

# UBC Social, Ecological Economic Development Studies (SEEDS) Student Report

## **UBC Greenhouse Gas Trading Protocol**

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## **EXECUTIVE SUMMARY**

Companies have already approached UBC to buy potential greenhouse gas (GHG) emissions reductions from projects currently under way even though there is currently no GHG Trading Mechanism in place in Canada. This consists of an opportunity that UBC could possibly benefit from. By using standardized and internationally recognized protocols to report GHG emissions, UBC would increase the reliability of its GHG emission figures and sell GHG emissions at a reasonable price. Furthermore, by complying with a recognized protocol, UBC would be only one step from certifying its emissions ahead of the Canadian GHG Trading Scheme.

Our search for recognized protocols began in Canada but with no success. Canada's institutions, such as the Voluntary Challenge Registry and the GHG Verification Center, are still developing protocols and can only offer guidelines to report emissions. Looking abroad, the UK GHG Emissions Scheme is the only source that offers viable protocols. The UK Scheme is the first and currently the only GHG trading scheme in the world. With the assumption that Canada would replicate the UK Scheme, the scheme protocols were applied in the context of UBC.

For reasons discussed in the text, the Direct Participant option was chosen as the mechanism of entry into the scheme. It requires an entity-based approach of reporting GHG emissions as opposed to project-based reporting. Technical recommendations are provided on what UBC should do in order to fully comply with UK GHG Trading

Scheme Standards. This is followed by a brief introduction to the World Resource Institute, a good source of guidelines for emissions not covered by the UK Scheme.

Within a few weeks of completing this project, the Canadian Government published a discussion paper outlining how the Canadian Trading Scheme would operate. As a result of what is proposed, UBC would not be able to participate using UK's Direct Participant entity-based reporting approach. It will only be able to obtain credits from project-based emission reductions.

UBC is currently undergoing energy retrofit projects in collaboration with MCW. The International Performance Measurement and Verification Protocol (IPMVP) will be used to measure energy efficiency performance for each project and insure compliance with targets. MCW is in fact offering performance guarantees. Further investigation of the 2001 protocol document indicates that its standards are likely to become the international greenhouse gas trading standard for monitoring and verification of greenhouse gas emissions. Consequently, the IPMVP is the appropriate protocol for UBC to use for eventual certification of GHG emissions. Once UBC produces verifiable emission reductions, it will be able to register them at the Registered Emissions Reduction program offered by the VCR and wait until the Canadian GHG Offset System is in place. Alternatively, it could also trade these emissions immediately at a favorable price due to the increasing reliability of the underlying data. Another possibility is for UBC to keep its records of projects that reduced emissions and wait until the Canadian GHG trading system is in place.

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## Introduction

The industrial revolution accelerated the process of migration to urban centers and the reliance on machines rather than man and animal power. In essence, western societies moved from a predominantly rural to urban economies. Specifically, Canada's urban population shifted from approximately twenty (20) percent in 1871 to currently eighty (80) percent.<sup>1</sup> Needless to say, over the century, our societies became dependent on fuel forms of energy, especially on petroleum. Indeed, in 1998, petroleum represented thirty-six (36) per cent of the world's source of energy followed by coal at twenty-three (23) per cent and gas at twenty (20) per cent. Overall, approximately eighty (80) per cent of the world's energy demand is met by fossil fuels.<sup>2</sup>

Fossil fuel combustion is the leading contributor of greenhouse gases. Indeed, emissions from fossil fuel combustion consist predominantly of carbon dioxide. Over the past half century, the concentration of CO<sub>2</sub> in the atmosphere increased from a mean concentration of approximately 316 parts per million by volume (ppmv) in 1958 to approximately 369 ppmv in 1998 for a total increase of approximately seventeen (17) per cent<sup>3</sup> leading to an average increase of the earth's temperature of 0.6°C.<sup>4</sup> This will seriously impact many ecosystems. In particular, scientists from the International Panel on Climate Change predict a reduction in crop yields in warm countries, decreased water

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<sup>1</sup> Helsley, R. Urban Real Estate Economics, UBC Commerce, 2000

<sup>2</sup> Gregory A. Keoleian, Environmental Sustainability Educational Resources, School of Natural Resources and Environment, Center for Sustainable Systems University of Michigan. Power point presentation on the internet, [http://css.snre.umich.edu/css\\_doc/Energy.ppt](http://css.snre.umich.edu/css_doc/Energy.ppt), May 4<sup>th</sup> 2003.

