BELLA COOLA VALLEY SUSTAINABLE AGRICULTURAL SOCIETY

BELLA COOLA VALLEY FOODSHED ANALYSIS PROJECT (2007)

FINAL REPORT

Bella Coola Valley Sustainable Agricultural Society
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Executive Summary

The *Bella Coola Valley Foodshed Analysis Project* began as a collaborative discussion. It then developed tactics towards reestablishing a local food system suitable for a rural northern group of settlements. A community-based approach to identify the agricultural resource base was adopted, with a focus on increasing consumption, productive capacity and enhancing awareness and support.

The foodshed concept is similar to the notion of a watershed, but applied to food systems. With this concept in mind, the project increased the awareness and understanding of this approach, facilitated the development of a sustainable local food system, and increased productive capacity. Agricultural opportunity workshops provided forums for sharing project findings and agricultural knowledge.

An agriculture use inventory, soils inventory, land capability for agriculture crop suitability studies were completed. The soils and agricultural use maps provided a foundation for Valley Global Information System (GIS) resource information. The project determined approximately 6000 hectares were within the study area. As a result of these efforts, the structure of the actual and potential land-based food production system became more clearly defined.

The study found a significant land base comprised of some of the highest capability soils, and a climate that could produce a wide range of agricultural and food crops. High, moderate or low crop suitability ratings were applied for each of the climatically suited crops or crop groupings. Based on the better than Class 1 climate of the Valley, climatically suited crops were determined. Yields and reliability for some crops limit their suitability to small scale, home or hobby garden production.

An active connection to food production activities was documented: 790 sites were inventoried and food production activity point data recorded, 82 with agriculture as a primary activity. A generalized land use survey was conducted to identify polygons having agriculture as a primary or secondary activity. There are a range of food production activities, such as small orchards, blueberry plantings, roadside fruit and vegetable stands, commercial nurseries, a beekeeping operation, and specialty livestock-hobby farms.

While present production scales may not indicate significant commercial activity, they are substantial contributors to household consumption, have positive food security implications, and indicate skill levels and interest in market-scale production and processing. Moreover, there is interest in further development of commercial agricultural and agri-food opportunities.

The tactics pursued thus far are preliminary and require further local capacity development, promotion and market analyses in order to increase food production, consumption, processing and distribution.

Acknowledgements

The *Bella Coola Valley Foodshed Analysis Project* was a multi-faceted and multi-year endeavour. It was a team effort that involved a great many partners. While unable to acknowledge all by name, the Bella Coola Valley Sustainable Agricultural Society wishes to thank all those individuals and organizations who contributed to the success of the project.

Sincere appreciation goes to the Foodshed Analysis Committee (Gary Runka, Chair and members David Anderson, Barney Kern and Paul Grace-Campbell) for the countless volunteer hours contributed, and for the valuable collaboration that the Food Action Plan Implementation Committee members provided. The Central Coast Regional District assisted with TRIM map bases and in-kind support, including staff time.

We are grateful for the funding provided in part by the Investment Agriculture Foundation of British Columbia, through programs funded by Government of Canada, and the Province of British Columbia and in part by the Real Estate Foundation of British Columbia.

With the support of University of British Columbia's (UBC) Faculty of Land and Food Systems, DeLisa Lewis, Project Facilitator and Doctoral Student, completed the agriculture and food production inventory and coordinated the community workshops. We thank her for: sharing her knowledge, keeping the community informed, and carrying out hands-on project outreach with Valley farmers, in addition to her work on the agricultural use map, associated spreadsheet and technical report and the crop suitability report.

The professional expertise of Dr. Terence Lewis, who completed the soils survey, compiled detailed soils descriptions, interpreted land capability for agriculture ratings, contributed to the crop suitability framework, and provided the scientific foundation for our work; was invaluable and much appreciated.

Thanks also to Gary Runka and Joan Sawicki for their volunteer hours spent to produce the crop suitability interpretations and augment the generalized land use inventory. We are indebted to Hans Granander of Frontier Resource Management for his diligence and commitment to making the Bella Coola Valley Foodshed Analysis data availability as GIS documents.

Finally, thanks goes to Bella Coola Valley residents who contributed to this project, whether through assisting in the workshops and garden tours, working on establishing micro- climate weather stations or sharing their food producing knowledge and experience.

Public support and participation in this project were essential to its success.

Table of Contents

		Funding Agency Acknowledgements	**i**
		Executive Summary	**ii**
		Participant Acknowledgements	**iii**
		Table of Contents	**iv**
		Appendix	**v**
1		**Introduction**	
	1.1	Study Proponent - Organizational Profile	**1**
	1.2	Study Context	**1**
2		**Project Overview**	**3**
3		**Soil Fertility and Irrigation Water Sampling**	
	3.1	Preamble	**4**
	3.2	Methodology	**4**
	3.3	Synopsis and Significant Findings	**5**
		3.3.1 Soil Fertility Testing Results	**5**
		3.3.2 Irrigation Water Testing	**5**
4		**Foodshed Analysis: Soils and Agricultural Use Inventories**	
	4.1	Methodology	**6**
	4.2	Global Information System (GIS) Mapping	**7**
		4.2.1 Agricultural Use Inventory	**7**
		4.2.2 Soils Inventory	**8**
		4.2.3 Land Capability for Agriculture Mapping	**9**
		4.2.4 Crop Suitability Mapping	**9**
	4.3	Synopsis and Significant Findings	**10**
		4.3.1 Synopsis	**11**
		4.3.2 Significant Findings	**11**
		4.3.3 Micro-climate Weather Station Installation	**12**
		4.3.4 Bella Coola Valley Crop Suitability Report	**12**
5		**Foodshed Analysis: Capacity Development**	
	5.1	Capacity Development	**14**
	5.2	Agricultural Workshops & Forums	**15**
6		**Conclusion**	**17**
7		**The Next Steps - Recommendations**	**18**

Appendix

A.1	Agricultural Use Inventory – Map 1	**19**
A.2	Agricultural Use Inventory – Map 2	**20**
B.1	Soils Inventory Map – Map 1	**21**
B.2	Soils Inventory Map – Map 2	**22**
B.3	Legend and Data Spreadsheet	**23**
C	Climate Data Review	**25**
D.1	Land Capability for Agriculture – Map 1	**26**
D.2	Land Capability for Agriculture – Map 2	**27**
E	Bella Coola Valley Crop Suitability Report	**28**
F.1	Crop Suitability Map – Map 1	**37**
F.2	Crop Suitability Map – Map 2	**38**
G	Bibliography	**39**
H	Web Resources	**42**

Chapter 1

Introduction

1.1 Study Proponent - Organizational Profile

The Bella Coola Valley Sustainable Agricultural Society (BCVSAS) is a four-year-old, BC registered, non-profit society with a vision to enhance local production and consumption of nutritious foods within a framework of sustainability. Membership is comprised of Nuxalk Nation members, local government, healthcare professionals and members from the civic community, who share concerns related to our unique social, economic and environmental health.

BCVSAS envisions the Bella Coola Valley producing nutritious foods sustainably, in order to create socioeconomic benefits for our communities and environment.

The mission is to facilitate the development of a sustainable local food system by building community capacity, in order to achieve community socioeconomic wellness.

BCVSAS is committed to facilitating the development of sustainable agricultural enterprises. By utilizing traditional knowledge with respect to our cultural diversity, we will build community capacity in cooperation with our neighboring communities and learning institutions.

Organizational goals include: enhancing community wellness and nutrition through locally produced agricultural products, increasing awareness that agriculture is a significant contributor to our local economy and a renewable resource; preserving an adequate land base and developing an infrastructure for sustainable land use; and, creating viable markets for existing and prospective agricultural and agri-food entrepreneurs.

1.2 Study Context

A foodshed can be defined as simply, "*the place where we live and eat*" (Kloppenburg, 1996, p.14). Throughout North American communities, foodshed studies have taken root as a means of tracing the local, seasonal flow of food that might be produced in a particular region. Cornell University researchers assert the following with respect to the investigation of a foodshed:

When agricultural production potential is linked to health-related nutritional needs of humans, the local land resource base, and the local population's demands for food, the structure of actual and possible food production systems that both protect the environment and meet basic human needs for a balanced diet can be determined (Fick, 2007).

The foodshed concept, similar to the notion of a watershed applied to food systems, resonated with project stakeholders and seemed well suited to the unique characteristics of the Bella Coola Valley. BCVSAS members and project partners envisioned that closer identification with their foodshed would promote increased production and sales of local food crops, increased food security and employment opportunities.

BCVSAS firmly believes that increased agricultural production, when carefully stewarded within the framework of the local resource base and inclusive of local residents, will provide crucially needed socio-economic benefits.

Investigation of the foodshed began as a collaborative discussion at BCVSAS's inaugural Annual General Meeting (February 2006). BCVSAS directors invited a UBC graduate student, with practical experience in specialty farming and direct marketing, and a keen desire to learn about the dynamics of community-inspired food systems, to facilitate the project.

The *Bella Coola Valley Foodshed Analysis Project was* grounded in a community-based action research approach. In keeping with this philosophy, it aimed to identify the potential agricultural resource base, with explicit focuses of enhancing local project support and inspiring greater agricultural productive capacity.

Image 1

Bella Coola Valley – Edible Garden Tour & Feast 2007

Chapter 2

Project Overview

Investigation of the Bella Coola Valley Foodshed began in early 2006 with efforts to compile and increase awareness of baseline soils and climate data, and community capacity development. The project utilized a community-based approach to the identification of potential agricultural opportunities, with an explicit focus on inspiring greater local productive capacity and enhancing support.

The investigation was conducted in two distinct, but sequential phases of fieldwork and financial support. Phase I, funded by the Coast Sustainability Trust and Community Futures Development Corporation Cariboo Chilcotin, focused on soil fertility and irrigation water testing and analysis. Phase II, funded by the Investment Agricultural Foundation of BC and the Real Estate Foundation of BC, comprised of capacity development, an agricultural use inventory, mapping of soils characteristics, local climate information and interpretations of land capability for agriculture and crop suitability.

Both Phases and activities were pursuant to and in accordance with BCVSAS's vision of food security promoting local agriculture and supported the implementation of the community Food Action Plan. (While this was a separate project with its own funding, it was pursued concurrently with this project.)

This project incorporated the soil survey, micro-climate weather station data and an agri-cultural land use inventory, together with the analyses of baseline soil and climate resource data. In order to realize the completion the Foodshed Analysis, BCVSAS developed strategic partnerships with UBC's Faculty of Land and Food Systems (FLFS), volunteers and other organizations. BCVSAS and its project partners share the vision of a reinvigorated local food system as a means of connecting improved socio-economic conditions and ecosystem with community health.

Agricultural workshops provided accessible and participatory forums for sharing findings and knowledge.

The project encouraged increased public awareness of agricultural productive potential of the Valley. This initiative increased community capacity in the form of training components, facilitated knowledge transfer through participation in workshops, and collaboration in various aspects of the project.

The study and resultant publications are not only important community resources, but also is the first for the Bella Coola Valley, in terms of in-depth agricultural analyses.

Chapter 3

Soil Fertility and Irrigation Water Sampling

3.1 Preamble

While the *Soil Fertility and Irrigation Water Sampling Study* was the precursor work (and funded separately) for the Foodshed Analysis Project, we restate its methodology, synopsis and significant findings in order to provide context and background for the Foodshed Analysis.

3.2 Methodology

In 2006 BCVSAS representatives circulated a newsletter throughout the Valley's postal area that offered complimentary soil fertility and irrigation water sampling and analysis to interested agriculturalists and gardeners on a first come, first served basis.

Participation in the study was based on interest levels and limited by the project budget. The initial mail-out and community outreach generated 53 soil and seven irrigation water sampling sites. Nearly all participants expressed interest in exploring the feasibility of a specific crop or land use for their property.

The project tasks were carried out by BCVSAS and project partners in 2006. Pacific Soils Analysis Incorporated (PSAI) provided the facilities, equipment and guidance for the testing of the collected samples.

Samples were collected from settled and cleared agricultural areas. Land use activities where the samples were collected from included: in-ground and raised bed gardens, lawns, hayfields, cultivated pastures, fallow or uncultivated lands, orchards and forested areas.

Individual soil cores from 20 locations were mixed thoroughly in a clean plastic bucket for composite samples. The samples were then transferred to a plastic bag and labeled with field location, sampling depth and date. Moist samples were air-dried and delivered to Pacific Soils Analysis Incorporated (PSAI) in Richmond. Irrigation water samples were collected in bottles provided by PSAI and refrigerated until delivered to the laboratory.

The tabulated results of the soil fertility and irrigation water tests were made available to study participants. In addition, a brief review of publicly accessible climate information served as a baseline for the compilation of data that informed the crop suitability assessment.

3.3 Synopsis and Significant Findings

3.3.1 Soil Fertility Testing Results

Baseline agricultural resource information that contributed to the understanding of the potential for enhanced food production in the Bella Coola Valley was collected.

