff to deliver the Okanagan Aquatic Invasive Species Prevention Program, funded by RBC Blue Water; the first being a full valley-wide presence at all RBC branches for RBC Blue Water Day June 4th.

Submitted by:
Zoe Kirk RDOS Public Works Projects

_____
Roger Huston – RDOS Public works Manager

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Electoral Area 'H' Community Facilities Capital Reserve Fund Expenditure Bylaw 2699, 2015

Administrative Recommendation:

THAT Bylaw No. 2699, 2015, Electoral Area 'H' Community Facilities Capital Reserve Fund Expenditure Bylaw be read a first, second and third time and be adopted.

Reference:
Bylaw No 2653, 2014

History:
In 2009. The Board approved the formation of the Vermillion Forks Community Forest Corporation (VFCFC) for the purpose of acquiring and managing a Community Forest Agreement. The Upper Similkameen Indian Band, the Town of Princeton and the Regional District are 1/3 shareholders in the Corporation. The Electoral Area 'H' Director and the CAO were appointed as the Regional District's Board Members on the Corporation.

In 2014, the RDOS Board created the Electoral Area 'H' Community Facilities Capital Reserve Fund for the purposes of expenditures for or in respect of capital projects within Electoral Area "H".

Annual dividends received from the VFCFC are transferred into the reserve.

Analysis:
The Hayes Creek Fire Brigade has requested funding for the expansion of the Hayes Creek Fire Hall in the amount of $30,000.

The Erris Volunteer Fire Association has requested funding for the completion of the fire/community Hall in the amount of $22,800.

The Area H Community Facilities Reserve Fund balance is currently $607,750.
A previous expenditure bylaw has $85,000 of the reserve committed.

Respectfully submitted:

"Sandy Croteau"

_____

S. Croteau, Finance Manager

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2699

A bylaw to authorize the expenditure of monies from the Electoral Area 'H' Community Facilities Reserve Fund for Hayes Creek Fire Department Building expansion and the completion of the Erris Fire Hall / Community Hall

---

WHEREAS Section 814(3) of the Local Government Act, R.S.B.C. 1996, c.323 and Section 189 of the Community Charter authorises the Board, by bylaw adopted by at least 2/3 of its members, to provide for the expenditure of any money in a reserve fund and interest earned on it;

AND WHEREAS the 'Electoral Area 'H' Community Facilities Capital Reserve Fund ' has sufficient monies available for community projects;

NOW THEREFORE, the Board of the Regional District of Okanagan-Similkameen in open meeting assembled enacts as follows:

1 This bylaw may be cited as the ''Electoral Area 'H' Community Facilities Capital Reserve Fund Expenditure Bylaw No. 2699, 2015'

The expenditure of $30,000 from the 'Electoral Area 'H' Community Facilities Capital Reserve Fund is hereby authorized for the Hayes Creek Fire Department Building Expansion

And

The expenditure of $22,800 from the 'Electoral Area 'H' Community Facilities Capital Reserve Fund is hereby authorize for the Erris fire hall / community hall.

READ A FIRST, SECOND, AND THIRD TIME this ___day of____, 20__

ADOPTED this ___ day of ___, 20__

_____ _____

RDOS Board Chair Corporate Officer

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Bylaw 2694 Okanagan Falls & District Parkland Acquisition Temporary Borrowing Bylaw

---

Administrative Recommendation:

THAT Bylaw No. 2694, 2015 Okanagan Falls & District Parkland Acquisition Temporary Borrowing Bylaw be read a first, second and third time and be adopted.

Reference:
Bylaw 2685, 2015

History:
At the May 7, 2015 the Board adopted Bylaw 2685, 2015 'Okanagan Falls & District Parkland Acquisition Loan Authorization Bylaw for the acquisition of parkland up to nine hundred and fifty thousand ($950,000).

Analysis:
MFA borrowing intakes only occur twice per year, in April and October. To fund any transactions under the loan authorization bylaw, short term borrowing will be required until the next MFA debenture intake in the fall. In order to access short term borrowing, a temporary borrowing bylaw is required by the Municipal Finance Authority.

Respectfully submitted:

"Sandy Croteau"

_____

S. Croteau, Finance Manager

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2694, 2015

A bylaw to authorize temporary borrowing pending the sale of debentures

---

WHEREAS it is provided by section 823.2 of the *Local Government Act* that the Regional Board may, where it has adopted a loan authorization bylaw, without further assents or approvals, borrow temporarily from any person under the conditions therein set out;

AND WHEREAS the Regional Board has adopted Bylaw No. 2685, 2015 cited as 'Okanagan Falls & District Parkland Acquisition Loan Authorization Bylaw' in the amount of nine hundred and fifty thousand dollars ($950,000);

AND WHEREAS the sale of debentures has been temporarily deferred;

NOW THEREFORE, the Board of the Regional District of Okanagan-Similkameen in open meeting assembled enacts as follows:

1. The Regional Board is hereby authorized and empowered to borrow an amount or amounts not exceeding the sum of nine hundred and fifty thousand dollars ($950,000), as the same may be required.

2. The form of obligation to be given as acknowledgement of the liability shall be a promissory note or notes bearing the corporate seal and signed by the Chair and the Financial Administration Officer.

3. The money so borrowed shall be used solely for the purposes set out in said Bylaw No. 2685, 2015.

4. The proceeds from the sale of debentures or so much thereof as may be necessary shall be used to repay the money so borrowed.

5. This bylaw may be cited as 'Okanagan Falls & District Parkland Acquisition Temporary Borrowing Bylaw No. 2694,2015.

READ A FIRST, SECOND, AND THIRD TIME this ___day of____, 20__

ADOPTED this ___ day of ___, 20__

_____ _____

RDOS Board Chair Corporate Officer

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Reallocation of unspent Regionally Significant Gas Tax Funding

Administrative Recommendation:

THAT the Board of Directors reallocate unspent Regionally Significant Gas Tax funds from the Interregional Transportation Study in the amount of $156,036 and from the Liquid Waste Management Plan in the amount of $18,289 to the RDOS Administrative Building Renovations project.

Reference:
Administrative Agreement on the Federal Gas Tax Fund In British Columbia Sec 11(e)

History:
In 2009, the Interregional Transportation Study and the Liquid Waste Management Plan were approved under the Regionally Significant Gas Tax Funding program. The approved completion deadlines for both of these projects was December 31, 2013

The Interregional Transportation Study was approved for $178,540. In 2011, some preliminary review work was undertaken and costs were incurred of $22,538. No further action was taken on this project and as such, $156,036 remains unspent.

The Liquid Waste Management Plan was approved for $130,464. Two elements of this project did not require all the funding that was allocated to them. The Gallagher Lake Liquid Waste Management Plan Amendment was allocated $41,206 but only required $27,917 to complete. $13,289 remains unspent from this project. The Septic Follow Up project was allocated $5,000 but was never initiated so the full $5,000 remains unspent.