<sup>3</sup> UNEP, <http://www.grida.no/climate/vital/06.htm>, May 4<sup>th</sup> 2003.

<sup>4</sup> UNFCCC, <http://www.unfccc.int>, April 15<sup>th</sup> 2003

availability in regions where water is already scarce, an increase in flooding risks, and the spread of diseases such as malaria and cholera.<sup>5</sup>

Unfortunately, fossil fuel consumption forecasts only seem to be on the rise according to a report published by the US Department of Energy. The Financial Times (Friday May 2, 2003) reported that demand for oil is forecast to climb fifty (50) per cent by 2025. Most of the demand will come from emerging countries, especially China, India and South Korea. They are forecast to need eighty-six (86) per cent as much oil as the developing world. The current level of urbanization in China is an indicator of the future demand of petroleum. It currently only has thirty per cent of its population living in cities (Helsley, 2000). In order to achieve the average level of urbanization of western countries i.e. eighty (80) per cent, China will need large amounts of energy to sustain very large urban populations, a very bleak outlook for climate change.

In 1992, leaders around the world signed the Kyoto Protocol, recognizing the threat of global warming and the urgency to mitigate sources of greenhouse gas emissions. One of the proposed methods to mitigate emissions is the introduction of an international greenhouse gas emissions trading system. In essence, the trading system is a market-based system of trading either pollution allowances or credits from projects that have produced a certified amount of reduction in greenhouse gas emissions. Many countries have ratified the protocol including Canada in December 2002. There is currently only one ratification is required before the protocol become legally binding.

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<sup>5</sup> Quirin, Scheirmeier, Climate change offers bleak future, *Nature* 409, 971 (2001).

In October of 2003, soon after the appearance of this report, the Russian electorate will decide whether or not to ratify the Kyoto Protocol. In the event of ratification, the commitments made by countries that have already ratified the Protocol will become legally binding. Canada will therefore be legally obligated to reduce its greenhouse gas emissions by 6% below its 1990 levels in time for the first commitment period of 2008 to 2012. The international community is currently at a key turning point in history. Greenhouse gas trading is close to becoming a widespread reality.

Even though the current legal framework for the Canadian National Greenhouse Gas Trading Scheme is still under development, companies have already approached UBC to buy potential greenhouse gas emissions reductions from projects currently under way. Specifically, Mr. Jonathan Frantz indicated that GEMco was interested in purchasing UBC's GHG emissions at three to eleven dollars per ton of CO<sub>2</sub>e. He indicated that BC Hydro also approached UBC<sup>6</sup> (see Appendix 1). A brief research on GHG emissions trades that occurred recently in the international community seems to suggest that the price of one ton of CO<sub>2</sub>e ranges between ten and twenty-five Canadian dollars<sup>7</sup>. It is therefore assumed that potential buyers are offering a discounted price, due possibly to the uncertain accuracy of UBC's GHG emission figures. By mitigating this risk, it is reasonable to assume that buyers could be persuaded to raise their offer.

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<sup>6</sup> Request for Greenhouse Gas Offset Proposals, June 2002, BC Hydro, [www.bchydro.com](http://www.bchydro.com), September 6, 2003.

<sup>7</sup> An Overview of Carbon Transactions, General Characteristics and Specific Peculiarities, H.C. de Coninck, N.H. van der Linden, March 2003, International Emissions Trading Association, [www.ieto.org](http://www.ieto.org), July 2003.



The primary objective of this research is to find and apply, in the context of UBC, a GHG emissions reporting protocol that could offer the possibility to certify greenhouse gas emissions. In essence, by applying an already recognized protocol, UBC will be able to assess where contentious issues will arise when reporting GHG emissions under our future National Greenhouse Gas Emissions Trading Scheme.

