

# **Sustainability Mapping**

Geography 472  
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<b>INTRODUCTION.....</b>	<b>3</b>
<i>Vision.....</i>	4
<b>SPECIFICATIONS.....</b>	<b>4</b>
<i>Client.....</i>	4
<i>Audience.....</i>	5
<b>THE GREEN MAP SYSTEM .....</b>	<b>5</b>
<i>Employing Green Map Symbols.....</i>	5
<i>Community Mapping Exercise .....</i>	7
<b>DESIGN AND RESEARCH .....</b>	<b>8</b>
<i>UBC Maps.....</i>	8
<i>Gathering Information .....</i>	10
<i>Map Design.....</i>	11
<i>Map Construction .....</i>	12
<i>Tour Design .....</i>	13
<i>Brochure Design.....</i>	14
<b>ISSUES ENCOUNTERED.....</b>	<b>14</b>
<i>Data.....</i>	14
<i>Generalization/Simplification .....</i>	15
<i>Colour .....</i>	15
<i>Communication .....</i>	15
<b>CONCLUSION .....</b>	<b>16</b>
<b>APPENDICES.....</b>	<b>18</b>
<i>Appendix I.....</i>	18
<i>Appendix II.....</i>	19
<i>Appendix III .....</i>	21
<i>Appendix IV.....</i>	23
<i>Appendix V.....</i>	25
<b>CITATIONS.....</b>	<b>28</b>
<b>RESOURCES AND DRAFTS.....</b>	<b>29</b>

## INTRODUCTION

A culture of sustainability is arising at UBC. In 1997 UBC adopted a sustainability development policy becoming the first university in Canada to do so, and subsequently, in 1998 the Campus Sustainability Office was launched. UBC is now fully engaged in bringing sustainability issues to the forefront of everyday campus life, and has been transforming the face of the campus reflecting these advancing sustainability principles. During the last eight years UBC has introduced a wide variety of sustainability initiatives and practices throughout campus life, and UBC is now the only Canadian university to receive Green Campus recognition from the US-based National Wildlife Federation (Sustainability Office).

In April 2004 Alice Miro and Nick Mason undertook the initiative to map the various sites that represented sustainable practices on the UBC campus. Their work resulted in the published map “Discover UBC - A Self Propelled Tour of Canada’s Leader in Campus Sustainability.” This map has since been circulated and used by a broad audience, however, earlier this year it was brought to our attention that this map is now outdated. The rapidly changing campus coupled with ever-evolving sustainability initiatives has rendered the existing map obsolete. Thus, we have proposed to update and redesign the Discover UBC map with the support of the SEEDS program and the Sustainability Office.

## **Vision**

Our vision was to create an all-inclusive map and brochure package that is an easy to read, visually intuitive summary of UBC initiatives and achievements. The Brochure is designed to promote awareness of the UBC Sustainability Office, its programs and partners to students and visitors alike, as well as to provide a gateway for the audience to further pursue knowledge of sustainable practices. The map is designed so that the audience may explore and familiarize themselves with the UBC campus and its various facets of sustainability. Overall, the map/brochure package attempts to encompass all aspects of UBC sustainability under one umbrella.

The map/brochure specifications, the Green Map system, and the design process will be described herein, followed by a discussion of the issues encountered.

## **SPECIFICATIONS**

### **Client**

Publications by the Sustainability Office (SO) now have a new 'look and feel' in order to establish a visual identity for UBC Sustainability. Consistency with the SO style was of utmost importance; therefore, it was necessary to follow these constraints. For instance, we were confined to using precise fonts, headings, subheadings, and body text, as well as particular colours (Appendix I). Both pros and cons arose out of these specifications namely revolving around decision-making processes.

## **Audience**

The SO wanted the sustainability map to reach a wide audience including first year students, faculty, community members, tourists, and World Urban Forum visitors. To ensure that the guide could be effectively utilized by such a diverse audience, we would have to produce an aesthetically captivating map that was age and value neutral. Granted, we would have to balance audience needs with the client specifications.

## **THE GREEN MAP SYSTEM**

### **Employing Green Map Symbols**

From the beginning of this project, we identified several reasons for using the Green Map symbol system. Firstly, our map was to be delivered to the SEEDS program at UBC SEEDS stands for social, ecological and economic development studies. Green Map symbols represent both ecological and cultural ideas. Secondly, if the map is to have an international audience during the World Urban Forum and beyond, people may be familiar with the system and may have seen other Green Maps. A third reason to use the symbols is that the first two UBC sustainability maps used them. Maintaining the symbol system allowed continuity across the reinvention of this map, however we felt it necessary to go back to the source, the complete Green Map legend, to make our symbol choices. The Green Map legend can be found in Appendix II.

There are many benefits in using the Green Map template. The symbols are meant to be an adaptable ‘shared visual language.’ (Green Map) There is flexibility in the

symbols, as local mapmakers are given freedom to assign precise definitions. In our case, for example, the ‘Eco-building’ symbol was renamed as ‘Green building’ to associate with UBC’s ‘green building’ projects.

One disadvantage we encountered is that the Green Map system does not include a symbol for libraries, nor a symbol with a definition that could be ‘stretched’ for the purpose. We felt it was necessary to identify all campus libraries to increase the usefulness of the map for students. The symbol we created approximates the Green Map style, a white letter within a black square; however we made it smaller to distinguish it from an official symbol.

We studied how the first two campus sustainability maps used the Green Map system to see what worked well, and what we needed to change to have the new map meet our vision. The first map, produced in 2004, had 26 symbols in the legend. The second map, the Discover UBC map, used 29 symbols. Several of these symbols were vital to showing how UBC is one of the most sustainable campuses in North America, such as Green Building, Organic Groceries, Farmer’s Market, Cultural Site, Special Garden and Social/Political Resources. Other symbols such as Star Gazing Site, Scenic View, Historical Feature and World Music, we viewed as auxiliary to the main sustainability message and were left off our map. We found the overall use of symbols distracted from the utility of the previous maps. Therefore, in an effort to employ cartographic principles such as KISS, we significantly reduced the number of symbols on our map.

## **Community Mapping Exercise**

In an effort to include a larger group of students in the decision making process around social sustainability (a somewhat fluid concept), we conducted a seminar exercise in a 4<sup>th</sup> year Cartography class. Having evaluated all Green Map symbols we chose 23 that we felt best encompassed ‘social sustainability.’ From these the students could choose from and place on a campus map.