Analysis:
Within the Administrative agreement for Gas Tax Funding, there is a provision that allows a Board to request to substitute another eligible project for previously approved Gas Tax funding. Section 11 (e) states:
"If a Regional District Board wishes to amend the scope of a project approved by the Management Committee established under Section 4.2 (Management Committee) of the First Agreement for funding under that Regional District's Regionally Significant Projects Fund reservation under the First Agreement, or substitute another Eligible Project (as defined in this Agreement) in its place, the Regional District Board may approve the change, and must notify UBCM of the change"

In order to fully utilize the funds approved under the Regionally Significant Gas Tax program, a

reallocation of funds is recommended.

Energy efficiency upgrades for the renovation of the RDOS Administrative building (101 Martin Street) could fit the criteria set out for eligible projects under the Regionally Significant Gas Tax funding program.

To begin the process to request a reallocation the funds, a Board resolution is required.
The Board resolution will accompany a letter to UBCM outlining the changes requested. After review of the resolution and letter, UBCM will inform us if the request will be approved.

Respectfully submitted:

"Sandy Croteau"

_____

S. Croteau, Finance Manager

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Information System Policies

Administrative Recommendation:

THAT the Board of Directors adopt the Information Systems Use and Social Media Policy, Directors Mobile Computer Policy, Electronic Mobile Communications Policy and the Personal Device Agreement as presented to the Corporate Services Committee on June 4, 2015; and further,

THAT Policy P1070.00.01 Directors Laptop and Policy P1070.00.02 Directors Laptop-Software, Hardware & Support, be rescinded.

Reference:
P1070-00.01 Directors' Laptop Policy
P1070-00.02 Directors' Laptop – Software, Hardware & Support Policy
June 4, 2015 Report to Corporate Services Committee

History:
At the June 4, 2015 Corporate Services Committee meeting, the following policies were introduced to the Board for review:

- Information Systems Use and Social Media
- Directors Mobile Computer Policy
- Electronic Mobile Communications Policy
- Personal Device Agreement

Analysis:
The 2015 Corporate Business Plan includes Objective 4.4.1 – Developing Policy Framework and Reviewing Policy. To achieve that objective, administration is currently reviewing all existing Board policies , and using a benchmarking process with other local governments, identifying other policies which may be appropriate for the Board of the Regional District of Okanagan-Similkameen.

Respectfully submitted:

"Christy Malden"

_____

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: Information Systems Use and Social Media Policy

AUTHORITY: Board Resolution No. _____ dated _____.

AMENDED: Board Resolution No. _____ dated _____.

(replaces 'CAO Policy' 1310-00.01 Information Systems Use Policy)

POLICY STATEMENT

The use of computers and social media in both a personal and professional setting is now, and will moreso become critical to the success of the Regional District of Okanagan-Similkameen (RDOS). To maintain the credibility and trust of our citizens, it is important that our employees, volunteers and elected officials be accountable for maintaining high standards of ethical conduct in their use of company property.

PURPOSE

1. To establish corporate practice and provide guidance around acceptable and appropriate usage of:
    - computers owned by the RDOS and provided to employees, volunteers and elected officials for work purposes; and,
    - work related Social Media
2. To set out the means to correct unethical conduct;

DEFINITIONS

"Computer" is defined as Computer hardware and ancillary devices (including but not limited to desktop and laptop workstations, mobile or "smart" phones, tablet computers, PDA's, and portable USB Flash drives photocopiers, printers, fax machines and the telephone system) as well as the software and data contained on them.

"Information Systems" include (but are not limited to) Computers, network infrastructure, servers, internet, remote access, corporate software (including but not limited to email, Electronic Document Management Software, Financial and GIS) and databases.

"Social Media" is defined as any group of internet based applications that allow the creation and exchange of user-generated content (including but not limited to Facebook and Twitter).

"Illegal activity" is an act committed in violation of the law (including but not limited to downloading copyright or pirated songs or videos and hacking into other computer systems).

RESPONSIBILITIES

1. The Board of Directors shall:
    a. make such revisions, additions or deletions to the Policy as may be required.
    b. investigate allegations and inquiries relating to unethical conduct by elected officials and the CAO and take appropriate action.

2. The Chief Administrative Officer shall:
    a. make such revisions, additions or deletions to the Policy as may be required by law.
    b. investigate allegations and inquiries relating to unethical conduct by employees and volunteers and take appropriate action.
    c. ensure the administrative controls referred to in the Code of Conduct are in place.

3. Information Services Department shall:
    a. maintain overall security and integrity of the Information Systems.

4. Managers shall:
    a. ensure that each employee in their Department is familiar with this policy.

5. User's shall:
    a. comply with this policy and any related procedural documents that may be issued.
    b. not use the Information Systems for an activity that could expose the RDOS, themselves, or colleagues to potential criminal, ethical or any legal proceedings.
    c. take reasonable steps to not compromise the performance and/or affect the integrity of the Information Systems.
    d. follow security measures and restrictions that are in place.
    e. report to the Information Services Department if something potentially negative happens, or anything suspicious is noticed in regards to the Information Systems.

PROCEDURES

This Procedure is broken down into four specific areas:
1. General Computer use guidelines for employees and Elected Officials on RDOS Computers.
2. RDOS Social Media internal operational guidelines.
3. Internal guidelines for public interaction with Social Media sites and key components to keep in mind.
4. General guidelines and summary.

1. *General Computer Use Guidelines for Employees, Volunteers and Elected Officials on RDOS Computers.*

1.1 The RDOS recognizes there are times when company Computers may be used (i.e. email, web surfing, use of audio/visual programs/software, Social Media sites, phones) for personal use. However using Computers for personal use must not affect the productivity, disrupt the system and/or harm the RDOS's reputation.

1.2 All Computers are to have a login password set and a Computer lockout after a period of idle activity.

1.3 Login information is to be protected and not shared with anyone.

1.4 Report lost/stolen Computers to the Information Services Department as soon as possible.

1.5 Downloading of large personal use programs/files/software is monitored by IS Department for bandwidth usage and security issues, and subsequent information may be brought to the users attention, or their respective supervisor. Users unsure of bandwidth allocation/usage for specific downloads/programs should consult the IS Department beforehand.

1.6 Downloading and/or viewing illegal material or participating in illegal activity on RDOS Computers is not permitted. Illegal activity conducted on RDOS Computers and/or portable/handheld devices will be dealt with through respective legal and labour relations means.

1.7 Downloading and/or viewing of pornographic material on the internet, or through email, is not permitted, and any user caught downloading/viewing pornographic material will face disciplinary action.