In broad terms, the test results provided a snapshot of nutrient availability and represented the varied land use and soil management practices for study participants. The majority of the soils tested showed limited available fertility tied to low pH and low organic matter. The more intensively managed soils tended to indicate more optimal pH and nutrient availability and the minimally managed fields and native soils returned lower pH and limited available nutrients.

On average, there was a trend towards more optimal pH and increased organic matter percentages in the land-use types that were more intensively managed as gardens or raised beds.

3.3.2 Irrigation Water Testing

While irrigation water testing was included as one of the complimentary sampling and analysis procedures for the preliminary study, budget constraints and other limitations minimized the effectiveness of this portion of the project.

Image 2
Garden at Healthy Beginnings – Nuxalk Nation's Early Childhood Care Facility

Chapter 4

Foodshed Analysis: Soils and Agricultural Use Inventories

4.1 Methodology

Throughout 2007, project partners worked on defining the biophysical characteristics of the Bella Coola Valley Foodshed. Specifically, work was directed at soils characteristics mapping, climate information, interpretation of land capability for agriculture, and crop suitability.

BCVSAS conducted an agricultural use inventory, completed fieldwork on a 1:20,000 scale soil inventory, and procured and installed two micro-climate weather stations.

Information was compiled from the soil inventory, applied land capability for agriculture ratings, and completed corresponding maps for each. In addition, crop suitability interpretations resulted in a Crop Suitability Report and map that indicate crop suitability ratings for each of the mapped soil units.

The Foodshed Analysis Project explored sustainability linkages through the soil and micro-climate study, soil mapping, land capability, crop suitability, and current land-use inventory. Another key piece of this study was the community capacity development and knowledge transfer of these agricultural production variables.

The approach to the research project was grounded in community-based action research. The project partners endeavored to carry out each major project task in a collaborative manner, beginning with the participation of local research assistants in conversation with interested landowners, and in workshop forums.

In keeping with this approach, the soil inventory contractor, BCVSAS volunteers and the Project Facilitator worked alongside and trained local youth through the land-use survey and community outreach projects.

In addition, property holders were invited to be active participants in the soils and micro-climate research, as well as the land-use survey. Finally, research and survey results formed the foundation and content for the various community workshops and forums.

4.2 Global Information System (GIS) Mapping

A key Foodshed Analysis Project objective was to build a GIS database, including floodplain data and terrain mapping of publicly accessible agricultural resource information. BCVSAS viewed this as a means of providing additional tools for the reestablishment of a local food system. A contract was awarded to Frontier Resource Management Ltd (FRML), a local firm, to prepare all GIS maps associated with the project.

4.2.1 Agricultural Use Inventory

The BC Ministry of Agriculture and Lands (MAL), Strengthening Farming, provided assistance with setting up the inventory. A combination of MAL publications, including the *Ag Focus - A Guide to Agricultural Land Use Inventory and Land Use Classification in British Columbia*, (BCMAL, 2004; Sawicki and Runka, 1986) provided guidance and procedures for the inventory, but in the end, was not used directly because of the small-scale nature of food production endeavors and the 1:20,000 base mapping scale.

The inventory began along Highway 20, at the Valley's eastern end (the boundary of Tweedsmuir Provincial Park). The representative food production inventory was carried out as a *"windshield survey,*" meaning project staff drove most accessible roads and driveways. In the more densely settled areas (e.g. Smith Subdivision, 4 Mile Reserve, Village Reserve and Bella Coola Townsite), data was gathered on foot. Where possible, information was obtained through both observation of gardens and interviews; however, in some instances when landowners were not available and gates, dogs or other access barriers were present, inventory information was limited to what was visually observed from a distance.

The goal of this component was to document food production and agricultural activities for the 2007 growing season. Over 790 sites were inventoried and field notes taken on food production, including numbers and types of:

- *fruit trees,*
- *variety and relative size of vegetable gardens,*
- *vines and berry crops,*
- *use of season extension mechanisms, such as greenhouses, raised beds, cold frames or other structures, and;*
- *the presence of livestock, whether cattle, horses, poultry or other.*

A substantial percentage of these sites were recorded as GPS points and a representative number plotted on the agriculture use map. Due to human and financial constraints, some food production may have been missed. In addition, certain foods, such as brambles, may be under represented. (These plants naturally thrive in the Valley and can be tucked away in landscape settings, yet be productive and significant for households.)

Complimentary to the field survey of point data, a generalized land use inventory was carried out using 2006 air photos and field checking. Due to the small scale of most food production relative to the 1: 20,000 base mapping scale, the majority of GIS polygons identified were dominantly agricultural as forage, either hay or pasture.

In residential areas where there were map sized agricultural clearings, the land use was complexed as Residential/Agricultural. In the more densely populated areas that were mapped as Residential polygons, information on food production activities can be interpreted through the associated map point data sites. (Please refer to Appendix A for the agricultural use inventory.)

4.2.2 Soils Inventory

Following a competitive tendering process, the contract to carry out soils mapping was awarded to Dr. Terence Lewis, P.Ag.

The groundwork followed traditional soil survey methodology for 1:20,000 soils mapping. Dr. Lewis spent 27 days in the field and mapped approximately 6,000 hectares. With refinements to the database and administrative work, the soil mapping project component ran from July to December 2007.

The methodology was comprised of:

- *pre-typing map units on air photographs,*
- *checking map unit boundaries on the ground,*
- *describing 320 soil pit sites,*
- *refining map unit boundaries, and;*
- *compilation of a soils map, database and descriptive map legend.*

Valley bottomlands within the study area were classified as fans, fluvial terraces or floodplain landforms, and mapped for differing soil characteristics, culminating in 199 map units. Each map unit was described, based on (please refer to Appendix B for additional information):

- *landform,*
- *slope range (topography),*
- *nature, texture and depth of surficial material, and;*
- *drainage.*

Due to the map's scale, some units appear as complexes of more than one soil, with percentages estimated for each component.

4.2.3 Land Capability for Agriculture Mapping

In this national/provincial classification, land is grouped into seven classes according to the range of crops that can be grown, based on inherent soil and climate characteristics, with Class 1 representing the widest range of crops and Class 7 having no capability for arable agriculture or natural grazing. Subclasses indicate specific limitations, such as topography, stoniness or soil moisture deficit that may limit the range of crops.

A moderate Coastal climate dominates the study area, with Interior climate influences becoming more apparent in the easternmost part of the Valley. Notwithstanding this climatic range and localized variations based on topography and aspect, with irrigation, the study area lies entirely within Climatic Class 1 (or better), indicating a freeze-free period of greater than 150 days, and effective growing degree days above 5^{C} of greater than 825.

In addition to considering climate and soil characteristics such as soil texture, topography and drainage, land capability for agriculture ratings consider the level of management intensity required to realize the identified crop range. Ratings do not, however, indicate crop suitability or productivity within the identified range.

Based on the available climate information and the 1:20,000 soils mapping with associated descriptions, land capability for agriculture ratings were applied to each of the 199 identified soil units, utilizing the standard rating conventions of the provincial Land Capability for Agriculture Classification (please refer to Appendix D, Land Capability for Agriculture Maps for additional information). All ratings are improved ratings, assuming irrigation and the alleviation of other limitations using normal farm management practices.

With the exception of the Bella Coola River estuary and Townsite, for which soils mapping was not carried out, the resulting land capability for agriculture map covers all lands within the study area, regardless of present use.

4.2.4 Crop Suitability Mapping

As further interpretation of both climate/soils information and land capability for agriculture ratings, climatically suited crops were identified and a crop suitability map and accompanying report prepared.

Based on the Class 1 Climate, growing experience and reference to the Soil Management Handbook of the Lower Fraser Valley, climatically suited crops for the study area were determined to include:

- *annual legumes,*
- *root crops,*
- *shallow rooted annual vegetables,*
- *cole crops,*
- *corn,*
- *asparagus,*
- *cereal grains,*
- *perennial forage,*
- *blueberries,*
- *currants,*
- *strawberries,*
- *cranberries,*
- *tree fruits,*
- *nursery stock,*
- *Christmas trees, and;*
- *hazelnuts*

Yields and reliability for some specific crops within the above groups (namely cucumbers, peppers, tomatoes, pumpkins, squashes, apricots, nectarines, peaches, grapes and kiwis) limit their suitability to small scale, home or hobby garden production (please refer to Appendix E: Bella Coola Valley Crop Suitability Report).

High, moderate or low crop suitability ratings were then applied for each of the climatically suited crops or crop groupings, both for individual soil units (located on the map) and for generalized soil groupings (table format within the report).

`High suitability'* indicates those crops that are well suited to the soils and climate and require few management inputs to achieve an acceptable levels of production, while *`low suitability' indicates those crops that are not well suited to the soils and climate, and require a considerable degree of management inputs to achieve an acceptable production levels. Climatically suited crops unsuited to the specific soil units do not appear on the map, but were recorded in the table within the accompanying report.

In addition to the Bella Coola River estuary and Townsite, for which no soils mapping was carried out, crop suitability ratings were unable to be applied to the 4 Mile Reserve due to complexity of soils and mapping scale. (Please refer to Appendix E for the Bella Coola Valley Crop Suitability Report and Appendix F for the Bella Coola Valley Crop Suitability Map.)

4.3 Synopsis and Significant Findings

4.3.1 Synopsis

An agriculture use inventory, soils inventory, a land capability for agriculture map, and crop suitability interpretations were completed. 1:20,000 scale soil mapping was carried out for the Bella Coola Valley, extending from the boundary of Tweedsmuir Provincial Park at Burnt Bridge Creek, westward to the Bella Coola River estuary at North Bentinck Arm.

n terms of climate information, missing solar shading and micro-climate information was identified as a gap in the available climate assessment and represents a key requirement for further research. Active connections to food production activities were documented - 790 sites were inventoried and point data on food production activities recorded. In addition, a generalized land use survey was conducted to identify polygons having agriculture either as a primary or secondary activity, with 82 sites having the primary activity listed as agriculture.

Results indicate there are a range of food production activities, such as small orchards, blueberry plantings, roadside fruit and vegetable stands, commercial nurseries, a beekeeping operation, and specialty livestock-hobby farms.

While production at this scale itself does not suggest significant commercial activity, it is a substantial contribution to household consumption, and may have positive implications for food security, as well as the necessary skill levels and interest required for market-scale production and processing.

4.3.2 Significant Findings

- The 5,888 hectares mapped comprises 1,594 hectares of floodplain landforms, 1,770 hectares of fluvial fan landforms and 2,524 hectares of alluvial terrace landforms.

- 5,158 hectares were documented as having the combination of soils and climate to result in capability for arable agriculture, as defined within Classes 1-5 of the Land Capability for Agriculture in British Columbia classification. 3,369 of these hectares are Class 1-3, representing the highest capability lands with the widest range of cropping options.

- Crop suitability interpretations for 15 climatically suited crops or crop groupings, indicated 2,037 hectares of land with dominantly high and moderate crop suitability for a wide range of crops; 1,529 hectares of land with dominantly moderate and low crop suitability for a wide range of crops; 282 hectares of land with suitability for a moderate range of crops; and 1,863 hectares of land having either low crop suitability or a narrow range of cropping options.

- In selected areas, a more detailed soil inventory carried out at a larger scale would be a significant and fundamental step towards the overall of objective of building the capacity for a more localized food system.

- Of 790 sites inventoried, 371 had at least one fruit tree and 181 had some type of vegetable crop. Most of the polygons identified as having agriculture as the primary land use activity were in forage, either hay or pasture.

- It was documented that: 56 sites had more than 10 fruit trees, 13 sites had planted vegetable crop areas larger than 550 square metres, and 34 sites had greenhouses larger than 10 square metres.

- Community workshops proved to be valuable forums for capacity development and transferring soils and agricultural use knowledge.

4.3.3 Micro-climate Weather Stations

Two micro-climate weather stations were installed and satellite uplinked during July 2007. The landowners where the stations were placed were present for orientation during the installation and provided with a reference book. Community residents were apprised of the online link and given the username and password in order to access the streaming information.

One additional location for a climate station was identified: north of the Bella Coola River in the Salloompt area. (It is hoped to increase network capacity and micro-climate coverage in 2009, with minimal additional funding for stations and basic supplemental software.)

The measurement of heat units is a key factor in accurate crop suitability assessment. The absence of this information is a barrier to the development of targeted agricultural opportunities. (At this time, only the airport station has archived information.)

4.3.4 Bella Coola Valley Crop Suitability Report 2007

The purpose of the crop suitability component of the Foodshed Analysis was to identify the biophysical opportunities for increased range and production of soil-based food products in Valley. This report provides basic crop suitability information for soil/climate combinations within the study area, based on climate and 1:20,000 soil survey inventory and mapping conducted in 2007.

Climate suitability for specific crops was determined from both long term and recently established Valley climate station data. Long-term data is summarized by Environment Canada's thirty-year (1971- 2001) climate normals for three stations: *Bella Coola*, located on North Grant Road, *Bella Coola A,* located at the airport, and *Stuie/Tweedsmuir,* located at the Valley's eastern end (just beyond the Foodshed project area).