By providing symbols, our intention was not to limit students in their definition of social sustainability, but to encourage the thought process. Many of the symbols had very broad, open-ended definitions such as ‘significant building.’ In hindsight, the process of thinking about social sustainability may have been better served by a simple campus map and free reign over design and symbolism. With or without symbols, however, the students involved in this exercise had limited knowledge about sustainable campus resources and sites. On average the groups placed 26 symbols on each map, many of which were common across every map. The students recognized the most celebrated green buildings, composting at residences, the Museum of Anthropology, many features at the Student Union Building, gardens and Pacific Spirit Park, among other things. Interestingly, all three groups placed a blight site symbol at the Buchanan towers.

The main point we gathered from the seminar exercise was that students could readily identify sustainability in areas and buildings that they are familiar with. Having thoroughly researched sustainability on campus however, we discovered many more buildings and initiatives that are not so well known and advertised. The fact that our

seminar students were not aware of these gave us all the more incentive for our map to be captivating, informative and widely distributed on campus.

## DESIGN AND RESEARCH

### **UBC Maps**

To research our map and to find design ideas we looked at many campus maps in existence. We found five campus maps online, one in a brochure and the two previous Campus Sustainability maps. The purpose and audience for these maps were quite varied: from first-year students, to library users, to tourists and visitors. Our map needed to cater to a wide audience so we viewed and considered them all.

UBC's online, interactive 'Wayfinding' service was one of our most heavily used resources for locating buildings and project sites quickly (our knowledge of campus was tested and found inadequate to the task of placing building names). The Wayfinding map is useful to students and campus visitors alike, and is easily accessible. Searching for some obscure buildings (e.g. the In-Vessel Composter) produced only addresses and not a map location; however, the search window allows the user to quickly find the location with Google maps. Interestingly, this map and the brochure version of this map are the only ones to represent South Campus. We had hoped to include South Campus on our map because there are several sustainability initiatives south of Thunderbird Road. UBC Farm in particular would have been wonderful to represent, as no UBC map officially

draws the farm's boundaries. Unfortunately we were constrained by scale and the length of an 11x17" page so only North Campus was represented.

Though the Wayfinding map may be UBC's most widely used reference map, it is not as up-to date as one might expect. Judging by building outlines, the base-line information appears to be drawn from a common PDF from Campus and Community Planning. Buildings erected before 2004 are drawn with detail that probably came from an AutoCAD file. Everything built after this, such as the Michael Smith Building, the Life Sciences Centre and Hawthorn Place, are represented as large rectangles with dashed outlines. Our data came from up-to-date AutoCAD files from Campus and Community Planning and included more detailed outlines for new buildings. For this reason we may have the claim to the most current campus map.

A map we must credit for inspiration is the printable Campus Map for new and first-year students from the student section of the UBC website (Appendix III, Fig.1) (<http://students.ubc.ca/current/campus.cfm>). The map uses colour effectively to distinguish classrooms, residences, libraries, services, sports facilities & gardens. Though over five hues are used, the map is visually pleasing and well organized. This use of colour demonstrates that many colours can be complementary if they are similar in value and saturation. The roads drawn in white on a green background also appealed to us and we followed this example. Our map maintains more detailed buildings and roads than this printable map. We tried hard to achieve a balance between accuracy, usefulness and visual appeal.

As mentioned before, the SO office wanted a map that would cater to a very wide audience. The first two sustainability maps were hugely influential in our map design choices but we believe that neither of these maps catered to all our map users. The first map, produced by Alice Miro and Nick Mason in 2004, was clearly targeted to a younger student audience, evidenced by the monkey graphic and use of the word ‘sex’ to draw attention. The second map maintained the same symbols and tour route but used base information from a standard campus PDF. The mapmaker did not adhere to many cartographic principles. Firstly, all base features are coloured in two shades of blue, neither of which are properly explained in the legend. Green Map symbols are not clearly placed or easily deciphered. The map also lacks a scale bar.

As cartographers we found the second map lacked the clarity and we felt that by using other types of symbolization the map information could be communicated much more effectively. The task of communicating all the sustainability initiatives at UBC was made somewhat easier by the brochure space on the back of the map. The next step was to decide what information could be symbolized on the map, and what information was better suited to be included as text.

### **Gathering Information**

We wanted the sustainability map to be as comprehensive as possible. Our main source of sustainability information was the Sustainability Office and its website. For further information on any project or program we were referred to more detailed reports,

websites and personal interviews. For detailed information on every project and program included in the brochure and map, refer to Appendix IV.

Spatial data was acquired from UBC Campus and Community Planning and from the Department of Geography spatial database. Below is a list of all the base information we gathered.

- Roads and Walkways
- Buildings
- Building names
- Parks and Recreational Areas
- UBC outline
- Parking lots- Above and Underground

For a complete list of the spatial data, data source location, data format type, date and the programs used refer to Appendix V.

### **Map Design**

After all the relevant information was gathered, we had to decide how to design our map and display all of the information. We discussed which projects and programs could be shown on the map and which couldn't. This determined how many features we would have on the map and how they would be symbolized. Any features that did not have an address had to be excluded from the map and talked about in the brochure.

Important sustainability features were symbolized with green map symbols and Green Buildings were further highlighted in green, a colour associated with the environment. EcoTrek buildings, because so numerous, were coloured a pale yellow to distinguish them from other buildings without dominating the map. Any buildings that are not part of EcoTrek or any green program were shaded grey so as not to grab attention.

Roads were represented in white so that they would not dominate the visual hierarchy and to improve the aesthetic quality of the map. Pedestrian walkways are distinguished by a grayish purple. Feature outlines were kept as thin as possible and building shapes were simplified to maximize clarity. We included the inset in consideration of our wide audience who may not be familiar with Vancouver. Both the inset and legend were placed on the right hand side to balance the weight of buildings on the west side of campus. Legends were kept as simple as possible to avoid confusing the map reader. Font styles were specified by the client and we used these fonts to maintain the Sustainability Office 'look and feel.' We maximized the scale of the map to include as much of campus as possible. For a complete list of all the programs and projects included on the map refer to Appendix IV.

### **Map Construction**

Preparing the data involved many time-consuming steps. Below is a brief list of the steps required in transforming data into a useable format.