1.8 Installation of non-work-related programs/software or "apps" should be approved by the IS Department. Installed non work-related programs/software is subject to removal by IS Department.

1.9 Do not intentionally expose the Information Systems to viruses, spyware or other security threats. Make every effort to avoid risky websites, programs, emails, attachments, etc. If you are not sure what something is, please consult the IS Department.

1.10 If there is a need for data to be taken out of the corporate environment or work related personal/non-public data to be stored on a RDOS portable storage device (including but not limited to USB flash drives, SD cards, USB hard drives), then the RDOS portable storage device must be encrypted with appropriate password protection.

1.11 Use of RDOS Computers for private enterprise is not permitted unless authorized by the CAO.

1.12 Use of cloud servers outside Canada (including but are not limited to Dropbox, iCloud, Google Drive, SkyDrive) is discouraged. Downloading of documents/files from these sites is permitted but any outgoing documents/files should be managed on the RDOS cloud file share (i.e., ownCloud) or the RDOS FTP (File Transfer Protocol) site. Please contact the IS Department if you are unsure on how you should be using cloud services.

1.13 If a user requests to connect their personal device to the corporate e-mail system, and such action is approved by their department manager and the IS Department, the user must sign the Personal Device Usage Agreement.

1.14 Some corporate web based applications including but not limited to OWA (Outlook Web Access), RDP (Remote Desktop Protocol) and EDMS (Electronic Document Management System) allow downloading of documents to local computers outside the RDOS network. Any downloading of documents should only be done on a temporary basis and corporate documents are not to be stored on remote personal computers.

2 *RDOS Social Media Internal Operational Guidelines.*

2.1 The RDOS has approved Social Media accounts (example: Facebook, Twitter, YouTube) which are operated internally by staff designated by the CAO or a CAO-approved designate. Any new Social Media sites must be approved by the CAO.

2.2 The RDOS's Social Media sites are public forums and platforms for information release which can include the following: utilities advisories, emergency services, public hearings, bylaw announcements, information releases, photos, maps, reports and any other information deemed pertinent and approved for public viewing by designated staff.

2.3 Until there is a dedicated resource to monitor Social Media sites, the ability for the public to add posts, general requests or comments to the RDOS Social Media sites will be disabled whenever possible.

3. *Internal Guidelines for Public Interaction With Social Media Sites and Key Components to Keep In Mind.*

3.1 RDOS users are not recommended to directly link their personal Social Media site profile to the RDOS's approved Social Media sites, unless they feel confident about their knowledge of the specific Social Media platform. Linking a personal site to an employer's site forms a professional connection via Social Media, thus an exchange of information may also take place and staff should take a proactive approach and educate themselves about applicable privacy settings beforehand.

3.2 Users are not permitted to use company email as login accounts for personal Social Media sites.

3.3 Users are required to comply with the code of conduct when answering questions or posting/linking information to other Social Media sites on RDOS related business.

4. *General guidelines and summary*

4.1 Users should be aware that RDOS Computers can be monitored internally, and made public through a *Freedom of Information and Protection of Privacy Act* request. Access to these devices may be requested by the Head of FOI at any time.

4.2 Collection of personal information through monitoring applications will be in accordance with *Freedom of Information and Protection of Privacy Act* legislation.

4.3 The RDOS reserves the right to recover costs due to inappropriate use of company property which includes Computers and Portable Devices.

4.4 Users assume responsibility and risk by using personally owned devices in the corporate environment.

RELATED POLICIES

Electronic Mobile Communication Device Policy

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: Directors Mobile Computer

AUTHORITY: Board Resolution No. _____ dated _____.

AMENDED: Board Resolution No. _____ dated _____.

(replaces Board Policy 3.1.1 Directors' Laptop Computer and 3.1.2 Directors' Laptop – Software, Hardware & Support)

POLICY STATEMENT

The use of computers and IT (Information Technology) related devices are essential for elected officials to do their job effectively. The Regional District is responsible for paying all business related costs for these devices. To maintain credibility and trust of our citizens, it is important these devices are issued, used and disposed of in a fair and cost effective manner.

PURPOSE

To provide guidance to elected officials on the use of Mobile Computers issued by the Regional District and to define ownership of these devices.

DEFINITIONS

"Mobile Computer" means a laptop, tablet, mobile or "smart" phone and ancillary devices (including but not limited to printers, photocopiers, dock station, monitors).

RESPONSIBILITIES

1. The Board of Directors shall:
    a. Make such revisions, additions or deletions to the Policy as may be required.
    b. Investigate allegations and inquiries relating to inappropriate conduct by elected officials take appropriate action.
2. The Chief Administrative Officer shall:
    a. Recommend such revisions, additions or deletions to the Policy as may be required by law.
3. Information Services Department
    a. Purchase devices.
    b. Provide primary level help desk support.
    c. Assign fair market value of the mobile computer device when a device becomes available and if an Elected Official wishes to purchase it.
4. Users Responsibilities
    a. Comply with this policy.
    b. Follow the computer use guidelines as stated in this and the Information Systems Use and Social Media Policy

PROCEDURES

1. Issuance

Mobile Computers are issued to the Board Chair and Rural Directors to facilitate access to electronic agendas, word processing, email and mobile voice communications. A departing Director has the option of returning the Mobile Computer to the RDOS or of purchasing it outright at the end of their term.

2. **Ownership**
   Mobile Computers issued to Directors remain the property of the RDOS, unless ownership is transferred by way of purchase to the individual Directors. Mobile Computers are subject to the requirements of the *Freedom of Information and Protection of Privacy Act*. Access to the devices may be requested by the Head of FOI at any time.

3. **Useful Life of Mobile Computers/Replacement Cycle**
   Mobile Computers will be replaced after successful completion of their replacement cycle unless otherwise necessary.

4. **Maintenance of Mobile Computers**
   The RDOS's IS Department will perform all required maintenance of Directors' Mobile Computers.

5. **Software/Hardware Upgrades and Additions**
   a. All Mobile Computers issued will include a standard software package the contents of which will be determined by RDOS IS staff.
   b. Directors wanting to install additional software and/or hardware are to do so at their own risk and expense.
   c. RDOS IS staff should be consulted prior to installation of additional software to ensure compatibility and to explain any concerns regarding personal software on a corporate device.
   d. RDOS staff will not be specifically available to install or support these additional packages.

6. **Non-corporate Computers**
   Use of personal or non-corporate computer equipment for RDOS work is discouraged. If required however, the computer use guidelines as stated in the Information Systems Use and Social Media Policy must be followed (this includes but is not limited to all guidelines regarding security and access to device for *Freedom of Information and Protection of Privacy Act* requests).

7. **Insurance**
   Mobile Computers will be insured by the RDOS within its property insurance policy.