Furthermore, if UBC wants to sell its emissions reductions immediately, applying a recognized protocol would place UBC in a stronger negotiating position with potential buyers. A rough calculation indicates that if UBC meets its goal of reducing emissions by 10%, as indicated in UBC's Energy Management Action Plan, at an average market price of \$10, UBC could earn approximately \$60,000. The approximation is based on values published in UBC's Energy Management Action Plan.

The investigation will be performed in the following order. Section 1 offers a brief introduction on the trading mechanisms available under the Kyoto protocol. Section 2 covers Emissions Trading Schemes, one of three trading mechanisms offered by the Kyoto Protocol. These will be investigated from a Canadian, and then from an international perspective to assess what GHG emissions reporting protocols are currently available. Section 3 assesses whether UBC could profit and therefore use the protocols from the remaining two trading mechanisms: Joint Implementation and Clean Development Mechanism. Sections 2 and 3 conclude that the best emissions reporting protocols currently available are from the UK Emissions Trading Scheme and the World Resource Institute (WRI). Section 4 therefore applies the UK protocols in the context of UBC. Section 5 covers the remaining emissions sources not covered by the UK protocols

and offers reporting insights on the WRI protocols. Section 6 summarizes recent events in the development of the Canadian Emissions Trading Scheme and its potential implications for UBC.

## Section 1 - Trading Mechanisms of the Kyoto Protocol

A detailed account of the Kyoto Protocol is beyond the scope of this research. If the reader is interested to learn more about the Protocol, a recommended reading is: “A Guide To the Climate Change Convention and its Kyoto Protocol, Bonn, 2002” which can be found in the accompanying CD.

The Kyoto Protocol offers three mechanisms to trade greenhouse gas emissions between Annex B countries<sup>8</sup>. These are: Joint Implementation, Clean Development Mechanism and Emissions Trading.

The first two mechanisms allow the purchase of emission reduction credits on a project-based approach. Units, in tons of CO<sub>2</sub>e, associated with these two mechanisms are called Emission Reduction Units (ERUs) and Certified Emissions Reductions (CERs) respectively.

The third option, Emission Trading Schemes, is a medium to trade GHG emission units between scheme participants, nationally and internationally. ERUs and CERs are tradable on these Schemes as well as Assigned Amount Units (AAUs). AAUs are emission allowances distributed by the governments to selected participants. The government gradually retires them to force compliance with the national emission target. Participants trading allowances use an entity-based approach to reporting as compared to

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<sup>8</sup> The 39 emissions-capped industrialized countries and economies in transition listed in Annex B of the Kyoto Protocol. Canada is an Annex B Country and has committed to reduce its greenhouse gas emissions by 6% of 1990 levels. Refer to document: A guide to the climate change convention and its Kyoto protocol, Bonn 2002. [www.unfccc.int](http://www.unfccc.int), August 2003. Found in the accompanying CD: UNFCC-guideconvkp-p.pdf

a project-based approach. A thorough comparison is made later in the text. The Trading Schemes objectives are to facilitate the achievement of GHG emission reductions at the lowest possible cost. All trades and ownership of units is recorded and monitored by national Registries.

For clarification, a project-based method of reporting requires participants to implement a project that reduces emissions above and beyond what would normally occur or is legislated by the government. The project has a defined boundary regardless of the entity's organizational structure. Audited emission reduction projects receive credits that are then tradable on Emission Trading Schemes. On the other hand, an entity-based method of reporting requires corporations, entities or persons to define their realm of influence, establish their organizational boundary and then calculate their total emissions. They receive an equivalent number of emission allowances and the government gradually retires them. This approach forces participating entities to either undertake projects to reduce their emissions or purchase allowances or credits to meet declared emissions reduction targets.

The next two sections investigate the three trading mechanisms in further detail to find a recognized protocol that UBC could use to report its GHG emissions.

## Section 2- Emission Trading Schemes

Canada is currently in the process of developing an Emissions Trading Scheme. While this is under development, a Voluntary Challenge Registry (VCR) was initiated to encourage early GHG reduction actions. The VCR is the precursor National Registry that will be part of a national compilation and accounting database. The national database will serve as a monitoring tool to determine Canada's emission target compliance.

Although there are currently no official trading mechanisms in Canada, the VCR offers participants the opportunity to either report their emissions using an entity-based approach or a project-based approach. The VCR also offers other services, but these are beyond the scope of this project.