- Imported AutoCAD files and generalized features due to jagged/irregular shapes
- Roads were traced from the supplied AutoCAD File
- Added all building names manually
- Vancouver Inset was created from GVRD data on the Geography Server
- Tour Locations were chosen and the Route digitized
- Digitized missing buildings using Building websites/addresses and UBC maps

For a complete list of the spatial data, data source location, data format type, date and the programs used refer to Appendix V.

### **Tour Design**

In creating the tour we first consulted the previous sustainability maps. The first thing we noticed was that the tour descriptions were on the reverse side of the maps. We felt it was more user friendly to have the tour with the map. Our tour stops feature most Green Buildings, points of interest such as the Museum of Anthropology and important campus locations such as the SUB. The distance of the tour is approximately the same as the first tours, a reasonable 2 hours at a sustainable jaunt. The tour is coloured red on the map with the red provided by the SO colour palette. Tour descriptions provide information about why a building or location is considered sustainable.

## **Brochure Design**

In designing the brochure, we applied the same principles we used in making the map. That is, to appeal to a wide audience, maintain balance, utilize the sustainability office's look and feel and to convey the sustainability message. Note: because the brochure was not the main focus of this Geography 472 project, we have not included all the design and construction description.

## ISSUES ENCOUNTERED

### **Data**

We had originally hoped to create the map using GIS so that it would be easily updatable, and attribute tables such as Ecotrek information could be spatially joined (Appendix V Table 2). After spending some time on a wild goose chase for campus GIS data, we found that it did not exist, or was not available. Some data was found on the Geography Department server, however it had no metadata. We explored this data and found major flaws, such as building names being assigned to the wrong buildings, and building outlines overlapping each other. Campus and Community Planning provided us with a complete and updated set of AutoCAD files that we transformed for GIS. This produced relatively accurate data and very detailed building outlines (Appendix III, Fig.2). Because building labels were lost, or complicated in the transformation, and editing polygons in ArcGIS is more difficult, we chose to abandon the idea of creating the map in GIS, and continued using CorelDraw and Adobe Illustrator instead.

## **Generalization/Simplification**

The roads had to be hand digitized in order to simplify the original, very complicated GIS spatial files. For our purposes the use of the GIS roads would have caused clutter and confusion, since the roads were initially represented as lanes with dividers etc. For visual acuity it was absolutely necessary to eliminate this unnecessary data.

## **Colour**

We tried to work within the confines of the sustainability colour palette for the map; however, it was difficult to work with the limited choices available. As a compromise, we chose various hues as best we could for the most visually pleasing affects. That being said, minor choices such as selecting different values of green were complicated by the fact that we did not have access to a publishing printer. Using different computer screens and a printer that is not calibrated for CKMY colours made all our colour choices estimates.

## **Communication – Between Offices, Departments and People**

Gathering information about sustainability initiatives at UBC became time intensive when our search went beyond the Sustainability Office website. Obtaining responses from the right people was difficult and sometimes we didn't receive a response at all. For instance, we were unable to include exact information about sustainability street because no one actually knows what features will be ready to showcase for the World Urban Forum this June. Stormwater management projects were also difficult to pin down.

Shortly before the completion of the map we received some information, which was hastily included. It should also be noted that we attempted to gather information about University Town sustainability initiatives, however, communication with the contact was unsuccessful.

We had hoped that this sustainability map might be incorporated with the GreenGuide project underway at the Design Centre for Sustainability at UBC. The GreenGuide has a similar mission to ours, to promote social, ecological and economic sustainability, but its scope is the entire Greater Vancouver Region. A meeting with GreenGuide organizers to facilitate this effort sharing was not fruitful, and our project continued on independently even though UBC will be featured on both maps.

What we found most surprising is the larger issue of spatial data sharing on campus. We found no GIS data available for UBC properties, and no indication that it is in use by Campus Planning or even the Engineering Department. We have discovered that a GIS data set for UBC is being built within the Geography department for a Graduate student project, however it is unknown what will become of the data afterwards.

## CONCLUSION

Through all of our efforts, we have learned a great deal about what it is like to work under client specifications and audience requirements. We have experienced the

difficult decision making process that goes into information selection and generalization as well as specific design choices. The context of our choices being made under the possibility of this map being published renders our decisions all the more important. The reality of our project has made the experience of producing a product that effectively communicates a vision all the more valuable. In the end, we hope our map will successfully engage users in the growing culture of sustainability at UBC and spread the principles of sustainable living to other communities across the globe.

# Appendix I

## UBC SUSTAINABILITY VISUAL IDENTITY COLOURS



## UBC SUSTAINABILITY VISUAL IDENTITY FONTS

Body Text: Frutiger LT Std - Title Case  
Alternate Body Text: Sarbon  
Subheadings: FRUTIGER BOLD CONDENSED - CAPS  
Headings: **FRUTIGER BOLD - CAPS**

## LAYOUT EXAMPLE:



## Appendix II

### Green Map® System Icons



#### Economic Development

- Farmers market
- Eco-agricultural site
- Organic produce / Natural food
- Vegetarian / Natural cafe
- Green business / Service
- Strictly green store
- Green / conserving products
- Fair trade / Social shop

#### About Green Map Icons

This globally designed visual language identifies, promotes and links environmental resources – both natural and cultural – through locally produced Green Maps. A fresh perception of the city is created, and our icons help spread greening initiatives around the world. These award-winning icons are the heart of our eco-info collaboration. See the resulting maps, info on participating and more at our website.