8. **Option to Purchase**
   Directors will have the option to purchase the Mobile Computer issued to them at the end of their term or the end of the expected life of the device. The amount paid by the Director to purchase the Mobile Computer will be set by IS Staff (determined by looking at the market value of a comparable device in similar condition).

RELATED POLICIES

Information Systems Use and Social Media Policy
Electronic Mobile Communication Device Policy

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BOARD POLICY

POLICY: Electronic Mobile Communication Device Policy

AUTHORITY: Board Resolution No. B216/12A dated June 7, 2012.

POLICY STATEMENT

The Regional District provides electronic communication devices and services such as cell phones, smartphones and data cards for Regional District business use to employees and elected officials who require them for work as designated by their Department manager. The Regional District is responsible for paying for all business related costs of these devices. To maintain credibility and the trust of our citizens, it is important these devices are assigned, used and paid for in an efficient, fair and cost effective manner.

PURPOSE

To provide the terms by which employees and elected officials with assigned Regional District electronic communication devices and services are to operate and to ensure that these devices are managed and used cost effectively, safely and appropriately.

RESPONSIBILITIES

1. The Board of Directors shall:
    a. Make such revisions, additions or deletions to the Policy as may be required.
    b. Investigate allegations and inquiries relating to inappropriate conduct by elected officials and the CAO and take appropriate action.

2. The Chief Administrative Officer shall:
    a. Make such revisions, additions or deletions to the Policy as may be required by law.
    b. Investigate allegations and inquiries relating to inappropriate conduct by employees and volunteers and take appropriate action.

3. IS Responsibilities
    i) Ensuring the accuracy of supplier billings
    ii) Ensuring that the most cost effective plans are being utilized for each device
    iii) Providing a report highlighting individual bills where there are usage concerns/questions. Focus will be on, but not limited to, bills where excessive costs beyond normal plan costs or obvious personal use costs were incurred
    iv) Provide primary level Help Desk support for devices
    v) Assist with the selection of supplier and device type for new/replacement devices
    vi) Selection of and adjustment to the most appropriate plan

4. Finance Responsibilities
    i) Ensuring the timely payment of supplier billings

5. Managers Responsibilities
    i) Ensuring that there is justification for each new device and service and continuing justification for existing devices and services (see 1 Eligibility)

ii) Ensuring that each employee with a Regional District communication device is familiar with this policy
iii) Review and follow up of items on individual bills where there are usage concerns/questions
iv) Ensuring that employees reimburse the Regional District for reimbursable costs
v) Ensure that IS has up-to-date and accurate information regarding device owners name and charge to account number
vi) Notification to IS if there is a change in device owners employment status
vii) Notification and return of device to IS when no longer required. Departments will be responsible for any early cancellation charges relating to the device

6. Users Responsibilities

i) Complying with this policy and any related procedural documents that may be issued
ii) Lost, stolen or damaged devices reported to IS Department immediately
iii) Regular reimbursement to the Regional District for all reimbursable costs (see Reimbursable Costs)
iv) Showing due care for the devices in their possession
v) Will act in accordance with the RDOS Communication Devices and Safe Driving Administrative Directive regarding the use of such devices while operating powered vehicles or equipment
vi) Inform IS Department of potential usage changes (i.e. significant change in text, voice data usage and/or roaming).

PROCEDURES

1. Eligibility - An employee of the Regional District whose manager/supervisor has deemed it a work necessity. Criteria may include but not be limited to (at discretion of manager or higher level senior official).
    a) Board Chair and Rural Directors
    b) Job related safety
    c) Emergency or on-call contact requirements
    d) Device used to monitor critical equipment
    e) Considerable time spent out of office with requirement to communicate with staff and/or public
    f) Improved customer service
    g) Operational efficiency

    Eligibility justification from the manager must be provided in the form of an email to the Manager of IS along with the employee's name, charge to account number, confirmation that the employee is familiar with this policy, type of device required (cell phone vs smart phone), intended use of device and any special considerations/uses that may affect the model of phone or type of plan selected for the device.

2. Electronic Communication Device. A list of approved devices is available from the IS Department.

3. Bring Your Own Device (BYOD). If a staff member requests to use their personal device to connect to the corporate email system, and such action is approved by the department manager and the IS Department, then the following steps are required:
    a. The user must agree to a Personal Device Usage Agreement.
    b. Devices that do not have current operating system patch levels will not be accepted for connection.
    c. It is expected that a user who has been provided with this benefit may also have the data features turned on outside of their scheduled work day. The user will not be expected to respond to work-related emails, calendar, text, etc. unless the user is on call or stand-by or overtime has been approved by the user's supervisor.
    d. Corporate practices and policies related to computer and mobile phone use including the Information Systems Usage and Social Media Policy apply to the employee's personal phone. This includes but is not limited to the following:

i. Users should be aware that Regional District related content on personal devices can be made public through a *Freedom of Information and Protection of Privacy Act* request and in compliance with this legislation. Access to these devices may be requested by the Head of FOI at any time.
ii. The agreement would allow the IS Department to control the device and allow remote wipe of it in the event that it is lost/stolen. This will remove all of the user's content.
iii. Users must comply with security guidelines as stated in the Information Systems Use and Social Media Policy.

e. Support
   i. The IS Department will assist employee's in configuring basic connectivity.
   ii. The IS Department will install any necessary software to enforce security standards.
   iii. These devices will only be supported by the IS Department on a "best effort" level.

f. Stipend.
   i. The user is entitled to financial compensation, if the Manager determines a business requirement for a smart phone for electronic communication services (such as voice, email, contacts, and calendar).
   ii. The stipend rate for the use of a personal device will be determined annually by the IS and Finance Department. The rate will be 75% of the cost to provide a standard device on the RDOS's plan.

4. Non policy information – Additional information re vendor plans, travel options/considerations, usage guidelines, billing access is available from the Systems Administrator.

5. Personal Use
   a. In recognition of the need most users have to take care of occasional personal matters. Reasonable personal use of devices is allowed during business hours provided that it does not interfere with Regional District business.
   b. Regional District cell phones and smartphones may be used for personal use outside of business hours (see section below)
   c. Vendor plans provide for usage and services with limits at a fixed cost which is covered by the District. The Finance and IS Manager will determine appropriate monthly cost dependent on position. Any usage and/or services over these limits that are deemed to be personal use are reimbursable costs. Reimbursable costs are to be paid to the District by the user on a regular basis (see reimbursable costs).

6. Travel
   a. Voice (long distance in Canada plus roaming outside of Canada) and texting (outside of Canada) costs are only paid by the Regional District when;
      i. The calls or text messages are work related
      ii. If traveling see options for travel packs/bundles from IS Department
   b. Data roaming costs for smartphones and data cards are only paid by the Regional District when;
      i. There is a need (managers discretion) to remain in contact with work via email
      ii. If traveling see options for travel packs/bundles from the IS Department
      iii. Only reasonable roaming costs will be covered by the Regional District.