The first approach is related to the program: 'Energy Management Action Plan Guidelines'<sup>9</sup>. The project is voluntary and offers a GHG emission calculation methodology for energy related GHG emissions. Unfortunately, the document guidelines do not offer a methodology on how to establish a boundary. Furthermore, they do not specify what type of source of emissions will be eligible to trade, nor how to solve issues with respect to double counting. In addition, it is still unknown if participants should use an absolute or rate-based approach to set targets and report their emissions. Although this program is a positive step for participants to learn about their sources of emissions and take action to mitigate them, the proposal falls short of offering the future means to trade GHG emissions. UBC currently report its emissions using this protocol.

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<sup>9</sup> Energy Management Action Plan Guidelines, August 1999, Voluntary Challenge Registry, [www.vcr-mvr.ca](http://www.vcr-mvr.ca), August 30<sup>th</sup> 2003.

The second program is called the Registered Reduction Registry. It offers a brief two-page guideline on how to calculate project-based emissions<sup>10</sup>. The VCR can review the projects using principles developed by the World Resource Institute. If approved, these are registered and will be considered favorably by the Government when the Trading Scheme is in place. Again, no detailed protocols are available to certify emissions. The VCR only offers guidelines.

Other organizations such as the Canadian Greenhouse Gas Verification Centre<sup>11</sup> or consultation papers such as the GERT<sup>12</sup> report do not offer further insights. In fact, a recent report indicates that Canada is currently in the process of developing protocols. This will further be discussed in Section 6.

Currently there is only one economy-wide Greenhouse Gas Emissions Trading Scheme in the world. The UK Emissions Trading Scheme, a precursor to the European Emissions Scheme, started trading in April 2002. This scheme offers detailed protocols and methodologies to report and certify emissions. It also offers strict rules to establish a boundary, defining which emissions are eligible and what documents are necessary to submit in order to certify emissions. The UK Scheme offers protocols which UBC could use to learn and possibly apply as part of the future Canadian Emissions Trading Scheme, depending on whether Canada decides to replicate the UK system. Prior to jumping to

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<sup>10</sup> Validation Protocol for Registered Emission Reductions, Voluntary Challenge Registry, [www.vcr-mvr.ca](http://www.vcr-mvr.ca), August 30<sup>th</sup> 2003.

<sup>11</sup> Greenhouse Gas Verification Centre, [http://www.ec.gc.ca/pdb/ghg/verification\\_procedures\\_e.cfm](http://www.ec.gc.ca/pdb/ghg/verification_procedures_e.cfm), September 3<sup>rd</sup> 2003.

<sup>12</sup> Greenhouse Gas Emission Reduction Trading Pilot, GERT Technical Committee, August 2002.

conclusions, the other two mechanisms offered by the Kyoto protocol are investigated to assess if other options exist.

### **Section 3 - Joint Implementation & Clean Development Mechanisms**

The Joint Implementation system allows Annex B signatories to implement greenhouse gas reduction projects in other Annex B countries. Emission reduction units (ERUs) generated by these projects can serve to meet the investor's emission targets. It is theoretically possible for a project to take place in an industrialized economy, but most projects take place in economies in transition (EITs). Central and Eastern Europe play host to most of these projects due to their greater scope for emission reduction projects at lower cost. UBC would therefore be an unlikely benefactor of this mechanism. In fact, an electronic communication with the Prototype Carbon Fund, a World Bank Initiative, which has set aside US\$75 million for Joint Implementation projects indicated that they purchase emission reductions only from projects in EITs. Although this could eventually change, UBC is unlikely to benefit from this mechanism in the near future. Nevertheless, Appendix 2 includes standardized protocols that will be used to monitor these projects. They might eventually become useful.

The Clean Development Mechanism allows Annex B parties to implement projects that reduce emissions in the territories of non-Annex B parties, usually developing countries. These projects generate certified emission reductions (CERs), which can be used by the investor to meet his/her emission target. UBC is not eligible to sell emission credits using this mechanism and therefore will not be investigated further.