#### Culture & Design

- Cultural site
- Museums / Institution
- Art spot
- World music
- Historical feature
- Traditional way of life
- Ecodesign / planning feature
- Eco building
- Significant building
- Shanty town / Self-built house
- Eco design resource
- Child friendly eco-site
- Senior friendly site
- Eco-spiritual site

#### Renewable Resources

- Solar energy site
- Wind energy site
- Renewable technology site
- Water recycling system
- Bioremediation site
- Composting
- Reuse site
- Remediated / (cleaned up) site
- Re-development opportunity site

#### Information

- Eco-information center
- Info resources by phone
- Info resources online
- Environmental center
- Environmental school
- Community center
- Green tour available
- Eco-tourist destination
- Significant organization
- Social / political resources
- Alternative health resources
- Scientific / research site
- Pollution monitor
- Protest point

#### Infrastructure

- Drinking water sources
- Wastewater treatment plant
- Recycling
- Landfills
- Solid waste transfer station
- Incinerator
- Energy grid generating facility

**Green Map® System**  
**greenmap.org**

GREEN MAP SYSTEM ICONS  
COMPLETE SHARED SET  
FONT VERSION 2 P.1

Green Map Poster  
© Green Map System 2003  
Email: [info@greenmap.org](mailto:info@greenmap.org)

**Nature:  
Land & Water**

- River and water-front park
- Wetlands
- Water feature
- Climate and currents
- Landform / geological feature
- Open space
- Wilderness site / info
- Camping
- Snow activity
- Great views / Scenic vistas
- Star-gazing site
- Sunset site

**Nature:  
Flora**

- Public forests / Natural area Parklands / Recreation area
- Special tree
- Spring blossoms
- Autumn leaves
- Bamboo forest
- Shaded boulevard
- Bio-regional site / Indigenous plants
- Wildlife corridor / Greenways
- Garden
- Community garden
- Special garden
- Gleaning area/ Fishing

**Nature:  
Fauna**

- Bird and wildlife watching
- Significant habitat
- Coastal habitat
- Marine habitat
- Amphibian habitat
- Insect watching site
- Wildlife info / Rehab center
- Zoo & wildlife center
- Duck pond
- Farm animals
- Dog run
- Fly-over zone

**Mobility**

- Bicycle site
- On road bike paths / Bridges
- Separate bike paths / Bridge
- Secure bike parking
- Wheelchair accessible
- Best walks
- Pedestrian zone
- Public square / Care-free zone
- Boat launch site (sail/human-powered)
- Ferry
- Major public transport stop
- Local transport stop
- Light rail transit
- Park'n'ride facility
- Alternative vehicle / Fuel station
- Park'n'charge facility



Contact

**Green Map System**

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Mail: PO Box 249  
New York, NY 10002, USA

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Fax: +1 212 674 6206

Website: [greenmap.org](http://greenmap.org)

**Miscellaneous**

- Call first / Appointment needed
- Green Maps available here
- Special or supporters' site

**Toxic Hot Spots /  
Pollution Sources**

- Blight site
- Danger zone
- Traffic hazard zone
- Noise pollution source
- Air pollution source
- Water pollution source
- Oil and natural gas facility
- Oil spill
- Underground storage tank
- Officially listed contaminated site
- Toxic chemicals storage
- Toxic chemicals release
- Hazardous waste generator
- Hazardous waste facility
- Waste dump
- Mining site
- Nuclear facility and waste site

# Appendix III

Fig. 1





## Appendix IV

MAP FEATURES				
	BUILDINGS	GREEN MAP SYMBOL	FEATURES	STREET ADDRESS
1	C.K. Choi	Green Building	Recycled materials, energy efficient	1855 West Mall
2	Fred Kaiser Building	Green Building	Photovalactic cells	2332 Main Mall
3	Life Science Building	Green Building	LEED Gold	2350 Health Sciences Mall
4	The Liu Centre for the Study of Global Issues	Green Building	Fly-ash concrete construction	6476 North West Marine DR
5	Michael Smith Building	Green Building	Energy efficient	2185 East Mall
6	Aquatic Ecosystem Resource Laboratory (AER)	Green Building	LEED Silver: energy efficient, natural materials	2202 Mail Mall
7	ICICS/CS Expansion	Green Building	Energy and water efficient	2366 Main Mall
8	Swing Space Building	Green Building	Natural Ventilation, energy efficient	2175 West Mall
9	Technology Enterprise Facility III	Green Building	LEED Silver, private research building	6190 Agronomy RD
10	First Nations House of Learning	Cultural Site	Cultural Centre	1985 West Mall
11	International House	Cultural Site	Cultural Centre	1783 West Mall
12	Museum of Anthropology	Cultural Site	Cultural Centre	6393 NW Marine Drive
13	Chan Centre for the Performing Arts	Cultural Site	World Music	6265 Crescent Road
14	Sustainability Street	Ecodesign/planning feature	Composting, eco-features	Stores Road
15	The Irving K. Barber Learning Centre	Library	Library	1961 East Mall
16	David Lam	Library	Library	2033 Main Mall
17	MacMillan	Library	Library	2357 Main Mall
18	Woodward	Library	Library	2198 Health Sciences Mall
19	Education	Library	Library	2125 Main Mall
20	Music	Library	Library	6361 Memorial Road
21	Math	Library	Library	6357 Agricultural Road
22	Asian Library	Library	Library	1871 West Mall
23	Koerner	Library	Library	1958 Main Mall
24	EcoTrek	Coloured to Distinguish	Infrastructure upgrades to reduce energy and water use	Multiple locations: see Table 3
	FEATURES WITHIN BUILDINGS	SYMBOLS ON MAP	FEATURES	STREET ADDRESS
1	AMS Resource Groups (5)	Social Political Resources	Social Sustainability, equity	
2	Equity Office	Social Political Resources	Social Sustainability, equity	6138 Student Union Boulevard.
3	Bluechip cookies (only fairly traded)	Fair trade	Fairly Traded Products	6138 Student Union Boulevard.
4	Sprouts	Organic Produce/Natural Food	Organic food, Fairly Traded Products	6138 Student Union Boulevard.
5	Bernoulli's Bagels(only fairly traded)	Fair trade	Fairly Traded Products	6138 Student Union Boulevard.
6	Bike Co-op	Included in map text box	Campus Bike Program	6138 Student Union Boulevard.
7	Campus Information Centre	Information Centre	General Campus Information Centre	6138 Student Union Boulevard.
8	Place Vanier (some ftc)	Fair trade,	Fairly Traded Products	1935 Lower Mall
9	Totem Park(some ftc)	Fair trade,	Fairly Traded Products	2525 West Mall
10	Sage Bistro	Organic Produce/Natural Food	Organic food from UBC farm	6331 Crescent Road
	PARK AND RECREATIONAL FEATURES	GREEN MAP SYMBOL	FEATURES	STREET ADDRESS
1	Botanical Gardens	Special Garden	Open green space	6068 South Campus Road
2	Nitobe Garden	Special Garden	Open green space	1903 West Mall
3	Rose Garden	Special Garden	Open green space	NW Marine and Main Mall
4	Pacific Spirit Park	Parklands/recreation area	Open green space	SW to NW Marine Drive