7. Reimbursable Costs
   a. Department managers are responsible for ensuring that their employees reimburse the Regional District regularly (minimum quarterly) for all reimbursable costs. Monthly billing review will identify possible potential significant personal use. Employee will be provided with a copy of the bill to reimburse or justify any extra usage.
   b. Users are responsible for reimbursing the Regional District for their reimbursable costs regularly (at a minimum annually for the previous 12 month period)

8. Device Use and Freedom of Information –Device use guidelines as stated in the Information Systems Use and Social Media Policy must be followed. This includes, but is not limited to, all guidelines regarding security and access to the device for *Freedom of Information and Protection of Privacy Act* requests.

9. Non-compliance with this Policy – Failure to comply with any portion of this policy or any future amendments could result in revocation of the District issued cell phone, smartphone or data card and/or disciplinary actions ranging from oral or written reprimands up to and including termination or legal action.

RELATED POLICIES

Information Systems Use and Social Media Policy

Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC, V2A 5J9

PERSONAL DEVICE USAGE AGREEMENT

In order to ensure the security of the Regional District of Okanagan-Similkameen (RDOS) data network / resources, **all individuals connecting non-RDOS managed devices to the RDOS network are required to read the following terms and conditions, and sign the attached Personal Device Usage Agreement.** The agreement is to be approved by the IS Department prior to connecting to the RDOS network.

TERMS AND CONDITIONS: The User agrees to the following:

1. Report all security related issues to the Information Services Department immediately.
2. Must not connect any unapproved hardware devices to the network (e.g. printers, hubs, routers, etc.).
3. Report lost or stolen devices to IS Department as soon as possible.
4. RDOS related content on personal devices can be made public through a *Freedom of Information and Protection of Privacy Act* request. Access to these devices may be requested by the Head of FOI at any time.
5. Only approved devices – upon review of the signed Agreement – will be allowed to connect to the RDOS network. As technology changes at a rapid pace, please contact the IS Department to verify that your device is acceptable.
6. The device must have current vendor patches applied to all installed software.
7. The device must be password protected to unlock/use the device.
8. The device must automatically lock after a period of inactivity.
9. Device encryption must be enabled.
10. The IS Department will have access to the device as required to install and maintain any necessary software to enforce security standards.
11. The IS Department may control the device and remotely wipe it in the event that it is lost/stolen. This will remove all of the user's content.
12. The RDOS will not be liable for accidental damage to these devices that may occur during its operation or during a security investigation.
13. These devices will only be supported by the IS Department on a "best effort" level. Employees choosing to use these devices are expected to provide an advanced level of self-support.

Regional District of Okanagan-Similkameen
101 Martin St, Penticton, BC, V2A 5J9

PERSONAL DEVICE USAGE AGREEMENT

This agreement must be approved by the IS Department before any network connections are made. **Individuals signing this agreement must read, understand, and comply with all of the terms on the previous page. Failure to do so will remove your right to use the RDOS network.**

I have read the RDOS Personal Device Usage Agreement Terms and Conditions, and the Computer and Portable Device Usage and Social Media Policy. I understand its contents and agree to comply with its provisions.

Full Name: _____ Contact No.: _____

Device Type: _____ Model: _____

Serial No. _____

Please indicate the service(s) you require:

☐ RDOS Email

☐ Other (please provide name of application): _____

_____ _____
Device Owner (signature) *Date*

_____ _____ _____
Authorizing Manager (signature) *Print Name* *Date*

_____ _____ _____
IS Department (signature) *Print Name* *Date*

TO BE COMPLETED BY THE IS DEPARTMENT

This agreement is **in effect** as of : _____
Date

This agreement is **void** as of : _____
Date

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Okanagan Falls Parks and Recreation Service Establishment Amendment Bylaw No. 2684, 2015

Administrative Recommendation:

THAT Bylaw No. 2684, 2015 Okanagan Falls & District Recreation Service Establishment Amendment Bylaw be read a first, second and third time and forwarded to the Inspector of Municipalities for approval.

Reference:

Bylaw No. 1174 Okanagan Falls & District Recreation Services Establishment Bylaw

History:

The Director for Electoral Area "D" has been actively involved over a number of years in the acquisition of parkland.

On April 25, 2015, the electorate within the Okanagan Falls Recreation Service Area, through an assent vote (referendum) process, approved a loan authorization bylaw which provided the authority for the Regional District to borrow up to $950,000 for parkland acquisition within the service area.

Analysis:

To allow for the additional costs associated with the parkland acquisition, the tax requisition limit must be increased. Currently the tax requisition limit for the Okanagan Falls Parks and Recreation Service is the greater of $380,000 or $0.50/1,000 of the net taxable value of land and improvements. Although an increase of $0.18/1,000 would provide for the acquisition of parkland and meet the needs of the current proposed budget ($490,000 total), it does not provide additional funds for future projects.

Administration recommends that the requisition limit be increased to the greater of $525,000 or $0.72/$1,000. This impact associated with going from $0.68/$1,000 to the recommended $0.72//$1,000 would change the maximum cost per average household from $218 to $234.

Respectfully submitted:

"*Christy Malden"*

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN
BYLAW NO. 2684, 2015

A bylaw to amend "Okanagan Falls & District Recreation Service Establishment Bylaw No. 1174, 1990" to increase the maximum requisition.

WHEREAS the Regional District has adopted "Okanagan Falls & District Recreation Programming, Parks and Facility Maintenance Local Service Establishment Bylaw No. 1174, 1990;

AND WHEREAS the Regional District wishes to increase the maximum requisition;

NOW THEREFORE, the Board of the Regional District of Okanagan-Similkameen, in open meeting assembled, enacts as follows:

CITATION

1. This bylaw may be cited as the "Okanagan Falls & District Recreation Service Establishment Amendment Bylaw No. 2684, 2015."

AMENDMENT

2. Section 5 is deleted in its entirety and the following text is substituted therefore:

   "The maximum amount that may be requisitioned shall not exceed the greater of five hundred and twenty five thousand dollars ($525,000) or seventy three cents ($0.72) per thousand dollars of the net taxable value of land and improvements in the service area."

READ A FIRST SECOND AND THIRD TIME this day of , 2015.

ELECTORAL AREA DIRECTOR CONSENT OBTAINED this .. day of , 2015

APPROVED BY THE INSPECTOR OF MUNICIPALITIES the day of , 2015.

ADOPTED this day of , 2015.

Chair

Corporate Officer

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Regional Economic Development Service

Administrative Recommendation:

THAT the Board authorize consent be given on behalf of the electoral participating areas by the Electoral Area Director pursuant to Section 801.5(2) of the *Local Government Act*.