Recently established climate stations include new stations on North Grant Road and Hammer Road. Reference was also made to the *Soil Management Handbook of the Lower Fraser Valley* and to the technical paper entitled, *Climatic Capability Classification for Agriculture in British Columbia.*

As part of a project that is grounded in a community-based research methodology, local experience was also utilized in determining crop suitability, including that gained through agriculture land use mapping carried out during the 2007 growing season. (Please refer to Appendix E to view the complete Crop Suitability Report.)

Image 3

Putl' iixw Community Garden – 4 Mile Reserve

Chapter 5

5.1 Capacity Development

The strength of the BCVSAS and UBC collaborative vision is the methodology of community-based action research (CBAR) and implementation.

The project's community-based action research approach allowed participants to interface with the Project Facilitator on crop selection and soil management. Many of the participants expressed interest in having additional plantings of specific crop types and more information regarding horticultural diseases, pests, weeds, soils and climate interactions in their particular locale. Those who participated in project expressed interest in exploring other possible agricultural land uses for their respective properties.

The search for qualified local research assistants began soon after the first workshop in 2007. BCVSAS Board members discussed potential candidates and generated a job description. Two candidates successfully interviewed and filled the positions.

Dr. Terence Lewis offered clear and accessible explanations of the soil pit and mapping work to landowners, growers on the garden tour, and a group of interested home schooled students. He also provided training to the Project Facilitator and a team of local research assistants. Both candidates were trained in some aspects of the soil mapping, GPS and land-use inventory. In addition, one research assistant contributed significantly to the garden tour planning, and gained public speaking experience by leading the tour at the Putl' iixw Community Garden.

The Project Facilitator regularly engaged in hands-on project outreach and extension with Valley farmers and agri-foods entrepreneurs. She provided innumerable volunteer hours on four different farm and garden operations. With a first-year farmer, she assisted with basic maintenance, transplanting activities, irrigation consulting and greenhouse operations. She also worked with more experienced market gardeners in direct seeding, and provided demonstration and assistance with raised bed construction and cultivation techniques.

5.2 Agricultural Workshops & Forums

- **March 10, 2007**

Soil Fertility and Irrigation Water Test Results Workshop - approximately 50 people attended this event, which represents nearly 5% of the Valley's civic populace. Seventy percent of participants in the soil fertility and irrigation water testing attended the workshop, despite snowy weather conditions.

Workshop promotion and communications included a feature article and advertisement in the Coast Mountain News and Nuxalk Nation Flyer. BCVSAS's newsletter, *"What's Growing,"* was distributed mid-February to all Valley post office boxes and featured a workshop announcement and project update. Additional workshop announcements were posted in public places and supportive businesses throughout the Valley.

The workshop was lead by Gary Runka, Foodshed Committee Chair, and UBC's Art Bomke. The highly interactive session focused on soil fertility and irrigation water testing opportunities, limitations and interpretations.

Exit surveys and direct feedback from participants provided for planning and organization for the second community forum.

- **July 15, 2007**

The Edible Garden Tour & Feast - local growers were featured which introduced a range of possible agri-foods ventures for the community.

Collaborative efforts among the Bella Coola Valley Food Security Coordinator (BCVFSC), farmers' market members and growers, along with consultations with BCVSAS's board inspired the concept of a tour. This tour coalesced as a showcase of talented local growers and active exchange of innovations.

Seven area growers were featured and introduced a range of possible agri-foods ventures for the community. The tour began with a promising demonstration garden, visited one of the Valley's most established four-generation family of market growers, included a tree fruit and table grape grower, small-scale livestock producer, commercial nursery with focus on edible greenhouse crops, and two other hard-working market gardeners - one with over fifty years experience, and one in his first challenging year with a horticultural enterprise.

In addition, Art Bomke and Dr. Terence Lewis encouraged and directed informative dialogue at every stop. The ambitious tour celebrated this diversity of local food production with a "local foods feast" to end the day. All Valley restaurants donated dishes harvested and created from local foods.

- **October 20, 2007**

The Community Garden Field Day-Cover Cropping Event – residents and Agricultural Science students from UBC's FLFS volunteered in all three community demonstration gardens as a part of their unique service-learning project.

This third and final forum allowed project stakeholders and UBC students to provide hands-on training in cover cropping, winterizing the garden and best-soil management practices for Valley growers, volunteers and the students themselves.

As with the summer tour, the event culminated with a dynamic showcase of seasonal, local foods and gathering of community members.

Image 6

Acwsalcta School's Lettuce Keepers

Chapter 6

Conclusion

→ GIS mapping was a significant contributor to agricultural resource information.

→ The Valley possesses a sizeable land base with high capability soils and climate that could produce a wide range of agricultural crops.

→ There is current food production capability and sincere interest in the sharing of local agricultural knowledge and skills.

→ Residents are interested in climate change factors related to agricultural and horticultural, and in measures such as optimizing potentially longer growing seasons and dealing with increased risk of moisture deficits and extreme weather events.

→ Increased awareness of, and closer identification with the foodshed promotes increased production and consumption of local crops, increased food security and employment opportunities.

→ The steps taken thus far are preliminary and require further capacity development at the individual, community and provincial levels, in order to secure a foothold of increased participation in the production and marketing of foods.

Chapter 7

The Next Steps – Recommendations

→ In order for existing and prospective farmers to make informed, innovative, successful, and sustainable agri-foods and land use management decisions, one additional GIS baseline layer is required. The Agriculture Land Availability overlay would indicate land status, legal boundaries, and zoning information, as well as land uses that could impact agricultural production, such as fisheries habitat, community forest boundaries and wildlife management areas. This overlay would assist existing and prospective farmers in determining legal and regulatory issues attached to a given parcel of land.

→ In order to render baseline information relevant and pertinent, a professional Agrologist should collect, interpret and integrate biophysical information and devise appropriate criteria for assessing land availability for agriculture. Once the data is analyzed (e.g. criteria, classification, interpretation and methodology) an on-the-ground landowner survey instrument would be required to ascertain land availability.

→ In order to build human capacity, continued support for agricultural presentations and training is essential to ensure community-wide access to the information. Given the Valley's limited access to agricultural expertise, periodic technical training is recommended.

→ Given the Valley's extreme variation in slope, aspect and micro-climate, prudent crop and land-use planning requires that additional weather stations be added to the existing network.

→ In order to optimize Foodshed Analyses accomplishments, it is essential to further develop the collaboration and integration with BCVSAS's Food Action Plan Implementation Project.

→ In order to link baseline information to the reinvigoration of Valley agri-foods sector, a comprehensive Foodshed Development Action Plan, inclusive of an agricultural market analysis, is required. It is crucial the market analysis and the accompanying financial feasibility results be combined with the baseline data into an achievable, functional and realistic plan. The planning process would also encourage innovation, enterprise and an entrepreneurial spirit.

Appendix A

Figure A.1 - Agricultural Use Inventory – Map Sheet 1 of 2

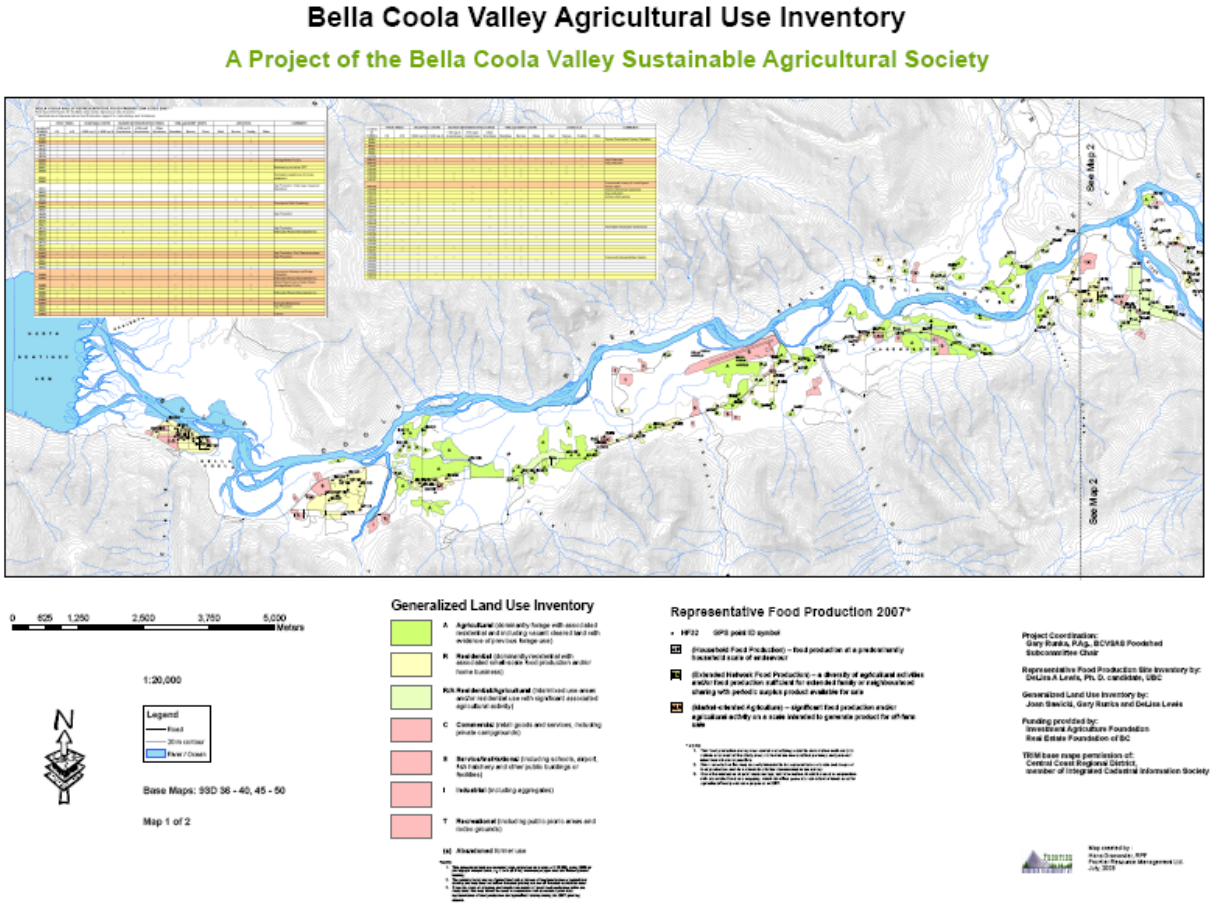
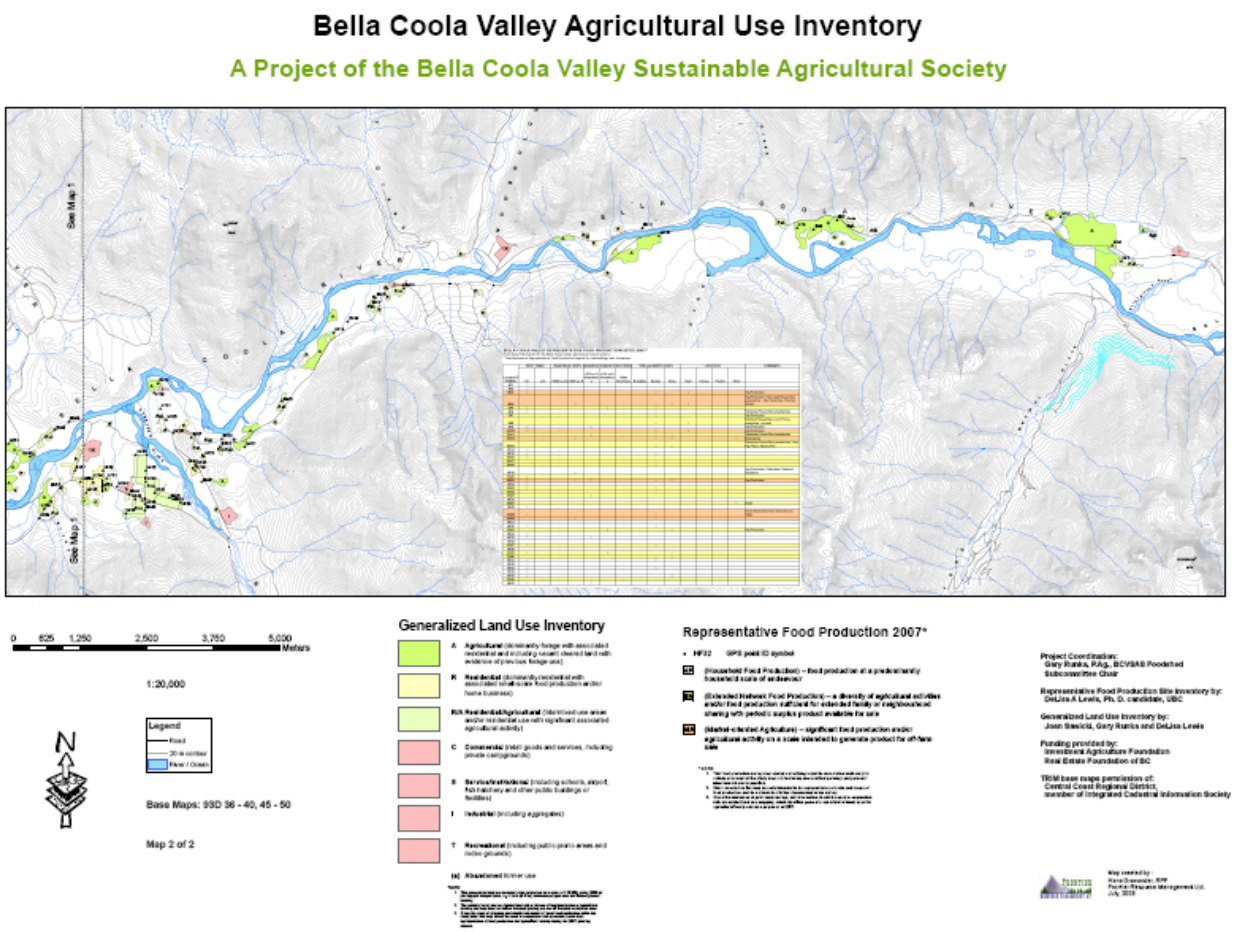