<b>CAMPUS SUSTAINABILITY TOUR</b>			
<b>TOUR STOP LOCATION</b>	<b>NUMBER ON MAP</b>	<b>FEATURES</b>	<b>STREET ADDRESS</b>
1 Student Union Building		1 University Student Hub	6138 Student Union Boulevard
2 Museum of Anthropology		2 Cultural Centre	6393 NW Marine Drive
3 Sage Bistro		3 Organic food from UBC farm	6331 Crescent Road
4 The Liu Centre for the Study of Global Issues		4 Fly-ash concrete construction, Energy efficient	6476 North West Marine DR
5 C.K. Choi		5 Recycled materials, energy efficient	1855 West Mall
6 Nitobe Garden		6 Open green space	1903 West Mall
7 First Nations House of Learning		7 Cultural Centre	1985 West Mall
8 Sustainability Street		8 Composting, eco-features	Stores Road
9 Aquatic Ecosystem Resource Laboratory (AERL)		9 LEED Silver: energy efficient, natural materials	2202 Mail Mall
10 Fred Kaiser Building		10 Photovoltaic cells	2332 Main Mall
11 Life Science Building		11 LEED Gold	2350 Health Sciences Mall
12 Micheal Smith Building		12 Energy efficient	2185 East Mall
<b>BROCHURE FEATURES</b>			
<b>SUSTAINABILITY INITIATIVES</b>	<b>TEXT ON BROCHURE</b>	<b>FEATURES</b>	<b>STREET ADDRESS</b>
1 SEEDS	" "	Academic programs for sustainability studies/initia	2329 W Mall (Sustainability Off
2 Renew program	" "	Building restoration, recycle building materials	2329 W Mall (Sustainability Off
3 UBC Trek Program	" "	Alternative transportation/reduce pollution and traf	2329 W Mall (Sustainability Off
4 UBC Waste Management	" "	Recycling and Wate Management	2329 W Mall (Sustaianbility Off
5 Ecotrek	" "	Infrastructure upgrades to reduce energy and wate	2329 W Mall (Sustaianbility Off
<b>DID YOU KNOW? SECTION</b>	<b>TEXT ON BROCHURE</b>	<b>FEATURES</b>	
1 C.K. Choi	" "	Recycled materials, energy efficient	1855 West Mall
2 Biodiesel Project	" "	Alternative Fuel from Recycled Cooking Oil	2329 W Mall (Sustainability Off
3 In-vessel Composter	" "	Composing of UBC Food Waste	Unknown
4 UBC Farm	" "	Organic and Sustainble Farming Pracitces	6168 Soth Campus Road
5 Green Power	" "	UBC purchase certificates	2329 W Mall (Sustaianbility Off
6 Ecological Footprint	" "	Sustainability Concept from UBC Faculty William R	Na
Stormwater management at UBC	Ecodesign/planning feature	Stormwater management	Na

## Appendix V

Table 1

SPATIAL DATA						
Data Name	Data Source Date	Source Location	Source Format	Software used	Programs	Transformations/ Processes
UBC Roads	2006	Campus and Community Planning	AutoCad	Imported to GIS and then exported to Corel Draw Version 11		Manually generalized roads, simplified road complexity to show location of road but removed any further information since road location was the most important information
UBC Buildings	2006	Campus and Community Planning	AutoCad	Imported to GIS and then exported to Corel Draw Version 11		Manually generalized buildings into simplified building shapes to reduce complexity
Parks and Recreation Areas	2006	Campus and Community Planning & UBC Campus Maps- PDF Version 2005	AutoCad	Imported to GIS and then exported to Corel Draw Version 11		Manually generalized park and recreational area shapes
Building Names	2006	UBC Campus Map PDF Version 2005 and various specific building websites	PDF	Corel Draw		Manually inserted text names onto Buildings
Road Names	2005	UBC Campus Map PDF Version 2005	PDF	Corel Draw		Manually inserted text names onto roads
Vancouver Inset	2006	The Department of Geography Spatial Data= GVRD Data	GIS	Imported from GIS into Corel Draw		Inset created in GIS, only main roads were selected