## Conclusion to Sections 2 and 3

UBC is unlikely to be able to trade under a Joint Implementation project and unable under the Clean Development Mechanism. Moreover Canada currently does not have a National Greenhouse Gas Exchange with associated rules and protocols. Hence the UK Greenhouse Gas Emissions Trading Scheme's rules and protocols are used in this report as UBC's emissions reporting standard. The UK trading scheme is in fact the only reliable source of rules and protocols for trading greenhouse gas emissions. It is assumed that the Canadian Trading Scheme will replicate the UK Trading Scheme. By using the UK protocols, UBC could be at the forefront of emissions trading.

## **Section 4 - UK GHG Trading Scheme**

### **Introduction**

The UK Emissions Trading Scheme was successfully launched in April 2002 creating the world's first economy-wide greenhouse gas trading scheme. The primary objective of the scheme is to achieve a significant amount of absolute emission reductions at a reasonable cost.

The UK Trading Scheme operates both a 'cap and trade' and a 'rate-based' program to regulate and trade emissions. In the first instance, regulated sources are required to limit their emissions to a fixed quantity of emissions per unit of time. Alternatively, emissions limitations with a 'rate-based' program are linked to levels of economic activity. Several measures of economic activity level can be used as the metric to define the emissions limitation in rate-based programs. These include physical output, energy input and monetary measures such as revenue.

The entry route chosen by a participant determines which trading program it will adhere to. This also affects the type of protocols a participant will use to report its emissions, as well as the type of trading restrictions that will apply. The next section explains the options available and associated restrictions.

### **Entry into the UK GHG Emissions Scheme**

There are four options of entry into the scheme: Direct Participant, Climate Change Agreement, Project-Based and Trader. The following describes each entry option.

The Direct Participant option allows an organization to set a voluntary absolute emissions target with the benefit of a financial incentive from the government. Participation is on a voluntary basis with no restrictions to entry other than both direct and indirect emissions must be emitted in the UK. At the beginning of the year, participants receive emission allowances equal to their emissions less their year-end target. In case of over-achievement, they can sell their allowances, while in the case of non-compliance; they must purchase either allowances or emission credits. The UK scheme provides protocols Direct Participants must use to report their emissions. Note that Direct Participants are required to report using an entity-based approach.

A second option is through the Climate Change Agreement (CCA). This is a separate agreement between the government and organizations to reduce their emissions. Unlike Direct Participants, CCAs can have relative emissions targets. Furthermore, the participant's targets are set prior to entry into the scheme. The objective is to offer a more flexible option to meet targets. In the case of over-achievement, participants can audit their emissions and receive allowances at the end of the year to trade in the open market. As with Direct Participants, they can also buy allowances or credits in case of under-achievement. Restrictions apply to relative target holders who trade allowances so as not to compromise the overall absolute emissions reduction objective. Specifically, restrictions are imposed on transfers of allowances from the relative sector to the absolute sector. Transfers are regulated by a "gateway" mechanism that prohibits a net inflow of allowances from the relative to the absolute sector. Unfortunately, no protocols for CCA participants are offered in the documentation regarding this scheme.

The third option is the Project-Based approach. Projects will be allowed in any sector but cannot be from sources of emissions already covered by the Scheme. This is to prevent double counting. Once a person or organization certifies its emission reductions, it is entitled to receive emission credits and to trade them in this scheme. Indeed, participants can also use credits generated from projects to help them meet their targets. Joint Implementation and the Clean Development Mechanism credits will also be valid to trade with some restrictions. Unfortunately, the final rules and protocols for project-based emission reductions are still under discussion.

Finally, it is also possible to open a trading account. Traders can speculate and hedge investments in GHG emissions allowances or credits.

UBC is eligible to enter the trading Scheme using any of these four options. Based on UBCs current reporting methodology and the protocols available with the UK Emissions Scheme, the Direct Participant approach to trade emissions is the preferred option. Specifically, the UBC's Energy Management Plan and the Direct Participant option both report emissions using an entity-based approach. The next section of this report applies in the context of UBC the regulations and protocols developed by the UK Emissions Trading Scheme for Direct Participants.