Figure A.2 - Agricultural Use Inventory – Map Sheet 2 of 2



Appendix B

Figure B.1 – Soils Inventory – Map Sheet 1 of 2

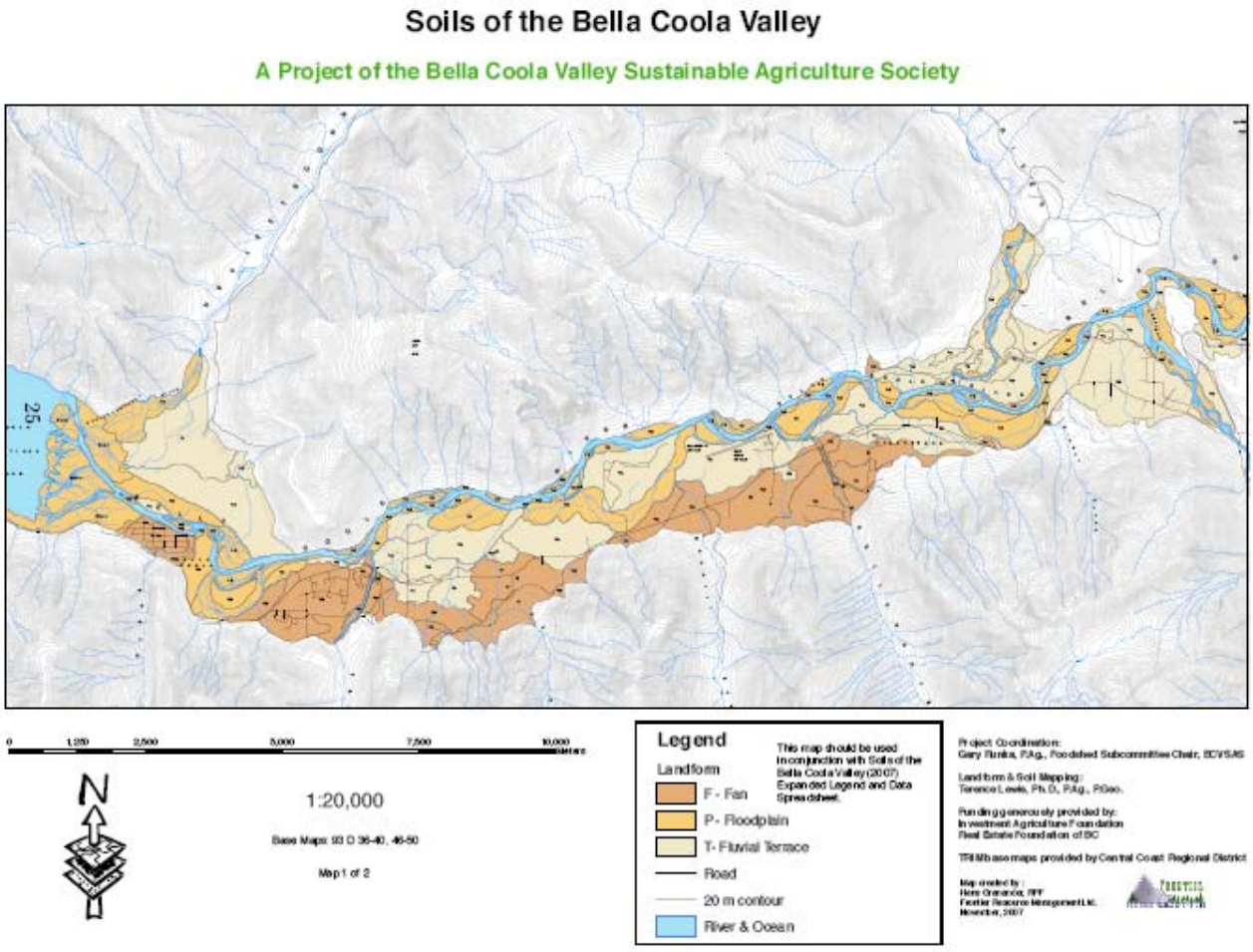
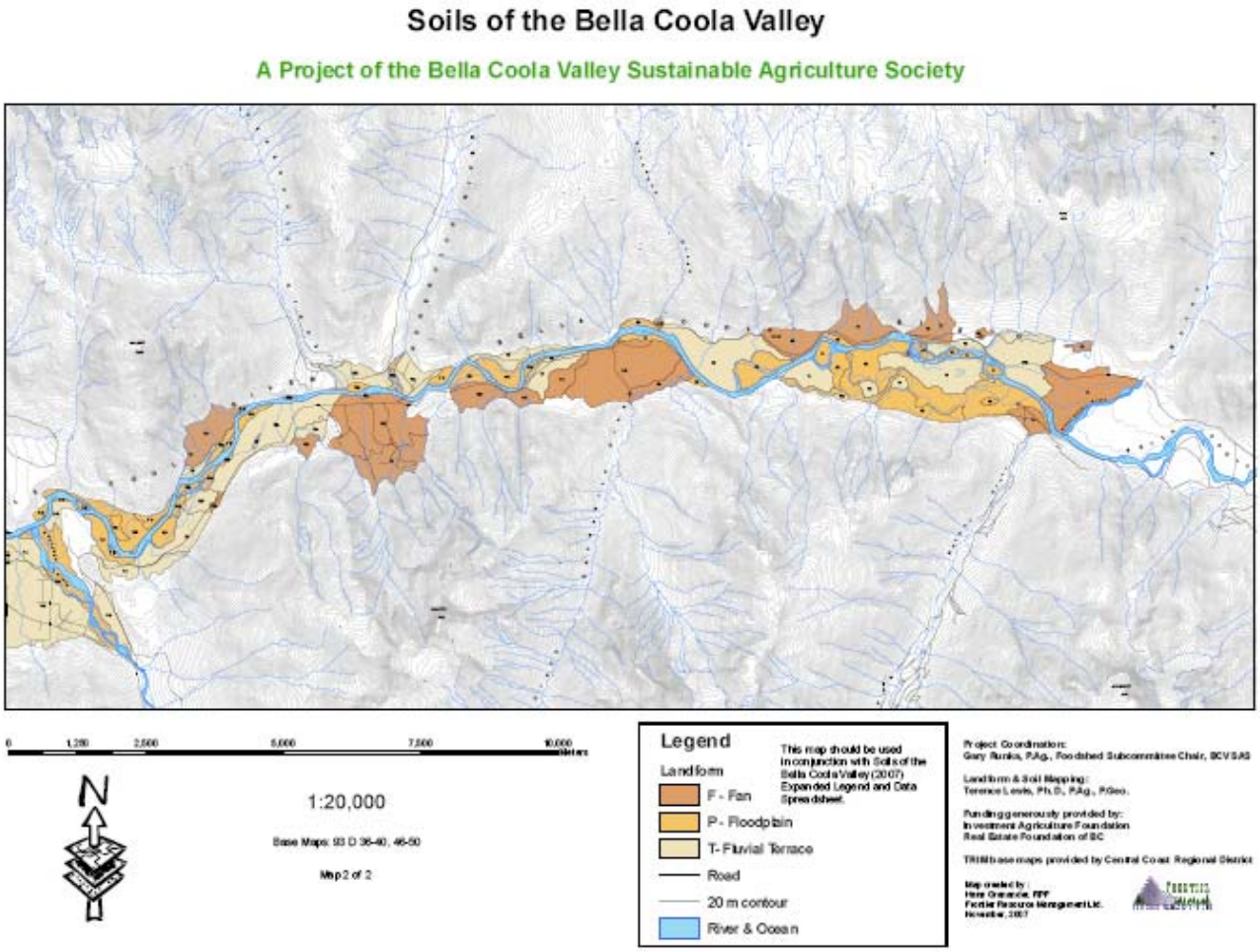