Table 2

<b>ECOTREK BUILDINGS</b>		
OLD ADMINISTRATION BUILDING	ASIAN CENTRE	BOTANICAL GARDEN CENTRE - RECEPTION AND EDUCATION CENTRE
GENERAL SERVICES ADMINISTRATION BUILDING	ANTHROPOLOGY AND SOCIOLOGY BUILDING	BOTANICAL GARDEN CENTRE - LOOKOUT TOWER
THE BRIMACOMBE BUILDING	HUT M-22	BROCK HALL - WEST WING
BIORESOURCE ENGINEERING ANNEX	ANIMAL SCIENCE - BEEF CATTLE RESEARCH	BROCK HALL ANNEX
NW MARINE DRIVE RESEARCH	BIOLOGICAL SCIENCES BUILDING- WEST, NORTH SOUTH WING	BUCHANAN TOWER
HENRY ANGUS BUILDING	BIOLOGICAL SCIENCES BUILDING - WORKSHOP	CHAN CENTRE FOR THE PERFORMING ARTS
HENRY ANGUS BUILDING ADDITION	BIOLOGICAL SCIENCES - PAPER RECYCLING/FLAMMABLE STORAGE FACILITY	CHEMISTRY BUILDING
FREDERIC LASSERRE BUILDING	BOTANY TRAILER UNIT	CHEMISTRY BUILDING NORTH WING
CAMPUS PLANNING & DEVELOPMENT II	BOTANICAL GARDENS SCHOLARS' RETREAT	ENVIRONMENTAL SERVICES FACILITY - SOLVENT & SILVER RECOVERY LAB
DAIRY CATTLE TEACHING AND RESEARCH UNIT	BOTANICAL GARDENS - LUNCHROOM	ENVIRONMENTAL SERVICES FACILITY - OFFICE
AQUATIC CENTRE	BOTANICAL GARDENS - GREENHOUSE AND WORKSHOP	CHEMISTRY STORAGE
ARTS ONE BUILDING	BOTANICAL GARDENS - GREENHOUSE, ALPINE GARDEN	ENVIRONMENTAL SERVICES FACILITY - SOLVENT STORAGE AREA
HUT O-4	BOTANICAL GARDENS - WORKSHOP	ENVIRONMENTAL SERVICES FACILITY - CHEMICAL WASTE PROCESSING & STORAGE BUILDING
BIORESOURCE ENGINEERING ANNEX 2	BOTANICAL GARDEN - GARDEN PAVILION	ENVIRONMENTAL SERVICES FACILITY - PCB EQUIPMENT STORAGE CONTAINERS
HUT B-5 SUSTAINABLE DEVELOPMENT RESEARCH INSTITUTE	BOTANICAL GARDENS WORKSHOP (TRAILER)	CHEMISTRY BUILDING EAST WING
AUDITORIUM	BOTANICAL GARDEN CENTRE - GATE HOUSE AND SHOP-IN-THE-GARDEN	CHEMISTRY BUILDING SOUTH WING
AUDITORIUM ANNEX OFFICES A	BOTANICAL GARDEN CENTRE - CAMPBELL BUILDING	CENTRE FOR INTEGRATED COMPUTER SYSTEMS RESEARCH (CICSR)
CEME TRAILER	FOREST SCIENCES EQUIPMENT STORAGE B	CHEMISTRY PHYSICS BUILDING
LADNER CLOCK TOWER	FOREST SCIENCES CENTRE	SCHOOL OF FAMILY AND NUTRITIONAL SCIENCES BUILDING
COAL AND MINERAL PROCESSING LABORATORY	FOREST SCIENCES EQUIPMENT STORAGE A	HAIDA HOUSE
PONDEROSA CENTRE	FREDERIC WOOD THEATRE	MORTUARY HOUSE
J. B. MACDONALD BUILDING	FOOD SCIENCE BUILDING	MACMILLAN ANNEX A
CENTRE FOR RESEARCH IN WOMEN'S STUDIES GENDER RELATIONS	OLD FIRE HALL	MACMILLAN ANNEX B
SING TAO BUILDING	FISH AND GAME BRANCH WORKSHOPS	PARKING AND SECURITY SERVICES BUILDING
DUKE HALL	FISH AND GAME BRANCH WORKSHOPS - BOAT STORAGE	HORTICULTURE BUILDING
NEVILLE SCARFE BUILDING - LECTURE BLOCK	FISHERIES CENTRE - HUT B-8	HORTICULTURE HUT
NEVILLE SCARFE BUILDING - TEACHER EDUCATION OFFICE	WOOD PRODUCTS LABORATORY	BIOMEDICAL RESEARCH CENTRE
NEVILLE SCARFE BUILDING - LIBRARY	H. R. MACMILLAN BUILDING	ENVIRONMENTAL SERVICES FACILITY - INCINERATOR
SOUTH STAFF OFFICE BLOCK (EDUCATION)	FOREST SCIENCES GREENHOUSE	INTERNATIONAL HOUSE
MATH/STATS RESOURCE CENTRE	FORESTRY FIELD HOUSE SOUTH CAMPUS	INSTRUCTIONAL RESOURCE CENTRE
CHEMICAL ENGINEERING BUILDING	ANIMAL SCIENCE - SMALL RUMINANT RESEARCH UNIT	INSTRUCTIONAL RESOURCE CENTRE LECTURE THEATRE ADDITION
CIVIL AND MECHANICAL ENGINEERING BUILDING	GAS GUN FACILITY	JAPANESE TEA HOUSE - NITOBE GARDENS
CIVIL AND MECHANICAL ENGINEERING LABORATORIES	GEOGRAPHY BUILDING	C. K. CHOI BUILDING FOR THE INSTITUTE OF ASIAN RESEARCH
THE LEONARD S. KLINCK BUILDING	GEOLOGICAL SCIENCES CENTRE	GEORGE F. CURTIS BUILDING
CIVIL AND MECHANICAL ENGINEERING STRUCTURES LAB	GEOLOGICAL SCIENCES CENTRE - OFFICE BLOCK	GEORGE F. CURTIS BUILDING ADDITION
MACLEOD BUILDING	GEOPHYSICS AND ASTRONOMY BUILDING	HUT M-21
HUT M-18	THEA KOERNER HOUSE	DAVID LAM MANAGEMENT RESEARCH CENTRE
HUT M-17	THEA KOERNER HOUSE ADDITION	ROBERT F. OSBORNE CENTRE - UNIT I
FOREST SCIENCES TRAILER	CECIL GREEN PARK HOUSE, COACH HOUSE, & SQUASH COURT	ROBERT F. OSBORNE CENTRE - UNIT II
THE LEON AND THEA KOERNER UNIVERSITY CENTRE	EMPIRE POOL	FIRST NATIONS LONGHOUSE
THE LEON AND THEA KOERNER UNIVERSITY CENTRE ADDITION 2	UBC-IBM LAW AND COMPUTERS CENTRE/UBC LEGAL AID CLINIC	LIU CENTRE FOR INTERNATIONAL STUDIES
INTERNATIONAL CENTRE FOR CRIMINAL LAW REFORM AND CRIMINAL JUSTICE POLICY	GEORGE CUNNINGHAM BUILDING ADDITION (PHARMACEUTICAL SCIENCES)	JACK BELL BUILDING FOR THE SCHOOL OF SOCIAL WORK
LIU CENTRE FOR INTERNATIONAL STUDIES	GEORGE CUNNINGHAM BUILDING (PHARMACEUTICAL SCIENCES)	SOUTH CAMPUS TELECOMMUNICATION HUB S