### Direct Participant Option

The emission reporting rules for Direct Participants will be applied to UBC according to the following methodology. The principles of reporting will first be defined. Regulation guidelines are then highlighted for the establishment of the baseline year, the boundary

and defining eligible emissions. This is followed by a six-step approach developed by the scheme to define the baseline, boundary and eligible emissions. Issues affecting the adjustment of the baseline year are then considered. The calculation methodology of GHG emissions is subsequently summarized with its current pitfalls. Finally, the implications of reporting emissions using this methodology are considered in the context of UBC's ability to trade GHG emissions in Canada.

### ***Principles of reporting***

Direct Participants shall follow these principles when measuring and reporting baseline and annual emissions. Verifiers will ensure that Direct Participants have measured and reported emissions against these principles when carrying out verification.

**Table 1. Greenhouse Gas Reporting Principles**

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Faithful Representation	<ul style="list-style-type: none"><li>• Information shall represent faithfully the transactions and other events it either purports to represent or could reasonably be expected to represent.</li><li>• Uncertainties shall be quantified and data shall neither be systematically overestimated nor underestimated so far as can be judged.</li><li>• Uncertainties shall be reduced so as to be immaterial.</li></ul>
Completeness	<ul style="list-style-type: none"><li>• Complete within the bounds of materiality and the rules of the Scheme, such that information shall not be misleading or unreliable in terms of its relevance.</li><li>• All sources above the Size Threshold within the defined and chosen Source List shall be included in the Baseline and annual emissions.</li><li>• Leakage effects shall be accounted for.</li></ul>
Consistency	<ul style="list-style-type: none"><li>• Consistent methodologies and measurements shall be used between the Baseline and subsequent years.</li><li>• Data shall be comparable over time.</li><li>• Estimates shall be comparable with the UK inventory estimates and with international guidelines including IPCC guidance.</li></ul>
Reliability	<ul style="list-style-type: none"><li>• Baseline and annual emissions and related disclosures shall be free from material misstatement and bias and capable of being depended upon by users to represent faithfully that which it either purports to represent or could reasonably be expected to represent.</li><li>• Changes in methodologies shall derive from continuous improvement of data quality and shall be clearly stated and documented to allow for year-to-year comparisons.</li></ul>
Transparency	<ul style="list-style-type: none"><li>• Reported data shall be replicable by a third party through provision of sufficient information and a clear audit trail.</li><li>• References and methodologies shall be clearly documented.</li><li>• Changes over time shall be clearly documented to allow clear understanding.</li><li>• Third party verification by an accredited verifier shall be undertaken.</li></ul>

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These principles draw on existing statements of key principles in other GHG reporting guidelines and the qualitative characteristics of financial statements within international accounting standards. These existing principles and characteristics are applied within the context of the UK Scheme.

### ***Regulation guidelines for the establishment of the baseline, boundary and defining eligible emissions***

Direct Participants are to report emissions in absolute terms. Real absolute reductions are difficult to assess since factors of production, which vary from year to year, directly impact greenhouse gas emissions. There are therefore many steps to help ensure that the figures are real and accurate, truly reflecting a reduction in emissions. These include the establishment of the baseline, the boundary and the sources of eligible GHG emissions.

Establishing the baseline is a first important factor to evaluate performance. Under an absolute emissions trading system, the choice of a baseline must take into account factors of production as levels vary from year to year. The scheme therefore requires the baseline to be the average emissions between 1998 and 2000. In the case of UBC, fiscal year 1998-1999 (April to May) was chosen as the baseline year. This year was chosen because it was the end of a period of growth at the University. Energy and water use stabilized after a period of growth and the Campus Sustainability Office had just been formed and was to start initiatives to reduce energy and water use.<sup>13</sup> This baseline will be used for the purpose of this report.

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<sup>13</sup> UBC Energy Management Action Plan, December 2002.

In addition, the boundary must encompass all sources of emissions in order to prevent ‘cherry picking’. It prevents participants from only including the easiest sources of emissions to mitigate. In fact, there is an obligation to present the complete picture of emissions in order to prevent organizations from claiming reductions in one area of their operations while simultaneously increasing emissions from other areas. There are exceptions to this rule under some unusual circumstances.