Figure B.2– Soils Inventory – Map Sheet 2 of 2



Soils Inventory Expanded Legend and Data Spreadsheet

MAP UNIT	LANDFORM	SLOPE RANGE (%)	MATERIALS - FIRST COMPONENT	DRAINAGE - FIRST COMPONENT	SUBGROUP - FIRST COMPONENT	% - FIRST COMPONENT	MATERIALS - SECOND COMPONENT	DRAINAGE - SECOND COMPONENT	SUBGROUP - SECOND COMPONENT	% - SECOND COMPONENT	MATERIALS - THIRD COMPONENT	DRAINAGE - THIRD COMPONENT	SUBGROUP - THIRD COMPONENT	% - THIRD COMPONENT	CAPABILITY - FIRST COMPONENT	% FIRST COMPONENT	CAPABILITY - SECOND COMPONENT	% SECOND COMPONENT	CAPABILITY - THIRD COMPONENT	% THIRD COMPONENT
F01	Fluvial fan	2-5	Gravelly coarse and medium sands with 16-30% cobbles and stones	Well	Orthic Regosol	60	Coarse and medium gravelly sands with >30% cobbles and stones	Rapid	Orthic Regosol	30	>50 cm of stone-free medium and fine sands over stony gravels			10	5P	60	7P	30	3A	10
F03	Fluvial fan	7-10	Gravelly coarse and medium sands with >30% cobbles and stones	Rapid	Orthic Regosol	100									7P	100				
F04	Fluvial fan	5-7	Gravelly coarse and medium sands with >30% cobbles and stones	Rapid	Orthic Regosol	100									7P	100				
F05	Fluvial fan	2-4		Moderatley Well	Orthic Regosol	70		Imperfect	Gleyed Regosol	30					3A	70	2A	30		
F07	Fluvial fan	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	Rapid	Eluviated Dystric Brunisol & Orthic Regosol	100									7P	100				
F08	Fluvial fan	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	Rapid	Orthic Regosol	100									7P	100				
F09	Fluvial fan, active portion	2-4		Rapid	Orthic Regosol	100									7P	100				
F10	Fluvial fan - inactive portion	4-10	Gravelly coarse and medium sands with 16-30% cobbles and stones	Well to Rapid	Eluviated Dystric Brunisol & Orthic Regosol	60	Coarse and medium gravelly sands with >30% cobbles and stones	Rapid	Orthic Regosol	30	>50 cm of stone-free medium and fine sands over stony gravels	Well	Orthic Regosol	10	5P	60	7P	30	3A	10
F11	Fluvial fan apron	2-6	25-75 cm of fine sands overlying gravelly coarse and medium sands	Well to Moderatley Well	Orthic Regosol	90		Imperfect	Gleyed Regosol	10	>1 m of fine sands				3A	60	2A	30	2AW	10
F12	Fluvial fan	10-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	Well	O R	70	Coarse and medium gravelly sands with >30% cobbles and stones	R	O R	30					5P	70	7P	30		
F13	Fluvial fan	10-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	100									5P	100				
F20	FF	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	R	O R	70	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	E DYB	30					7P	70	5P	30		
F21	FF prone to snow avalanching	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	R	O R	100									7PE	100				
F22	FF	5-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O DYB & E DYB	70	Coarse and medium gravelly sands with >30% cobbles and stones	R	E DYB	20	35-75 cm fine sands over gravelly coarse sands	W	O DYB	10	5P	70	7P	20	2AT	10
F23	FF	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	R	O R	60	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O DYB	40					7P	60	5P	40		
F24	FF	15-25	Very gravelly coarse and medium sands with >30% cobbles and stones	R	O R	70	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O DYB	30					7P	70	5P	30		
F25	FF	3-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	80	25-75 cm of fine sands overlying gravelly coarse and medium sands	P	R GL	20					5P	80	5W	20		
F40	FF	3-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	80	>50 cm of stone-free medium and fine sands over stony gravels	W	O DYB	20					5P	80	3A	20		
F41	FF	3-10	25-100 cm of fine sands overlying gravelly coarse and medium sands	W - MW	O R	60	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	40					2AT	60	5P	40		
F42	FF	5-15	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	60	25-75 cm of fine sands overlying gravelly coarse and medium sands	W	Orthic Sombric Brunisol	40					5P	60	3A	40		
F43	FF																			
F44	FF apron over fluvial terrace	1-3	>1 m of stratified very fine and fine sands; stone-free	MP	R GL	70	15-40 cm of mesic peat overlying stratified silt, very fine and fine sands	VP	Peaty R GL	30					3W	70	5W	30		
F60	FF	3-8	25-50 cm of medium and fine sands overlying gravelly,medium and coarse sands with variable cobble and stone content up to 60%	W	E DYB	90	Coarse and medium gravelly sands with >60% cobbles and stones	R	O R	10					4P	70	3A	20	7P	10
F61	FF	3-8	25-50 cm of medium and fine sands overlying gravelly,medium and coarse sands with variable cobble and stone content up to 60%	W	E DYB	90	Coarse and medium gravelly sands with >60% cobbles and stones	R	O R	10					4P	70	3A	20	7P	10
F62	FF, active dyked portion	3-8	Gravelly coarse and medium sands with >30% cobbles and stones	R	O R	100									7PE	100				
F63	FF apron	1-3	Stratified very fine to medium sands over medium to coarse sands; often with very fine sand to silt river alluvium at depth	W - MW	O DYB & O R	80	Stratified very fine to medium sands over medium to coarse sands; often with very fine sand to silt river alluvium at depth	I - MP	GL R & R GL	20					3A	70	2AW	20	3W	10
F64	FF	3-8	15-50 cm of medium and fine sands over coarse sands with 41-60% cobbles and stones	W	O R & E DYB										5P	80	3A	20		
F65	FF apron over fluvial terrace	1-3	>1 m of stratified very fine, fine and medium sands; locally silt; all stone-free	W - MW	O R, often tending to O DYB	100									2A	80	1	20		
F66	FF	15-25	Very gravelly medium and coarse sands, locally with 16-30% cobbles and stones	R	O R	100									5AP	100				
F67	FF	15-25	Very gravelly medium and coarse sands, locally with 16-30% cobbles and stones	R	O R	100									5AP	100				
F68	FF	15-25	Very gravelly medium and coarse sands, locally with 16-30% cobbles and stones	R	O R	100									5AP	100				
F69	FF, active portion	3-10	25-75 cm of fine sands overlying medium and coarse sands and gravels	P, regularly inundated	R GL	80	25-75 cm of fine sands overlying medium and coarse sands and gravels	I	GL R	20					5IW	80	2AW	20		
F80	FF apron	1-3	75 cm - >1 m of silt and fine sand overlying fluvial sands and gravels	MP - P	R GL	70	75 cm - >1 m of silt and fine sand overlying fluvial sands and gravels	I	GL R	30					4W	70	3W	30		
F81	FF	3-20	Gravelly coarse and medium sands with 16-30% cobbles and stones	W	O R	70	Gravelly coarse and medium sands with >30% cobbles and stones	W - R	O R	30					5AP	70	7P	30		
F82	FF apron	1-8	Variably stratified medium, fine and very fine sands; stone-free	W	O DYB & O R	80	25-50 cm of stratified medium, fine and very fine sands over gravelly sands	W	O DYB & O R	20					3A	80	4A	20		
F83	FF	3-8	15-50 cm of medium and fine sands over coarse sands and gravels with 16-30% cobbles and stones	W	E DYB & O SB	80	50 cm to >1 m of medium and fine sands; stone-free	W	E DYB	20					5P	80	3A	20		
F84	FF	3-6	15-50 cm of medium and fine sands over coarse sands and gravels with 16-30% cobbles and stones	W	E DYB	80	50 cm to >1 m of medium and fine sands; stone-free	W	E DYB	20					5P	80	3A	20		
F85	FF apron	0.5-2	25-75 cm of fine and very fine sands overlying coarse sands and gravels	P	R GL	80	small standing water ponds								4W	80	7I	20		
F86	FF apron	1-3	15-50 cm of medium and coarse sands over stratified fine and very fine sands; stone-free	P	FE GL	100									4W	100				
F87	FF, active dyked portion	3-6	Gravelly coarse and medium sands with >30% cobbles and stones	R	O R	100									7PE	100				
P01	Braided FP, active portion	0.5-8, r & s	Very gravelly and cobbly materials with coarse interstitial sands	R	O R	70	15-35 cm of stratified fine and very fine sand over very gravelly medium and coarse sands	W	O R	20	High water channels and bars with cobbly, gravelly sands	W	O R	10	7AP	70	5A	20	7I	10
P02	FP, low terrace >2 m above regular inundation	0.5-1	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	100									4A	100				
P03	FP, low terraces	0.5-8, r & s	25-75 cm of fine sand over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					4A	70	3A	20	7I	10
P04	FP	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					4A	90	7I	10		
P05	FP	0-1	25-50 cm of silt over very fine and fine sands; stone-free	P	R GL	90	High water channels with cobbly, gravelly sands	W	O R	10					5W	90	7I	10		
P06	FP	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					4A	90	7I	10		
P07	FP	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					4A	90	7I	10		
P08	FP, low terrace	0.5-8, r & s	>1 m of very fine and fine sands; stone-free	W	O R	100									3AT	100				
P09	FP, low terrace	0.5-8, r & s	>1 m of very fine and fine sands; stone-free	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P10	FP	0.5-8, r & s	>1 m of very fine and fine sands; stone-free	W	O R	90	High water channel with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P11	FP, low terraces	0.5-8, r & s	>1 m of very fine and fine sands; stone-free	W	O R	70	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	20	High water channels with cobbly, gravelly sands	W	O R	10	3AT	70	4A	20	7I	10
P21	FP, low terraces	2-10, r & s	>1 m of very fine and fine sands; stone-free	W	O R	80	High water channels with cobbly, gravelly sands	W	O R	20					3AT	80	7I	20		
P22	FP-I, low terrace	0.5-8, r & s	>1 m of stratified very fine sand, silt and fine sand; stone-free	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					5I	90	7I	10		
P23	FP	0.5-8	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	60	25-50 cm silt over stratified fine and very fine sands; stone-free	P	R GL	30	High water channels with cobbly, gravelly sands	W	O R	10	3AT	60	5IW	30	7I	10
P24	FP, low terrace	0.5-8, r & s	>1 m of stratified very fine sand, silt and fine sand; stone-free	MW	O R	100									3AT	100				
P25	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	MW	O R	70	>1 m of stratified silt, very fine sand and fine sand; stone-free	VP	R GL	20	High water channels with cobbly, gravelly sands	W	O R	10	2AT	70	5W	20	7I	10
P26	FP	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	70	High water channels with cobbly, gravelly sands	W	O R	30					4A	70	7I	30		
P27	FP, low terraces	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MW	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P28	FP	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W	O R	80	High water channels with cobbly, gravelly sands	W	O R	20					4A	80	7I	20		
P29	FP, low terraces	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P30	Braided FP	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	80	High water channels and bars with cobbly, gravelly sands	W - R	O R	20					4A	80	3A	20	7I	20
P31	FP, low terrace	0.5-8, r & s	>1 m of very fine and fine sands; stone-free	W	O R	60	25-75 cm silt over stratified fine, very fine and medium sands	MW - I	GL R	30	High water channels with thin fine sand capping over cobbly, gravelly sands	P - VP			3AT	60	2W	30	7I	10
P32	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P33	FP	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	80	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	20					4AT	50	3A	30	7I	20
P34	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W	O R	100									3AT	100				
P35	FP	0.5-2	25-50 cm of fine sand over very gravelly medium and coarse sands	W - R	O R	60	High water channels and bars with cobbly, gravelly sands	W	O R	40					4A	60	7I	40		
P36	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W	O R	100									3AT	100				
P41	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MW	O R	50	>1 m of stratified silt, very fine sand and fine sand; stone-free	MP	R GL	40	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	10	3AT	50	3W	40	7I	10
P42	FP, island	0.5-8, r & s	25-50 cm of fine sand over very gravelly medium and coarse sands	W - R	O R	80	High water channels and bars with cobbly, gravelly sands	W	O R	20					4A	80	7I	20		
P43	Braided FP, mostly active	2-6	0-50 cm of medium and fine sands over cobbly, gravelly medium and coarse sands	W - R	O R	100									7PE					
P44	FP, low terrace	0.5-8, r & s	25-75 cm of fine sands over very gravelly medium and coarse sands	W	O R	80	High water channels and bars with cobbly, gravelly sands	W	O R	20					3AT	80	7I	20		
P45	FP, including islands	0.5-2	25-50 cm of fine sand over very gravelly medium and coarse sands	W - R	O R	60	High water channels, bars and islands with cobbly, gravelly sands	W	O R	40					5I	60	7I	40		
P46	FP, low terraces	0.5-8, r & s	>1 m of stratified very fine sand and fine sand; stone-free	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P47	FP, low terraces	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	60	4A	30	7I	10
P48	FP, low terrace	0.5-8, r & s	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MW	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P49	FP, low terrace	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	50	High water channels and bars with cobbly, gravelly sands	W	O R	50					3AT	50	7I	50		
P50	Braided FP, bars & islands	0.5-2	0-50 cm of medium and fine sands over cobbly, gravelly medium and coarse sands	W - R, regularly inundated	O R	100									7PE					
P51	FP; part braided, part low terraces	0.5-8	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	60	High water channels, bars and islands with cobbly, gravelly sands	W - R	O R	40					4A	60	7PE	40		
P52	FP, low terraces	0.5-8, r & s	50 cm to >1 m of stratified fine sand, very fine sand and medium sand, stone-free; over very gravelly medium and coarse sand	W	O R	60	0-50 cm of fine sands over cobbly, gravelly medium and coarse sands	W	O R	30	High water channels with thin fine sand capping over cobbly, gravelly sands	VP	R GL	10	3AT	60	5P	30	7I	10