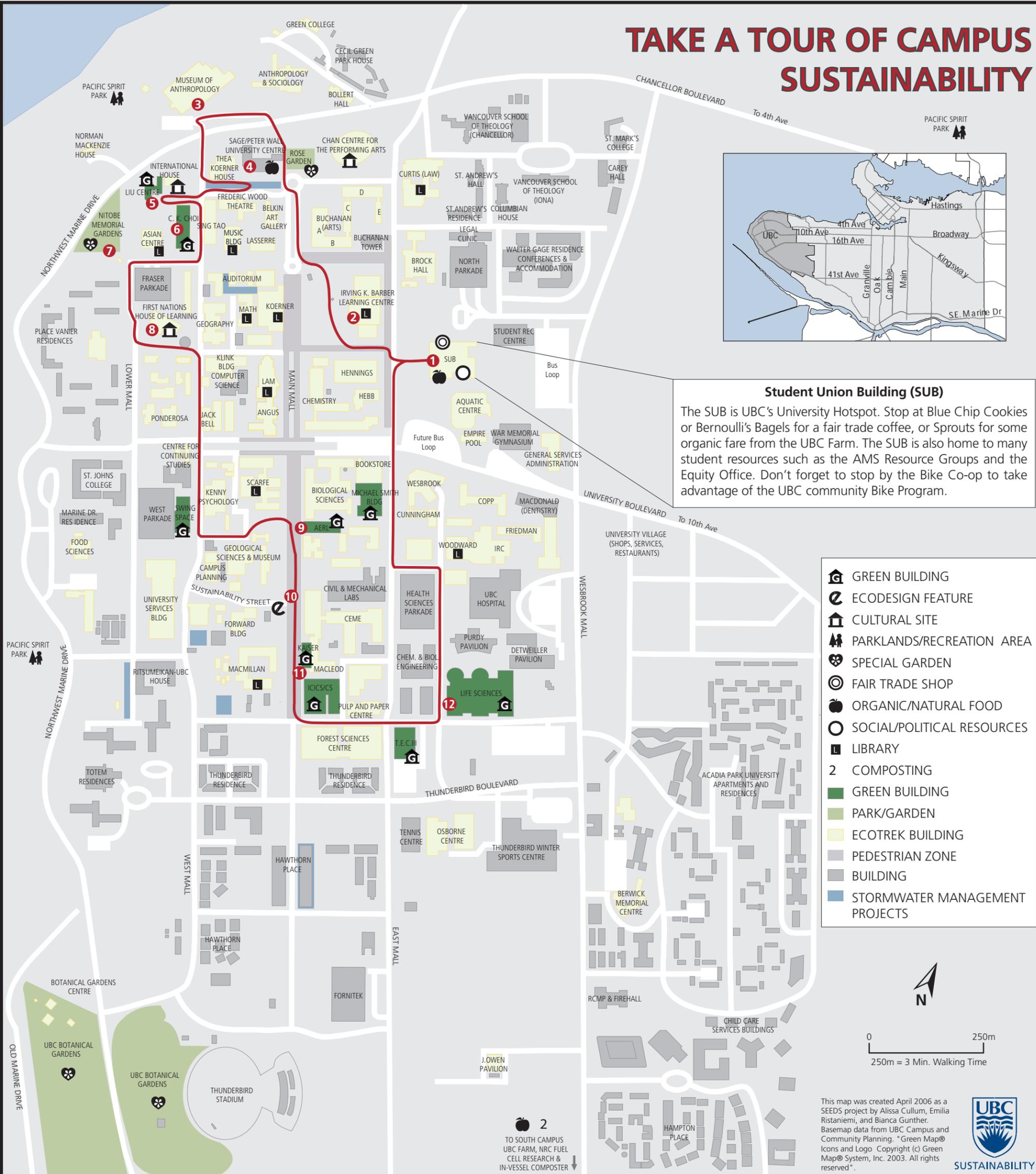
ENGINEERING HIGH HEAD ROOM LABORATORY	PLANT OPERATIONS ANNEX F	SOUTH CAMPUS SUBSTATION - SWITCHING STATION 12KV
LIBRARY PROCESSING CENTRE	SOUTH CAMPUS WAREHOUSE	MAIN SUBSTATION
SEDGEWICK LIBRARY	UNIVERSITY SERVICES BUILDING	STUDENT UNION BUILDING (SUB)
MAIN LIBRARY	CAMPUS PLANNING & DEVELOPMENT I	MAIN SUBSTATION - SWITCHING STATION
CHEESE FACTORY ENGINEERING UNDERGRADUATE SOCIETY	PLANT OPERATIONS NURSERY	ANIMAL SCIENCE - AQUACULTURE TEACHING RESEARCH CENTRE
MATHEMATICS BUILDING	B.C. BINNING M.F.A. STUDIOS	TASK FORCE BUILDING
MATHEMATICS ANNEX	PLANT OPERATIONS EXTERIOR STORAGE	TOTEM POLE SHED
AMS DOG BARN	PLANT SCIENCE GREENHOUSE	JOHN OWEN PAVILION AND ALLAN MCLEOD SPORTS MEDICINE CENTRE
JAMES MATHER BUILDING	HENNINGS BUILDING	VIVARIUM
D.H. COPP BUILDING ADDITION 2	HEBB BUILDING	BERWICK MEMORIAL CENTRE
AUDIOLOGY AND SPEECH SCIENCES TUTORIAL	PLANT SCIENCE FIELD STATION	SHERWOOD BUILDING - PHYSIOLOGY RESEARCH
HUT MS-3 HEALTH SCIENCES	PLANT SCIENCE GARAGE	WESBROOK BUILDING
HUT MS-4 HEALTH SCIENCES	TOTEM FIELD STUDIOS	HEADER HOUSE
WESBROOK PLACE	STORES ROAD ANNEX	WESBROOK ANNEX - ANIMAL CARE UNIT
WOODWARD BIOMEDICAL LIBRARY	PLANT SCIENCE FIELD BUILDING	PONDEROSA OFFICE ANNEX G
FRANK FORWARD BUILDING	POULTRY SCIENCE - QUAIL UNIT	ANTHROPOLOGY AND SOCIOLOGY BUILDING MURRY HALL
MORRIS AND HELEN BELKIN ART GALLERY	POULTRY SCIENCE - BROILER/BREEDER	HUT B-6 - FISHERIES CENTRE & ZOOLOGY
MUSEUM OF ANTHROPOLOGY	POWER HOUSE	ANIMAL CARE CENTRE - LARGE WILD ZOOLOGY
MUSIC BUILDING	POWER HOUSE - METER STATION	ANIMAL CARE CENTRE - SMALL WILD ZOOLOGY
JOHN OWEN PAVILION ANNEX	POWER HOUSE - OIL STORAGE FACILITY	ANIMAL CARE CENTRE - ADMINISTRATIVE BUILDING
FORESTRY ANNEX 6	NORMAN MACKENZIE HOUSE (PRESIDENTIAL RESIDENCE)	ANIMAL CARE CENTRE - MEDIUM LAB BUILDING
SOIL SCIENCE ANNEX 3	BOTANY ANNEX	ANIMAL CARE CENTRE - RODENT BREEDING
	PONDEROSA ANNEX H	ARTS ONE BUILDING ANNEX
PLANT OPERATIONS NURSERY - GARDEN RESIDENCE AND LAB	GEOPHYSICS AND ASTRONOMY BUILDING	ANIMAL SCIENCE - MAIN SHEEP UNIT
PLANT OPERATIONS NURSERY - SOIL SCIENCE	GEOPHYSICS AND ASTRONOMY BUILDING	ANIMAL SCIENCE - SHEEP BREEDING
PLANT OPERATIONS NURSERY - PROPAGATION HOUSE	GEOPHYSICS AND ASTRONOMY BUILDING	ANIMAL SCIENCE - SHEEP DIGESTIBILITY
PLANT OPERATIONS NURSERY - GREENHOUSE NO. 1	CONTINUING STUDIES IN DAVID LAM MA RESEARCH CENTRE	ANIMAL SCIENCE - SHEEP BREEDING
BIOLOGICAL SCIENCES BUILDING - WORKSHOP ADDITION 1	WALTER C. KOERNER LIBRARY	JOHN OWEN PAVILION AND ALLAN MCLEOD SPORTS MEDICINE CENTRE - ADDITION
DOUGLAS KENNY BUILDING	D.H. COPP BUILDING	WEST MALL OFFICES
HUT B-3 - FISHERIES CENTRE	FRIEDMAN BUILDING	AUDITORIUM ANNEX OFFICES B
PULP AND PAPER CENTRE	MEDICAL SCIENCES BLOCK C	PONDEROSA OFFICE ANNEX A
BIOLOGICAL SCIENCES BUILDING - WORKSHOP ADDITION 2	D.H. COPP BUILDING ADDITION	PONDEROSA OFFICE ANNEX B
BOTANY GREENHOUSE 1, 2	FRIEDMAN BUILDING ADDITION	PONDEROSA OFFICE ANNEX C
BOTANICAL GARDENS - GREENHOUSE	MEDICAL SCIENCES BLOCK C ADDITION	PONDEROSA OFFICE ANNEX D
BOTANICAL GARDENS - SHADE HOUSE	WOODWARD BIOMEDICAL LIBRARY ADDITION	PONDEROSA OFFICE ANNEX E
OCEANOGRAPHY ANNEX	KOERNER GALLERY	PONDEROSA OFFICE ANNEX F
NETWORKS OF CENTRES OF EXCELLENCE	HENNINGS BUILDING PENTHOUSE ADDITION	ANTHROPOLOGY AND SOCIOLOGY BUILDING ISABEL MACINNES HALL
BROCK HALL - EAST WING	TOTEM FIELD STUDIOS ADDITION	ANTHROPOLOGY AND SOCIOLOGY BUILDING ANNE WESBROOK HALL
BUCHANAN BUILDING (BLOCKS A, B, C, D & E)	POULTRY SCIENCE - ADMINISTRATION AND LABORATORY	
NEVILLE SCARFE BUILDING - CLASSROOM	POULTRY SCIENCE - NUTRITION UNIT	
NEVILLE SCARFE BUILDING - OFFICE BUILDING	POULTRY SCIENCE - PHYSIOLOGY UNIT	
THE LEONARD S. KLINCK BUILDING ADDITION	POWER HOUSE - ADDITION 1	
THE LEON AND THEA KOERNER UNIVERSITY CENTRE ADDITION 1	POWER HOUSE - ADDITION 2	
MACMILLAN ANNEX C, D, E, F	POWER HOUSE - ADDITION 3	
FORESTRY CONTAINER NURSERY 1	NORMAN MACKENZIE HOUSE (PRESIDENTIAL RESIDENCE - GARAGE)	
FORESTRY CONTAINER NURSERY 2	MAIN SUBSTATION ADDITION	
DOROTHY SOMERSET STUDIO	STUDENT UNION BUILDING (SUB) - ADDITION 1	
OLD FIRE HALL - TRAILER 1, 2, 3	STUDENT UNION BUILDING (SUB) - ADDITION 2	