THAT Regional District of Okanagan-Similkameen Regional Economic Development Service Establishment Bylaw No. 2695, 2015 be read a first, second and third time prior to being forwarded to the Inspector of Municipalities for approval.

Reference:

February 19, 2015 Report to Corporate Services Committee
June 4, 2015 Report to Corporate Services Committee

History:

At the June 4, 2015 Corporate Services meeting, the Committee recommended that the Board adopt a Regional Economic Development Service Establishment Bylaw and a draft of the proposed bylaw was reviewed.

A service establishment bylaw must set a maximum amount to be requisitioned; however, that does not obligate a local government to requisition the full amount. The Committee was informed that the amount to be requisitioned each year would be determined by the Board during the budget cycle and voted on by the Board in conjunction with budget approval each spring.

Analysis:

For the purposes of establishing a service which promotes economic development, the *Local Government Act* allows for consent, in writing, by a Director on behalf of an electoral area or Council on behalf of a municipal area, providing the participating area includes all of that municipality or electoral area, and that the service may be established without borrowing.

The Act also states that should an Electoral Area Director refuse to give consent, the board may, by a resolution adopted by at least 2/3 of the votes cast, dispense with the consent of the Electoral Area Director and give participating area approval by consenting to adoption of the bylaw on behalf of the electors in the proposed participating area. If a Board consents as above, the Director for the participating area may, within a limited time, appeal to the Minister for a review.

Should the desire instead be for a sub-regional service with each jurisdiction opting in or out, consent from those Electoral Area Directors and Municipal Councils wishing to participate in a service is all that is required to create the service.

Based on discussion and recommendation at the June 4, 2015 Corporate Services meeting, Bylaw No. 2695, 2015 to develop a Regional Economic Development service is now before the Board for three readings. Upon approval by the Inspector of Municipalities, it will be returned to the Board for adoption.

Alternatives:

That Administration be directed to bring forward a bylaw to establish a sub-regional economic development service; upon confirmation of participating jurisdictions; and further,

That a confirmation of consent be forwarded to each Council and each Electoral Area Director for their consideration of inclusion in an Economic Development service.

Respectfully submitted:

"Christy Malden"

_____

C. Malden, Manager of Legislative Services

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

BYLAW NO. 2695, 2015

A bylaw to establish and operate the promotion of economic development as a regional service in the Regional District of Okanagan-Similkameen.

WHEREAS the Board of Directors (the "Board") of the Regional District of Okanagan-Similkameen (the "Regional District") may adopt a bylaw to establish and operate the promotion of economic development as a service;

AND WHEREAS for a proposed municipal participating area that is all of a municipality, approval of the electors under section 801(2) (a) of the *Local Government Act* may be given under section 801.4;

AND WHEREAS the Councils of the Regional District's member municipalities have, under section 801.4 (2) of the *Local Government Act*, consented on behalf of the electors to adopting this bylaw and notified the Board of the Regional District of its consent;

AND WHEREAS for a proposed electoral participating area, a board may authorize approval under section 801(2) (a) of the *Local Government Act* to be given under section 801.5 if, in the case of an establishing bylaw for a service referred to in section 800.1 (2), the proposed participating area for the service includes all of the electoral area and the service can be established without borrowing;

AND WHEREAS the Directors for the Regional District's electoral areas have, under section 801.5 (2) of the *Local Government Act*, consented in writing on behalf of the electors in the proposed electoral participating areas to adopting this bylaw;

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

1. ESTABLISHMENT OF THE SERVICE

1.1 The promotion of economic development, including without limitation the promotion of tourism and grants for the promotion of economic development, is established as the Regional District Economic Development Service (the "service").

1.2 The Board may operate the service in the Regional District of Okanagan-Similkameen Economic Development Service Area (the "service area") and, without limitation, enter into a contract with a third party to implement the service.

2 SERVICE AREA

2.1 The service area comprises of the Town of Princeton, Town of Osoyoos, Town of Oliver, Village of Keremeos, District of Summerland, City of Penticton, Electoral Area "A", "B", "C", "D", "E", "F", "G" and "H".

3 PARTICIPATING AREAS

3.1 Participating areas for the service are the Town of Princeton, Town of Osoyoos, Town of Oliver, Village of Keremeos, District of Summerland, City of Penticton, Electoral Area "A", "B", "C", "D", "E", "F", "G" and "H".

4 **METHODS OF COST RECOVERY**

4.1 In the municipal participating areas, the annual costs of the service are to be recovered by a requisition under section 805 of the *Local Government Act.*

4.2 The amount requisitioned from each municipal participating area must be collected by a property value tax imposed in accordance with section 805.1 of the *Local Government Act* on the basis of the net taxable value of land and improvements.

4.3 In the electoral participating areas, the annual costs of the service are to be recovered by a requisition under section 806 of the *Local Government Act*.

4.4 The amount requisitioned from each electoral participating area must be collected by a property value tax imposed in accordance with section 806.1 of the *Local Government Act* on the basis of the net taxable value of land and improvements.

5 **APPORTIONMENT**

5.1 The annual costs of the service must be apportioned among the participating areas on the basis of the converted value of land and improvements in the service area.

6 **MAXIMUM AMOUNT**

6.1 The maximum amount that may be requisitioned annually for the service is $100,000.00.

7 **CITATION**

8.1 This bylaw may be cited as the Regional District of Okanagan-Similkameen Regional Economic Development Service Establishment Bylaw No. 2695, 2015.

READ A FIRST, SECOND, AND THIRD TIME on ,.

MUNICIPAL CONSENT OBTAINED on ,.

ELECTORAL AREA DIRECTOR CONSENT OBTAINED on ,.

APPROVED BY THE INSPECTOR OF MUNICIPALITIES on ,.

ADOPTED on ,

_____ _____

Board Chair Corporate Officer

FILED WITH THE INSPECTOR OF MUNICIPALITIES on ….

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Electoral Area "D" Governance Study

Administrative Recommendation:

THAT the Board of Directors endorse the Terms of Reference for the Electoral Area "D" Governance Study as attached to the June 18, 2015 administrative report; and further,

THAT the following residents of Electoral Area "D" be appointed as Chair and members of the Ad Hoc Committee:

Chair
Bob Daly (Chair of OKFID)

Members
Myleen Mallach (Skaha Matters)
Larry Kenyon (East Side Road/Grayback)
Eleanor Walker (OK Falls/community leader)
Sam Hancheroff (Kaleden, and KID)
Doug Lychak. (Heritage Hills/ret'd CAO)
Navid Chaudry (APC, HH resident, realtor)
Gerry Stewart (Skaha Estates and APC)
Tamara Brown (Naturopathic Physician)
Leslie D'Andrea (Noble Ridge winery owner)

Reference:

Electoral Area "D" Governance Study Terms of Reference

History:

In 2010, The Regional District of Okanagan Similkameen, passed a resolution requesting the Province to commence a process to develop information that would be necessary for the citizens of Okanagan Falls to make an informed decision on incorporation. As well, the Regional District has made representations to the Minister during subsequent opportunities at UBCM.