P53	FP, low terraces	0.5-8, r & s	50 cm to >1 m of stratified fine sand, very fine sand and medium sand over very gravelly medium and coarse sands	W	O R	70	0-50 cm of fine and very fine sands over cobbly, gravelly medium and coarse sands	W	O R	20	High water channels with thin fine sand capping over cobbly, gravelly sands	VP	R GL	10	3AT	70	5P	20	7I	10
P54	FP, low terrace	0.5-1	>1 m of stratified very fine sand and fine sand; stone-free	MP	R GL	100									3W	100				
P55	FP	0.5-2	50-75 cm of stratified medium, fine and very fine sands over cobbly, gravelly sands	W	O R	90	High water channels and bars with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P57	FP	0.5-2	50-75 cm of stratified medium, fine and very fine sands over cobbly, gravelly sands	W	O R	100									3AT	100				
P58	FP, low terraces	0.5-8, r & s	50-75 cm of stratified fine and very fine sands over cobbly, gravelly medium and coarse sands	W	O R	70	0-50 cm of stratified fine and very fine sands over cobbly, gravelly medium and coarse sands	W	O R	20	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R		3AT	70	5P	20	7I	10
P59	FP, low terraces	0.5-8, r & s	50-75 cm of stratified medium, fine and very fine sands over cobbly, gravelly sands	W	O R	90	High water channels and bars with cobbly, gravelly sands	W	O R						3AT	90	7I	10		
P61	FP, low terraces	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	60	75 cm to >1 m of stratified very fine sand, silt and fine sand; stone-free	W	O R	30	High water channels with cobbly, gravelly sands	W	O R	10	3AT	60	2AT	30	7I	10
P62	FP, frequent channels	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W - I	O R	80	High water channels with thin fine sand capping over cobbly, gravelly sands	I - VP	O R & GL	20					5I	50	4AP	30	7I	20
P63	FP, low terraces	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	70	High water channels with thin fine sand capping over cobbly, gravelly sands	I - VP	O R & GL	30					4A	70	7I	30		
P64	FP	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	90	High water channels and bars with cobbly, gravelly sands	W	O R	10					4A	90	7I	10		
P65	FP, 2 large channels	0.5-8, r & s	50 cm to >1 m of stratified fine sand, stone-free; over very gravelly medium and coarse sand	W	O R	80	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	20					3AT	80	7I	20		
P66	FP, low terrace island	0.5-8, r & s	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P67	FP, low terraces	0.5-8, r & s	50 cm to >1 m of stratified fine and medium sands, stone-free; over very gravelly medium and coarse sand	W	O R	90	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P68	Braided FP	0.5-8, r & s	0-50 cm of medium and fine sands over cobbly, gravelly medium and coarse sands	W - R	O R	80	High water channels and bars with cobbly, gravelly sands	W	O R	20					5I	80	7I	20		
P69	FP, inundates 1-2x/century	0.5-2	40 cm - >1 m of stone-free, very fine sand and silt over gravelly medium sands	MW	O R	90	High water channels with thin, fine sand capping over gravelly sands	I	GL R	10					1	60	2A	30	5W	10
P70	FP, part braided, part low terraces	1-3	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	W	O R	70	0-50 cm of medium and fine sands over cobbly, gravelly medium and coarse sands	W - R	O R	30					3A	70	5P	30		
P81	FP, low terrace	0.5-8, r & s	50 cm to >1 m of stratified fine and medium sands, stone-free; over very gravelly medium and coarse sand	W	O R	90	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P82	FP, braided & channelled; ox-bows & marshes	0.5-8, r & s	0-50 cm of medium and fine sands over cobbly, gravelly medium and coarse sands	W - R	O R	60	High water channels with thin fine sand capping over cobbly, gravelly sands; localized thin organics	P - VP	R GL	40					5I	40	7IW	40	4A	20
P83	FP, low terrace island	0.5-8, r & s	50 cm to >1 m of stratified fine and medium sands, stone-free; over very gravelly medium and coarse sand	W	O R	90	High water channels with thin fine sand capping over cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
P84	FP, low terrace	0.5-4, r & s	>1 m of stratified, very fine and fine sands; stone-free	I - W	GL R & O R	80	Thin capping of saturated organics over >1 m of very fine and fine sands; stone-free	P - VP	R GL	20					3W	40	3A	40	5W	20
T01	Fluvial Terrace	1-4	very fine sand over stratified very fine and fine sand, with very gravelly medium and coarse sands at depths >75 cm	MW	O R	60	very fine sand over stratified very fine sand, silt and fine sand, with very gravelly medium and coarse sands at depths >25 cm	I	GL R	30	High water channels with cobbly, gravelly sands	W	O R	10	3A	60	2AT	30	7I	10
T02	Fluvial Terrace	2-5	very fine sand over stratified very fine and fine sand, with very gravelly medium and coarse sands at depths >75 cm	MW	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
T03	FT	2-5	ery fine sand over stratified very fine and fine sand, with very gravelly medium and coarse sands at depths >75 cm	MW	O R	90	High water channels with cobbly, gravelly sands	W	O R	10					3AT	90	7I	10		
T04	FT	1-4	very fine sand over stratified very fine and fine sand, with very gravelly medium and coarse sands at depths >75 cm	MW	O R	60	very fine sand over stratified very fine sand, silt and fine sand, with very gravelly medium and coarse sands at depths >25 cm	I	GL R	40					3A	60	2AT	40		
T05	FT	1-4	>1 m of stratified silt, very fine sand and fine sand; stone-free	MW - W	O R	70	>1 m of stratified silt, very fine sand and fine sand; stone-free	MP	R GL	30					2AT	70	3W	30		
T06	Levee on outer part of Fluvial Terrace	2-4	very fine sand and silt overlying fine and medium sands at +/- 1 m; all stone-free	Well	Orthic Regosol	70	very fine sand and silt overlying fine and medium sands at +/- 1 m; all stone-free	Imperfect	Gleyed Regosol	30					3AT	70	2W	30		
T07	FT in part overlain by fan apron	1-2	>1 m of stratified silt, very fine sand and fine sand; stone-free	MP - I	R GL & GL R	80	25-75 cm of stratified very fine sand and fine sand; stone-free; over gravelly medium sands	MP	R GL	20					3W	60	2W	40		
T09	FT	1-2	>1 m of stratified very fine sand, silt and fine sand; stone-free	MW - I	O R & GL R	100									2W	70	1	30		
T10	FT with variable, thin veneer of fan apron	0.5-3	stratified very fine sand,silt, fine sand,medium sand and clayey silt; mostly stone- and gravel-free for >1 m	MW - W	O R	70	stratified very fine sand,silt, fine sand,medium sand and clayey silt; mostly stone- and gravel-free for >1 m	I	GL R	30					2A	50	1	30	3A	20
T11	FT with variable, thin veneer of fan apron	0-1	silt overlying silty clay at 35-75 cm	MP	HU GL	70	silt overlying silty clay at 35-75 cm	P	R GL	30					3W	70	5W	30		
T21	High FT	1-3	thin, discontinuous veneer (0-25 cm) of fine and medium sand over very gravelly coarse sands	W	O DYB	70	similar with >30% cobbles and stones to the surface	R	O DYB	30					5P	70	7P	30		
T22	Low FT	0.5-4, ridge & swale	>1 m of stratified very fine sand, fine sand and silt; stone-free	W - MW	O R & O DYB	100									3A	80	2AT	20		
T23	FT	0.5-4	>1 m of stratified very fine sand, fine sand and silt; stone-free	MW - MP	O R & R GL	60	25-75 cm of stratified very fine sand and fine sand; stone-free; over gravelly medium sands	W - MP	O R & R GL	40					2AT	70	3W	30		
T24	FT	0-1	> 1 m of silty and silty clay vertical accretions	P	O GL	100									5W	100				
T25	Colluvial veneer over FT	5-30	variable thickness veneer of a blocky slide deposit atop fluvial materials; colluvial blocks to 3 m diameter	W	O DYB	100									7P	100				
T40	FT	1-3	50 cm to >1 m of silt over fine or medium sands; stone-free	MP - MW	R GL, O R & GL R	100									3W	80	1	20		
T41	High FT overlain by fan aprons	3-5	silt and very fine sand, stone-free; overlying stratified very fine and fine sands; localized 10-20% gravel and cobble content	MW-W	O R	100									2AT					
T42	FT	2-5	>1 m of very fine sand and silt; stone-free	MW - I	O R & GL R	60	Thin stone- and gravel free veneer over gravelly medium and coarse sands with 16-30% cobbles and stones	W	O R & O DYB	40					2AT	60	4P	40		
T43	FT	1-3	>1 m of silt and very fine sand; stone-free	MW	O R	100									1	60	2AT	40		
T44	Low FT	1-3	>1 m of stratified very fine sand, fine sand and silt; stone-free	W - MW	O R	100									3A	70	2AT	30		
T45	Low FT	0-1	>1 m of stratified very fine sand, fine sand and silt; stone-free	P - VP	R GL	100									5W	80	7WI	20		
T46	High FT	1-8	>1 m of stratified very fine, fine, medium and coarse sands; coarser with depth; stone- and gravel-free depth ranges from 0 to >1 m	W - MW	O DYB, E DYB & O R	100									3A	60	4P	20	2A	20
T47	High FT	1-3	>1 m of stratified fine, medium and coarse sands; coarser with depth; stone- and gravel-free depth ranges from 0 to >1 m	W - R	O DYB	100									3A	70	5AP	20	2A	10
T48	FT	1-3	>1 m of stratified silt, very fine sand and fine sand; stone-free; medium and coarse sands at depth	I - MW	GL R & O R	100									2A	60	1	40		
T49	FT, several levels	1-8	25-75 cm of stratified silt, very fine sand and fine sand; stone-free; over coarse sands or cobbly, gravelly coarse sands	W	O R & O DYB	80	1 m of stratified silt, very fine sand and fine sand; stone-free; medium and coarse sands at depth	I	GL R	20					2AT	80	4A	20		
T50	FT, several levels	1-8	25-75 cm of stratified silt, very fine sand and fine sand; stone-free; over coarse sands or cobbly, gravelly coarse sands	W	O R & O DYB	80	1 m of stratified silt, very fine sand and fine sand; stone-free; medium and coarse sands at depth	I	GL R	20					2AT	80	4A	20		
T51	FT	0-1	> 1 m of silt and very fine sand; stone-free	P	R GL	100									5WI	100				
T52	FT	0-1	> 1 m of silt and very fine sand; stone-free	P	R GL; some Peaty	100									5WI	100				
T53	High FT	1-2	50 cm to 1 m of medium and fine sands, stone-free; over gravelly coarse sand with 16-30% cobbles and stones	W	O DYB	100									3A	100				
T54	FT	1-2	50 cm to >1 m of fine sand, stone-free; over cobbly, gravelly coarse sand with 16-30% cobbles and stones	MW	O R	100									2A	70	1	30		
T55	FT	0-1	> 1 m of silt and very fine sand; stone-free	P	R GL; some Peaty	100									5WI	100				
T56	Medium FT	1-5	>1 m of stratified fine sand, very fine sand and silt; stone-free; medium and coarse sands at depth	W - MW	O DYB & O R	90	> 1 m of very fine sand and silt; stone-free	P	R GL	10					3A	60	2AT	30	4W	10
T57	FT	0.5-4, ridge & swale	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MP	O R, GL R & R GL	80	15-75 cm of stratified silt, very fine sand and fine sand; stone-free; medium and coarse sands at depth	W - MP	O R, GL R & R GL	20					2AT	60	1	20	3W	20
T58	Low FT	0.5-4, ridge & swale	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MP	O R, GL R & R GL	100									2AT	50	1	30	3W	20
T61	FT	0.5-4	>1 m of stratified silt, very fine sand and fine sand; stone-free	W - MP	O R, GL R & R	100									2AT	60	1	20	3W	20
T62	FT	0-1	>1 m of stratified silt, very fine sand and fine sand; stone-free	P - VP	R GL	100									5W	100				
T63	FT	0-1	>1 m of stratified silt, very fine sand and fine sand; stone-free	P - VP	R GL	100									5W	100				
T65	FT	0.5-8, r & s	>1 m of stratified very fine, fine and medium sands; stone-free	W - MW	O R	60	25-75 cm of stratified very fine, fine and medium sands, stone-free; over very gravelly medium and coarse sands	W	O R	40					3A	80	4A	20		
T66	FT	0-1	>1 m of stratified sands including thin layers of moderately decomposed organic peat; stone-free	P - VP	R GL	100									5W	100				
T67	Medium FT	0-3	50 cm to >1 m of stratified very fine and fine sand with minor silt, stone-free; over very gravelly fine, medium and coarse sands	MW - W	O DYB	100									2A	100				
T68	Low FT	0.5-8, r & s	>1 m of stratified fine sand, very fine sand and silt; stone-free	W	O R	90	25-75 cm silt and very fine sand, stone-free; over gravelly sands	P	R GL	10					3AT	50	2A	40	5W	10
T69	FT	0-3	>1 m of stratified silt and very fine sand, stone-free	MW - I	O R & GL R	100									1	60	2A	20	2W	20
T70	FT	0-1	>1 m of stratified silt and very fine sand, stone-free	I - VP	GL R & R GL	100									3W	50	2W	40	5W	10
T71	High FT	0-3	25 cm to >1 m of very fine and fine sands, with minor silt, all stone-free; over gravelly sands	W - MW	O DYB & E DYB	100									3A	60	2A	40		
T75	FT	0-2	>1 m of stratified silt, fine sand and very fine sand; stone-free	MW	O R	100									2A	100				
T76	FT	0-2	>1 m of stratified silt, fine sand and very fine sand; stone-free	MW - MP	O R & R GL	100									1	50	2A	30	3W	20
T77	FT	0-3	25 cm to >1 m of fine and very fine sands over very gravelly medium and coarse sands	W - I	O R & GL R	100									3A	70	4P	30		
T78	FT	0-1	25-75 cm of fine and very fine sands over very gravelly medium and coarse sands	P - VP	R GL	100									5W	100				
T81	FT	0-1	Variable accumulation (25 cm to >1 m) of peat overlying silts and sands	VP - P	Peaty R GL & TY F	100									5WF	70	5W	30		
T82	FT	0-2	>1 m of stratified silt, fine sand and very fine sand; stone-free	MW - I	O R & GL R	100									2W	70	3A	30		

Appendix C

Climate Data Review

- Closer to the Coast and sea level, the 30-year record of climate data indicated an average freeze-free period of more than 250 days (253 days for the Bella Coola station and 268 days at the Airport).
- Higher in elevation and up the Valley, the Stuie-Tweedsmuir station reported 229 average freeze free days.
- Stuie-Tweedsmuir Lodge reported nearly twice as many degree-days above 18 C compared with Bella Coola and the Airport stations.
- Moisture deficits during the growing season at Stuie-Tweedsmuir station during the thirty- year period of record indicate a need for supplemental irrigation.
- Droughty periods regularly occur in all areas of the Valley during the growing season as well as excess moisture during the planting season. This strongly suggests a need for detailed, accurate information regarding climate, soils, and hydrology.
- Given the extreme variation in slope, topography, and vegetation from end to end of the Valley, prudent crop and land-use planning requires up-to-date climate interaction information at the Micro-climate scale.

Three weather stations recorded climatic conditions for the Bella Coola Valley over the thirty-year period of record from 1971-2000. Following Environment Canada's station identification, they are referred to as Bella Coola, the Bella Coola Airport station and Stuie-Tweedsmuir Lodge. Environment Canada's weather archives list temperature and precipitation averages, along with historical extremes.

Heat units and moisture deficiencies are basic climate factors associated with optimal or unfavorable conditions for agricultural activities; accordingly information was gathered pertaining to these factors and made available in the previous Phase I report.