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## **Resources and Drafts**

# TAKE A TOUR OF CAMPUS SUSTAINABILITY



- 1 Student Union Building:** The hub of student life on campus. See inset for details.
- 2 Irving K. Barber Learning Centre:** Usually referred to as the Main Library. The heritage core of the library is being preserved, and the new portion of the building features an energy efficient radiant heating and cooling.
- 3 Museum of Anthropology:** An iconic cultural site, promoting understanding and respect for world cultures.
- 4 Sage Bistro:** One of UBC's best kept secrets, serving fresh organic produce from the UBC Farm, in season.
- 5 Liu Centre for the Study of Global Issues:** Constructed with green practices such as salvaging materials from the previous building on site and using environmentally friendly fly-ash concrete. Energy conserving features include natural air circulation and efficient heating and cooling.
- 6 C.K. Choi Building:** UBC's first green structure, featuring recycled building materials, energy efficiency, reduced water consumption and composting toilets. It has attracted international attention including an award from the American Institute of Architects.
- 7 The Nitobe Memorial Gardens:** A beautiful green space for quiet walks and contemplation.
- 8 First Nations House of Learning (Long House):** Based on the Coast Salish model out of respect for the Musqueam people who historically inhabited the Point Grey peninsula. Its four major components: a resource centre, the Great Hall, the Longhouse and the Spirit Renewal Hall.
- 9 Aquatic Ecosystem Resource Laboratory (AERL):** Awarded LEED Silver rating. Natural ventilation and less sheet metal ducting reduced the use of both materials and energy. This building also features passive solar lighting and heating, natural materials, and renewable wood sources.
- 10 Sustainability Street:** Showcasing emerging concepts in sustainability research.
- 11 Fred Kaiser Building:** Awarded LEED Silver rating. Features water conserving wash-rooms, non-toxic wood products, recycled building materials and natural ventilation. Photovoltaic panels on the rooftop generate electricity from daylight, helping reduce the building's energy use to 45% of a regular building's.
- 12 Life Sciences Centre:** Awarded LEED Gold certification for its responsible construction practices, use of recycled materials as well as energy and water efficiency. Over 50% of the open area has been restored with planting, of which 87.5% is of native or adaptive species.