Finally, the UK GHG Trading Scheme follows 6 steps outlined below to establish both the baseline and boundary, and eligible emissions. Decisions taken at each step must be fully documented when presenting the documents to the authorities. These steps are applied here in the context of UBC. The 6 steps are 1) Management Control, 2) Sources within a sector, 3) Emissions data, 4) Eligibility for entry, 5) Coverage of greenhouse gases, and 6) Coverage within the reporting guidelines.

## ***Six-step approach to define the baseline, boundary and eligible emissions***

### **1 - Management control**

A Direct Participant has management control over a source of emissions when it exercises dominant influence over the emissions from a source, through having the ability to direct the financial and operating policies governing the emissions from that source. A source of emission must be either energy based or process-based.



Limits of management control will be defined in two categories: organizational and operational boundaries. Further description of these categories is found in the next two sections.

### Organizational boundary

An organizational boundary is often defined as the limit of dominant influence of an organization. This principle is often clear to participants because it is the same principle used when submitting information to auditors as part of the preparation of consolidated financial statements. Examples of dominant influence include:

- a) by virtue of the provisions contained in its memorandum or articles
- b) through holding a majority of the voting rights in that company
- c) through having a right to appoint or remove the directors holding a majority of voting rights in the company.

A brief electronic communication with Freda Pagani, Director of the Campus Sustainability Office, indicated that at this point in time it would be too difficult to assess all of UBC's investments and joint ventures. No further investigation was initiated. Therefore, for the purpose of this research, only UBC's facilities will be considered under managerial control.

**Recommendation** - Further evaluation of UBC GHG emissions will require that all facilities and organizations under UBC's managerial control be included.

### Operational boundary

UBC owns facilities both on and off the Point Grey campus. Due to a lack of data, facilities located off the Point Grey campus are excluded from UBC's managerial control for the time being. The facilities are listed in Appendix 3.

**Recommendation** – Off-campus facilities should eventually be part of UBC's emissions report.

### Operational boundary for UBC Point Grey campus

As described in UBC's Energy Management Plan document submitted to the Voluntary Challenge Registry, UBC Point Grey campus hosts three main types of facilities: core academic and administrative facilities funded and operated by the University (Core Buildings), facilities operated by University ancillary departments, such as Housing, Food Services, Parking & Security, and Athletics & Recreation (Ancillaries), and facilities owned and operated by land-lease tenants on the University Point Grey campus, such as UBC Hospital, Forintek, BC Research, NRC and TRIUMF (Tenants).

UBC purchases bulk electricity and natural gas from BC Hydro, Terasen and resells part of it to Tenants at the prevailing market price. UBC also produces steam on campus for its own use as well as for sale to Tenants. It therefore becomes important to clearly define managerial control of installations and therefore energy consumption, the source of greenhouse gas emissions.

Core facilities are directly under managerial control. Ancillary services and facilities also fall under managerial control following the organizational chart found in Appendix 4. Tenants who own facilities on land-lease terms are outside UBC's managerial control. This is true at least for energy-based sources of GHG emissions.

Not all Tenants own their facilities. Some lease space in facilities owned by UBC. These include companies leasing space in the Student Union Building (SUB) such as the Deli and Subway. In addition, the Bread Garden leases space in the Forestry building. Furthermore, Detwiler and Purdy pavilions are jointly owned by UBC and part of the facility is leased to tenants. It is currently unclear if tenants lease the portion of the facility owned by UBC. In addition, the Pulp and Paper Building and Koerner pavilions are 100% owned by UBC and are leased, at least partly, to tenants<sup>14</sup>.

The issue of ownership becomes important when establishing the boundary of sources of emissions. UBC possesses the managerial control to reduce emissions from facilities it owns by implementing energy retrofit programs even though it is not the ultimate consumer of energy. Critical is the risk of double counting. UBC could therefore insert a clause in their leases that any greenhouse gas emissions associated with the lessees' energy consumption falls under UBC's jurisdiction. This way, UBC could retain the benefit from emissions mitigation projects and avoid any conflicts of ownership over these emissions. There is room for debate and any assumptions made should be documented in the final report submitted to the authorities. Currently, UBC's Energy

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<sup>14</sup> The information was provided by Mr. Peter Jia, UBC Senior Analyst, Space Analyst, and Ms. Mercedes Sumang, UBC Space Analyst.