Of special note for growers of heat-loving plants and land-use planners alike are the differences in degree-days above 18 C: Stuie-Tweedsmuir Lodge reported nearly twice as many degree-days above 18 C compared with Bella Coola and the Airport stations. For the complete record, please visit the Environment Canada website.

Link to Environment Canada website: http://climate.wethero_ce.ec.gc.ca

Appendix D

Figure D.1: Land Capability for Agriculture – Map Sheet 1 of 2

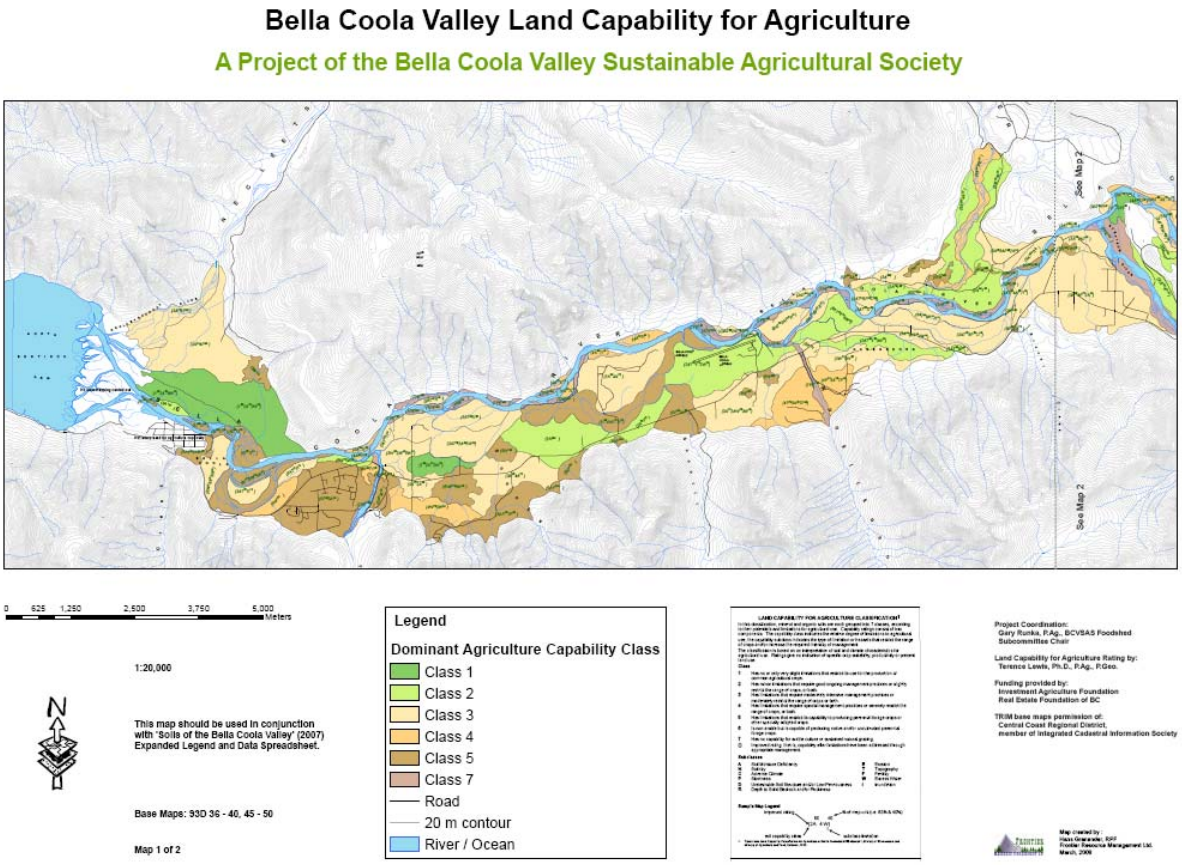
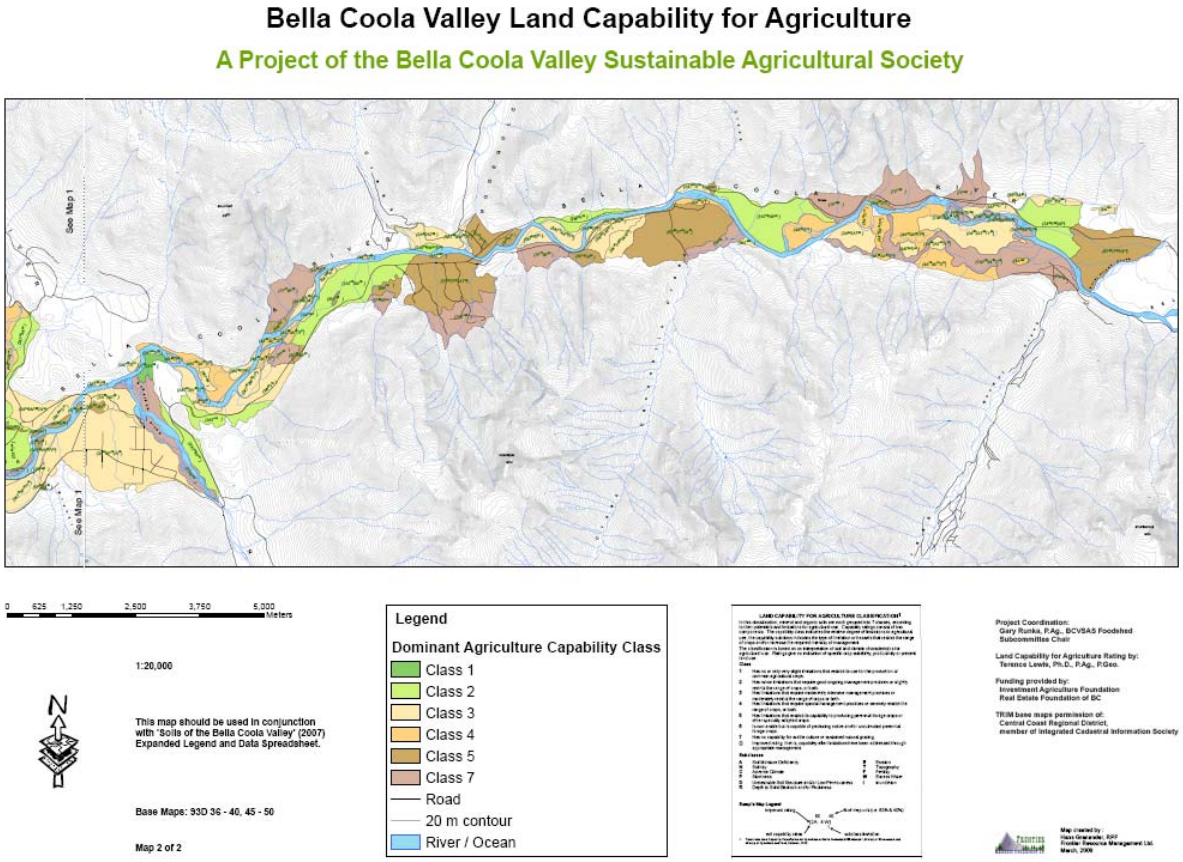


Figure D.2: Land Capability for Agriculture – Map Sheet 2 of 2



Appendix E

Bella Coola Valley Crop Suitability Report 2007

A project of the Bella Coola Valley Sustainable Agricultural Society & UBC Faculty of Land and Food Systems

Project deliverable for the Bella Coola Valley Foodshed Analysis

Prepared by Gary Runka, P.Ag., Dr. Terence Lewis, P.Ag. and DeLisa Lewis

March 2008

Introduction

The 2007 Foodshed Analysis area comprises the valley bottom landforms within the Bella Coola Valley from the boundary of Tweedsmuir Provincial Park at Burnt Bridge Creek westward to the estuary of the Bella Coola River at North Bentinck Arm. The study area comprises 6,276 ha (15,509 acres). The crop suitability component of the Foodshed Analysis is intended to identify the biophysical opportunities for increased range and production of soil-based food products in the Bella Coola Valley.

This report provides basic crop suitability information for soil/climate combinations within the study area, based on climate and 1:20,000 soil survey inventory and mapping conducted in 2007. Climate suitability for specific crops was determined from both long-term and recently established valley climate station data. Long-term data is summarized by Environment Canada's thirty-year (1971- 2001) climate normals for three stations: "Bella Coola" located on North Grant Road, "Bella Coola A located at the airport, and "Stuie/Tweedsmuir Lodge located at the eastern end of the Bella Coola valley just beyond the Foodshed project area. Recently established climate stations include new stations on north Grant Road and on Hammer Road.

Reference was also made to experience elsewhere and to the Soil Management Handbook of the Lower Fraser Valley and the technical paper, *Climatic Capability Classification for Agriculture in British Columbia.*

As part of a project that is grounded in a community-based research methodology, local experience was also utilized in determining crop suitability, including that gained through agriculture land use mapping carried out within the study area during the 2007 growing season.

Climatic Capability Classes for the Bella Coola Valley

The Climatic Capability Classification for Agriculture in British Columbia (1981) defines climatic classes on the basis of freeze-free period, accumulated growing degree-days above 5C and climatic moisture deficit.

A moderate coastal climate dominates the Bella Coola Valley; consequently it is the accumulation of growing degree-days rather than freeze-free period that limits the range of climate-adapted crops. The coastal influence does, however, decrease with distance from North Bentinck Arm and a decidedly Interior climatic influence becomes apparent in the easternmost part of the study area. In addition, local sites have topographic advantages or disadvantages depending on slope and aspect, and the extent and duration of valley shading - factors that significantly influence the accumulation of heat units.

Assuming irrigation, the Bella Coola Valley lies entirely within Climatic Class 1 (or better), which, for the Coast, is defined as:

- Freeze-free period is greater than 150 days and effective growing degree-days above 5^{C} are greater than 825.

Provincial modifications to reflect growing degree-days as the key determinant of crop suitability in coastal BC (over and above freeze-free period) have resulted in additional climatic classification categories as follows:

- Class 1c: freeze-free period > 150 days; growing degree days above 5C are 2060 to 2225; examples of the range of suitable crops include apricots, peaches, cherries, pears, plums, apples, strawberries, raspberries, grapes, cucumbers, melons, beans, peppers, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radishes, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, cereal grains and forage crops.

- Class 1b: freeze-free period > 150 days; growing degree days above 5C are 1780 to 2059; examples of the range of suitable crops include hardy apples, strawberries, raspberries, cucumbers, melons, beans, peppers, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radishes, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussels sprouts, Swiss chard, cereal grains and forage crops.

- Class 1a: freeze-free period is 120 to 150 days; growing degree days above 5C are 1505 to 1779; examples of the range of suitable crops include hardy apples, strawberries, raspberries, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radishes, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cereal grains and forage crops.

Based on these climatic class definitions, the available climate data, and the observed range and performance of crops actually grown, the range of climatic classes found in the Bella Coola Valley is best described as Class 1b+ (i.e. better than 1b, but not quite 1c) to 1.

The range of crops climatically suitable for the Bella Coola Valley (i.e. without consideration of soils) as listed in the following section assumes irrigation.

Climatically Suited Crops or Crop Groups for the Bella Coola Valley

Annual Legumes: peas, beans.

Blueberries and Currants: Not categorized into varieties.

Cereal Grains: barley, fall rye, oats, wheat and winter wheat.

Cole Crops: unlimited range including broccoli, brussel sprouts, cabbage, cauliflower, and kale.

Corn: sweet corn*

Note: *Cool, wet climate conditions at time of planting risks poor stands. Some additional season extension, fertility management and careful selection of climatically appropriate varieties may be necessary to produce reliable yields. Best results in areas with well-drained soils.

Nursery Stock and Christmas Trees: crops grown in the ground, rather than in containers.

Perennial Forage Crops: grass and grass clover.

Raspberries, Blackberries, Loganberries and Tayberries: Have not been categorized into varieties.

Root Crops: beets, carrots, parsnips, potatoes, radishes, bulb onions and turnips.

Shallow Rooted Annual Vegetables:

1) unlimited range of salad crops including lettuce, spinach, parsley, celery and green onions plus
2) more limited range of crops that require sufficient heat units during the growing season includes cucumbers, peppers, tomatoes, pumpkins and squash, where yields and reliability would be limited to small scale, home or hobby garden production.

Strawberries: Not categorized into varieties.

Tree Fruits:

1) apples, cherries, plums and pears plus
2) apricots, nectarines and peaches, but with this group, yields and reliability limited to small scale, home or hobby garden production, and best on sites with favorable slope and aspect.

Hazelnuts: Not categorized into varieties.

Asparagus: Not categorized into varieties.

Cranberries: Not categorized into varieties.

Grapes and Hardy Kiwifruit: Yields and reliability limited to small scale, home or hobby garden production, and best on sites with favorable slope and aspect.