In November 2014, the Minister for Community, Sport and Cultural Development advised that she was prepared to support a governance study for Electoral Area "D", providing it was still a priority for the newly elected 2014-2018 Board of Directors.

At the Board meeting of March 5, 2015, the Board resolved to petition the Minister of Community,

Sport and Cultural Development to commence a process to study the future of governance in Okanagan Falls.

The Regional District has received $50,000.00 from MCSCD to carry out the study. Should the budget exceed that amount, the Regional District would be expected to cover any shortfall.

Analysis:

The purpose of the study is to look at the features of the current structure through description of the service delivery, cost recovery and decision making arrangements in place. Public engagement will be a part of the process and will aid in determining the issues that are of the greatest concern to citizens.

Preliminary discussions with Ministry representatives began in April 2015 and a draft Terms of Reference was developed. During review of the Terms of Reference, the governance study area was expanded from Okanagan Falls to encompass the entire Electoral Area "D".

The Electoral Area "D" Director and his Alternate met with Ministry representatives and various area stakeholders in early June 2015 to identify issues and discuss the process moving forward. Coming out of those meetings, a list of potential governance study committee members was developed and has been recommended by the Electoral Area "D" Director.

Alternatives:

That the Board of Directors not endorse the Terms of Reference for the Electoral Area "D" Governance Study

That the residents noted in the recommendation not be appointed to the ad hoc committee.

Respectfully submitted:

"Christy Malden"

_____

C. Malden, Manager of Legislative Services

Terms of Reference
Electoral Area D Governance Study

June 10, 2015

Overview

The purpose of the study is to review and consider methods of improvement of local governance in Electoral Area D of the Regional District of Okanagan-Similkameen (RDOS). The study will illustrate the manner in which communities in Electoral Area D receive or participate in:

- governance of the community,
- services and other things that are necessary or desirable for all or part of the community,
- stewardship of the public assets of the community, and
- fostering the economic, social and environmental well-being of the community.

The study will include research to describe these facets of local government in Electoral Area D, public engagement to discern both the issues that are of greatest concern to communities in Electoral Area D and how those communities envision future governance and service outcomes, and analysis to identify options, within the regional district framework, for addressing the most pressing interests of the communities.

Governance Study Process

The management and oversight of the governance study process rests with a local governance committee. The committee members are nominated by the Electoral Area Director and ultimately appointed by the RDOS Board.

Once established, the governance committee will advise the Regional District on the selection of a qualified consultant, providing direction to the consultant on the research, education, and analytical elements of the study work, and engaging the community in discussion of the study findings.

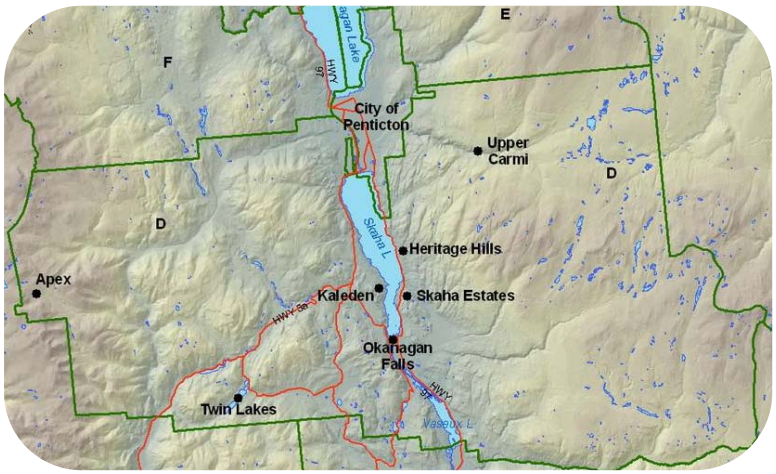
Working with RDOS staff, the committee will develop a request for proposals (RFP) for the consultant that builds upon the parameters set out in these terms of reference. The RFP will be issued by the RDOS, following its procurement policies and process. In supervising the consultant and managing the overall study process, the committee is responsible for ensuring that the study reports completed by the consultant meet the requirements outlined in the RFP and these terms of reference.

The study process is to include:

- a preliminary governance report, presenting the initial research and analysis on the current state of governance, services, asset management, and community well-being;
- a public engagement and stakeholder consultation process, utilizing the contents of the preliminary report to drive issues identification; and
- a final governance report, providing a synopsis of the current-state findings, a summary of the public engagement outcomes, and any supplementary synthesis, research and analysis that supports an assessment of options to address community interests identified in the public engagement process.

Following completion of the study, the committee will convey the study findings to the Board of the Regional District of Okanagan Similkameen. The committee will also forward a copy to the Minister of Community, Sport and Cultural Development.

Governance Study Area



The governance study area encompasses all of Electoral Area D, including the communities of Okanagan Falls, Kaleden, Skaha Estates, Heritage Hills, Upper Carmi, Vaseaux Lake, Twin Lakes, and Apex.

Governance Study Timeline

The study must be completed and delivered no later than December 31, 2016.

The committee will establish time lines for the study in discussion with MCSCD staff and the study consultant. MCSCD staff will have the opportunity to review drafts and to provide comments prior to completion of the final study.

Public Engagement

The committee should determine how best to engage with the public and other stakeholders directly affected in the governance study process.

It is important to establish and communicate parameters for public participation so that residents and property owners understand the opportunities to participate in the governance study. The committee may wish to have the study consultant assist in finalising the public engagement process.

The public engagement strategy should include:

- a communication plan for reporting out to the public on the study progress;
- one or more community meetings or other community engagement events to present information to the public and to seek community feedback; and
- a process to gather information from the public on subjects such as community issues.

Governance Committee

The committee guides the study process to ensure that the study and engagement with the community are neutral and balanced. The composition of the volunteer committee should be broadly representative of the various interests in the study area. The committee will ideally have between 7 and 12 members, including the Electoral Area Director in a non-voting capacity. The RDOS Board will select a chair from among the committee membership.

The committee is an objective fact-finding body; individual members of the committee should ensure that any expression of their personal opinions do not detract from the ability of the committee to function as a neutral and credible conduit for information to the community. Committee meetings are open to the public.

Governance Study Contents

The study must include the following:

1. Overview of community characteristics and socio-economic profile, including descriptions of:
   a. history, overall and for each community or settlement node;
   b. population trends, both historic and forecasted, by community if possible;
   c. housing stock, household and dwelling characteristics across the study area;
   d. tax base trends, by individual tax class and with respect to the mix of tax classes;
   e. economic characteristics and growth trend indicators; and,
   f. connectedness between the communities or settlement nodes.