Crop Suitability based on Soil/Climate Combinations

This section of the report should be used in conjunction with Soils of the Bella Coola Valley, Maps 1 and 2 (2007) and Expanded Legend and Data Spreadsheet (2008), as prepared by Dr. Terence Lewis, P. Ag. and Bella Coola Valley Crop Suitability Maps 1 and 2 (2008) as prepared by Gary Runka, P. Ag. and Joan Sawicki, both of which are projects of the Bella Coola Valley Sustainable Agricultural Society.

Interpretations of the suitability of climatically adapted crops to the various soils of the Bella Coola Valley were carried for the 199 individually mapped soil units. For the purposes of this report, the soils have been generalized into 9 groupings and rated as dominantly High, Moderate, Low or Unsuited for the climatically adapted crops listed above, excluding those crops indicated as only suitable for home or hobby garden production.

NOTE: Crop suitability ratings were only carried out on those areas for which soil mapping was completed. That is, interpretations were not done for Bella Coola Townsite or the Estuary. This does not imply an absence of agricultural capability or crop suitability in these areas.

Soil groupings for crop suitability interpretation (See Appendix A for the correlation between these soil groups and individually mapped soil polygons):

- High capability fluvial soils
- Sandy fluvial soils
- Fluvial soils with high water table
- Old, high terraces
- Very wet terraces
- Regularly inundated soils
- Active floodplain soils
- Stony, coarse textured fans
- Acidic, wet organic soils

Crop suitability ratings are defined as follows:

- High suitability: indicates those crops that are well suited to the soils and climate and require few management inputs to achieve an acceptable level of production.

- Moderate suitability: indicates those crops that are moderately well suited to the soils and climate and require some management inputs to achieve and acceptable level of production.
- Low suitability: indicates those crops that are not well suited to the soils and climate and require a considerable degree of management inputs to achieve an acceptable level of production.
- Unsuited: indicates those crops that are not suited to the soils.

NOTE: Based on *Soil Management Handbook of the Lower Fraser Valley* (1991) methodology, suitability for climatically adapted crops assumes a sufficient and appropriate level of management inputs. For Bella Coola Valley soils, sufficient and appropriate level of management inputs would most often include, but not be limited to, drainage and/or irrigation improvements and organic matter build-up to increase water-holding capacity and soil fertility.

Table E.1

Generalized Suitability of Climatically Adapted Crops in the Bella Coola Valley

Soil Group	Suitability			
	Dominantly High	Dominantly Moderate	Dominantly Low	Unsuitable
High Capability Fluvial Soils	*Annual legumes (peas & beans), blueberries and currants, cereal grains, cole crops, corn, nursery and Christmas trees, perennial forage crops, raspberry, blackberries, loganberries, tayberries, root crops, shallow rooted annual vegetables, straw-berries, apples, cherries, plums and pears, hazel-nuts, asparagus*			*Cranberries*
Sandy Fluvial Soils	*Raspberries, blackberries, loganberries, tayberries, straw-berries, apples, cherries, plums and pears, hazel-nuts, asparagus, perennial forage crops, nursery and Christmas trees*	*Annual legumes (peas & beans), cole crops, corn, root crops, shallow rooted annual vegetables, blueberries and currants, cereal grains*		*Cranberries*

Continued on next page…

Table E.1

Generalized Suitability of Climatically Adapted Crops in the Bella Coola Valley (Cont'd)

Soil Group	Suitability			
	Dominantly High	Dominantly Moderate	Dominantly Low	Unsuitable
Fluvial Soils with Water Table	*Annual legumes (peas & beans), blueberries and currants, shallow rooted annual vegetables, perennial forage crops*	*Cole crops, corn, root crops, cereal grains*	*Apples, cherries, plums and pears, raspberries, blackberries, loganberries, tayberries, straw-berries, hazelnuts, cranberries, asparagus, nursery and Christmas trees*	
Old, high terraces	*Raspberries blackberries, loganberries, tayberries, straw-berries, apples, cherries, plums and pears, hazel-nuts, asparagus, perennial forage crops, nursery and Christmas trees*		*Annual legumes (peas & beans), cole crops, corn, root crops, shallow rooted annual vegetables, blueberries and currants, cereal grains*	*Cranberries*
Very wet terraces		*Perennial forage crops*		*All other climatically adapted crops unsuitable due to poor drainage*

Continued on next page…

Table E.1

Generalized Suitability of Climatically Adapted Crops in the Bella Coola Valley

(Cont'd)

Soil Group	Suitability			
	Dominantly High	Dominantly Moderate	Dominantly Low	Unsuitable
Regularly inundated soils		*Perennial forage crops*		*All other climatically adapted crops unsuitable due to flooding risk*
Stony, coarse textured fans		*Perennial forage crops, nursery and Christmas trees*	*Apples, cherries, plums and pears, depending on micro-climate*	*Annual legumes, blueberries and currants, cereal grains, cole crops, corn, raspberries, blackberries, Loganberries, tayberries, root crops, shallow rooted annual vegetables, straw-berries, hazelnuts, asparagus, cranberries*
Acidic, wet organic soils	*Cranberries*	*Perennial forage crops, blueberries, currants and cranberries*	*Annual legumes (peas & beans), corn, shallow rooted annual vegetables, cole crops, root crops, cereal grains*	*Raspberries, blackberries, loganberries, tayberries, straw-berries, asparagus, hazelnuts, apples, cherries, plums and pears, nursery and Christmas trees*

Appendix F

Figure F.1: Crop Suitability – Map Sheet 1 of 2

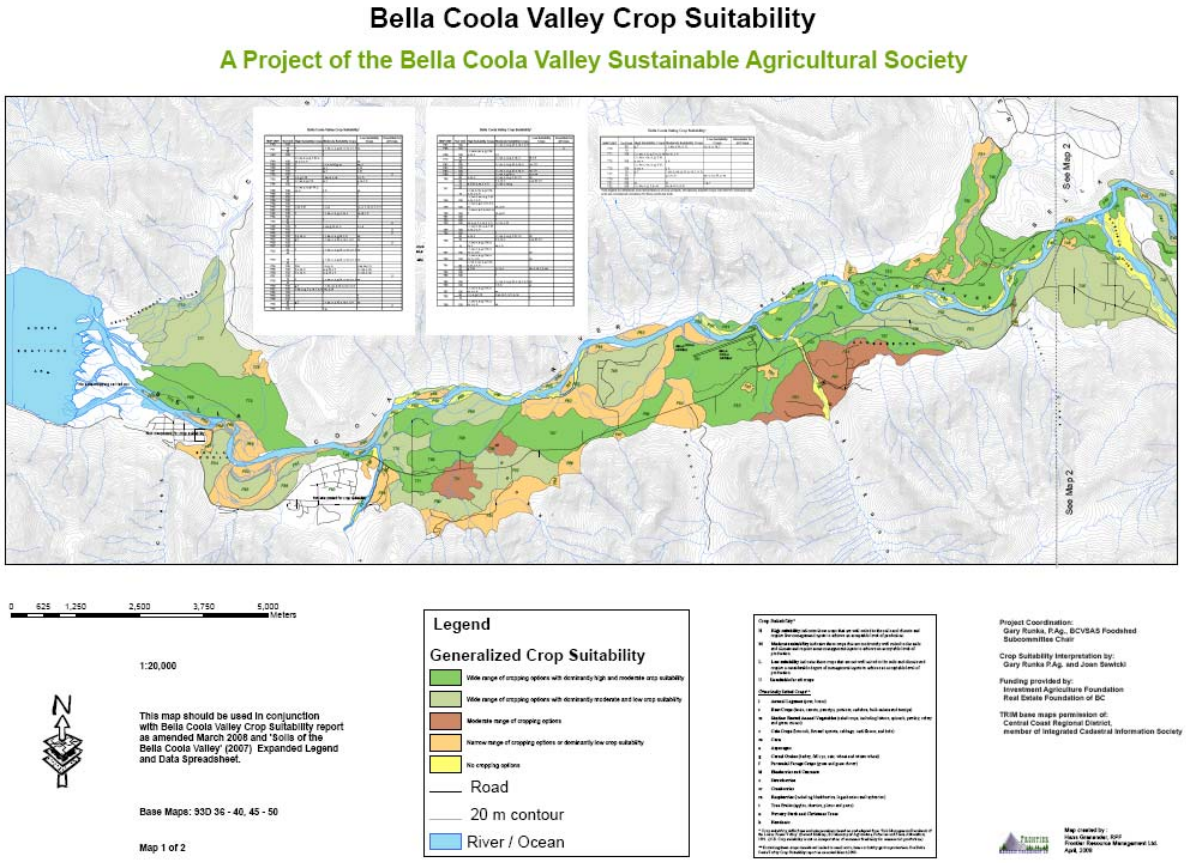
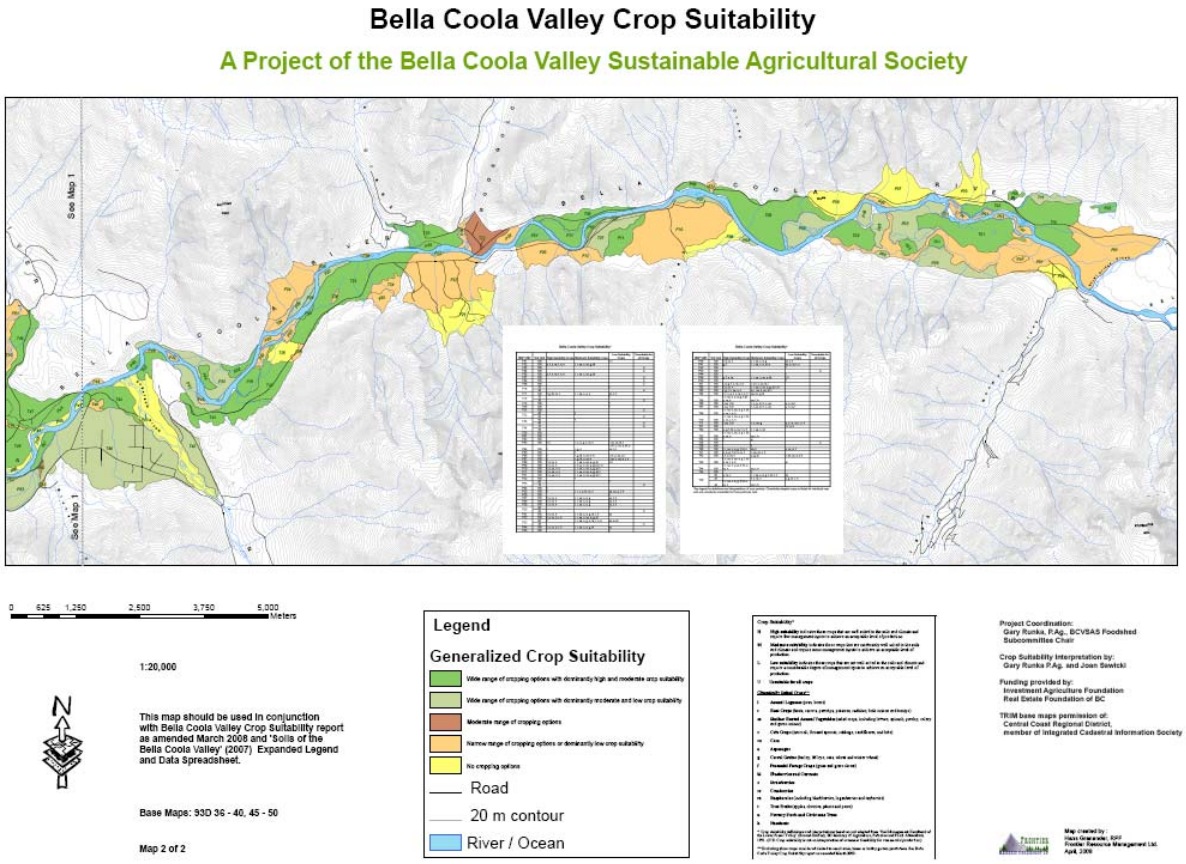


Figure F.1: Crop Suitability – Map Sheet 2 of 2



Appendix G

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Appendix H

WEB Resources

Links for more information on Food Miles and the Foodshed:

British Columbia

- 100-Mile Diet Society http://www.100milediet.org
- BC Food Systems Network http://www.fooddemocracy.org
- Deconstructing Dinner http://kootenaycoopradio.com/deconstructingdinner/011107.htm

Canada

- Earth Care Sudbury http://www.greatersudbury.ca/cms/index.cfm?app=divearthcare&lang=en&currID=6904&parID=68
- Falls Brook Center: Food Miles Calculator http://www.fallsbrookcentre.ca/cgi-bin/calculate.pl
- Local Flavour Plus http://www.localavourplus.ca/

U.S.A.

- Foodshed Alliance http://www.foodshedalliance.org
- Wisconsin Foodshed Research Project http://www.cias.wisc.edu/foodshed/foodshed.htm
- National Sustainable Agriculture Information Service http://attra.ncat.org/farm energy/food miles.html

WEB Link to Micro-climate Weather Station

- http://www.romcomm.net/multi

  username: BCVSAS
  password: BCVSAS