2. Overview of the rural governance system, including explanation of the:
   a. federated nature of regional districts, their three central roles, and the financial obligations of a regional district member (both electoral area and municipal).
   b. powers, responsibilities, and functions of improvement districts and regional districts.
   c. tax assessment system in BC and taxation in unincorporated jurisdictions, highlighting differences among relevant property tax classes and responsibilities for setting tax rates.
   d. mechanisms available (under statute and common practice) for community participation in decision-making by regional districts and improvement districts.

3. Description of governance, services, and asset management in Electoral Area D, including the:
   a. provision of services with reference to each of the major service providers (regional district, improvement districts, and the Province), including representative structure, service geography and methods of cost recovery.
   b. decision-making processes and procedures of the service providers, in relation to the services and other matters.
   c. relationship between different service providers (e.g. where water service is provided by one entity and sewer or fire protection by another), how those linkages are functionally managed, and how the service providers identify common interests and communicate;
   d. level of cooperation/collaboration among governing bodies of service providers, with reference to their relative roles and responsibilities.
   e. the use of commissions and their effectiveness in Area “D”, including but not limited to, Advisory Planning Commissions, Recreation Commissions, Recreation Societies, etc.
   f. variations in governance and/or service features and levels across different sub-areas of Electoral Area D, and complexities or benefits that arise.

4. Synopsis of public engagement, including a:
   a. summary of the public engagement activities undertaken.
   b. report on results of stakeholder consultation meetings.
   c. summary of community issues raised.

5. Conclusions on future community needs, including an analysis of the opportunities for local service providers to address issues or meet needs.

6. Appendices
   a. Copies of public engagement materials.
   b. Copies of foundational documents (e.g.,Terms of Reference, Request for Proposals, etc.).

Out of Scope

The focus of this governance study is the governance and service situation and options for improvement in the context of a regional district electoral area. A governance study should not be confused with an incorporation study, and speculative information about municipal incorporation is out of scope for this project.

Administration of the Study

The consultant shall report directly to the committee, and disbursements will be provided by the RDOS.

The total funding available for the governance study will be determined by the RDOS. The Ministry's financial commitment to the governance study is $50,000.

ADMINISTRATIVE REPORT

TO: Board of Directors

FROM: B. Newell, Chief Administrative Officer

DATE: June 18, 2015

RE: Olalla Local Community Commission Appointments

Administrative Recommendation:

THAT the Board rescind the appointment of Daniel Banman to the Olalla Local Community Commission; and further

THAT a letter be forwarded to Mr. Banman thanking him for his contribution to the Olalla Local Community Commission; and further,

THAT the Board of Directors appoint Bev Fraser to the Olalla Local Community Commission for the remainder of a four year term ending with the next local government election in October, 2018

Reference:

Bylaw No. 1609, 1995 (as amended)

Analysis:

The Director for Electoral Area "G" has advised administration that Daniel Banman has recently tendered his resignation from the Olalla Local Community Commission. A letter will be forwarded to Mr. Banman thanking him for his contribution to the Commission.

The Director has recommended that Bev Fraser, a resident in the service area be appointed to the vacancy resulting from Mr. Banman's departure from the Commission.

Respectfully submitted:

"Christy Malden"

_____

C. Malden, Manager of Legislative Services

Okanagan Basin WATER BOARD

BOARD REPORT: June 5, 2015

1450 KLO Road, Kelowna, BC V1W 3Z4
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OBWB Directors

Doug Findlater - Chair, Regional District of Central Okanagan

Juliette Cunningham - Vice-Chair, Regional District of North Okanagan

Doug Dirk, Regional District of North Okanagan

Bob Fleming, Regional District of North Okanagan

James Baker, Regional District of Central Okanagan

Tracy Gray, Regional District of Central Okanagan

Andre Martin, Regional District of Okanagan-Similkameen

Sue McKortoff, Regional District of Okanagan-Similkameen

Peter Waterman, Regional District of Okanagan-Similkameen

Peter Waardenberg, Okanagan Nation Alliance

Toby Pike, Water Supply Association of B.C.

Don Dobson, Okanagan Water Stewardship Council

The next regular meeting of the OBWB is 10 a.m. July 7, 2015 at Regional District of North Okanagan in Coldstream.

Okanagan Basin Water Board Meeting Highlights

Water Board looks for solutions to mudboggers in watersheds: There was universal agreement at this week's meeting on the need to prevent damage to community watersheds by ATVs, dirt bikes and other motorized vehicles that are ripping up these sensitive areas. The most recent and shocking example was during the May long weekend at Grizzly Lake in Greater Vernon when about 500 people descended on the area. Watersheds like the one at Grizzly Lake are a drinking water source to local residents and local utilities are legally responsible to ensure safe drinking water quality standards, but have little enforcement powers. Provincial fines of up to $100,000 are possible for disturbing a drinking water source, but more provincial enforcement is needed. The board will be writing to the Ministry of Forests, Lands and Natural Resource Operations urging increased enforcement and fines to deter damage to the water, dams and levies. The OBWB will also strengthen its own 2009 policy on Multiple Use of Crown Land in Watersheds, expand the water quality protection information on its website, and investigate what else can be done to protect these areas.

Joint Board-Council meeting hears Okanagan wetland project update: As part of its annual joint Water Board and Water Stewardship Council meeting, board and council were given an update on efforts to protect and restore existing wetlands in the valley by the OBWB's Okanagan Wetlands Strategy and the Okanagan Nation Alliance—including a number of fencing and re-planting projects. The Wetland Strategy project is mapping existing wetlands and will be launching a new interactive website to highlight Okanagan wetlands through story and photos. The website will allow the public to upload pictures of these special places.

Board approves Annual Financial Statements: Directors approved the 2014-15 audited financial statements. Programs include milfoil control, Sewage Facility Assistance Grants to Okanagan local governments, and the Water Management Program including the Water Conservation & Quality Improvement grant program, water education and outreach, the Water Stewardship Council, and an array of water science initiatives.

Plans underway for Annual Meeting & 45th birthday celebrations: Work is already underway to prepare the OBWB's annual report and annual meeting, this year celebrating 45 years of collaborative water management in the Okanagan. The annual meeting is set for Friday, Sept. 4 at Rotary Centre for the Arts. The theme this year: "It starts with water." Stay tuned for more.

Event marks 10 years of Water Improvement Grants in Okanagan: The OBWB is hosting a 10-year anniversary celebration of its Water Conservation and Quality Improvement grant program Sept. 3 at the Laurel Packinghouse in Kelowna. The event will showcase over 200 projects that have received funding since 2006, and several grantees will present details on their own projects. More details to come.

For more information, please visit: www.OBWB.ca