Management Action Plan reports these sources as outside its managerial control but does not fully document its assumptions. For the purpose of this research due to currently unavailable data, it will be assumed that UBC Tenants, regardless of building ownership, fall outside UBC's managerial control.

UBC also possesses managerial control on mobile sources of emissions. UBC operates a large fleet of vehicles from many different departments. Even though many vehicles are leased, UBC is responsible for the emissions from the combustion of fossil fuels<sup>15</sup>.

A list of Core and Ancillary facilities for fiscal year ending April 1999 is found in Appendix 5 found in the accompanying CD. The list covers over 400 facilities. Tenant owned facilities along with their respective energy meters identification numbers are found in Appendix 6. Finally, a complete list of facilities owned by UBC and leased to tenants is found in Appendix 7. For completeness, Core and Ancillary buildings completed after the establishment of the baseline year are listed in Appendix 8. These facilities will be referred to later in the Adjustment of the Baseline Year Policy section. Unfortunately, assumptions had to be made when compiling these lists. The following section summarizes the methodology used to assemble these documents. Finally, a complete list of UBC's fleet is found in Appendix 9.

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<sup>15</sup> The Greenhouse Gas Protocol, a corporate accounting and reporting standard, World Resource Institute, [www.ghgprotocol.org](http://www.ghgprotocol.org), July 15<sup>th</sup> 2003.

**Recommendation** – Assumptions should be documented to define whether the facilities that UBC leases are within or outside its managerial control or, in other words, within or outside its operational boundary.

***Methodology applied when compiling UBC's Point Grey Campus facilities boundaries and ownership lists***

The property database list maintained by Mercedes Sumang, Space Analysts at Campus and Community Planning was used as the starting point. Ms. Sumang provided a list that includes all properties located on the Point Grey campus as well as a separate list of UBC properties located off-campus (see Appendix 3).

From the On-Point-Grey-Campus list, a list of properties that are leased were extrapolated from a list of facilities that UBC Utilities bills every month as tenants provided by Gavin Yap, Meter Reader at UBC Utilities. The tenant's list was sent to Ms. Sumang to verify ownership. Buildings built prior to April 1999, owned by UBC and leased to tenants are listed in Appendix 7. Buildings owned by its third party occupants remain outside of the operational boundary of UBC and are included in Appendix 6.

Fortunately, the database provided by Ms. Sumang also indicated the year of construction for most facilities though some completion dates are unavailable, and it is unclear how construction dates were derived. In other words, it is unclear if these dates are start or completion dates. Because key personnel were on vacation, it was not possible to obtain an answer. Completion date is an important factor discussed below in the section dealing with Adjustment of the Baseline Year Policy. This section will explain why Appendix 7 only lists buildings built prior to April 1999.

In order to resolve this issue, Jim Carruthers, Manager of Development Services Planning Department at Campus and Community Planning suggested that building permits be used as the official completion date. Unfortunately, Eddie Ho, Chief Building Official Permits and Inspections at Campus and Community Planning, did not believe it was feasible to search manually all the building permit files, as there is currently no computer database.

Fortunately, the author was able to obtain an unofficial list of buildings completed after 1999 from Bob Makela, Building Inspector at Campus and Community Planning. Mr. Makela compiled the list by looking quickly at their records and from memory. Although it might not be 100 per cent accurate, it provides the best information currently available. From this information, it was possible to derive a list of Core and Ancillary buildings completed after April 1999 found in Appendix 8.

Mr. Makela also highlighted the importance of a proper definition of a 'new building'. To complicate matters, there are sometimes large additions to buildings or complete refurbishing of structures. A tentative definition of 'new building' is as follows: 'A new construction that breaks new grounds, has a separate legal address and is not connected significantly to another facility'. A more precise definition should be devised. In any event, this definition was used to define the buildings listed by Mr. Makela. This definition will also become important in the section on Adjustment of the Baseline Year Policy.

Buildings or facilities listed in the database provided by Ms. Sumang with no completion date that were not part of Mr. Makela's list or UBC's Properties Trust project list provided by Mr. Graeme (see Appendix 10) are assumed to have been completed prior to April 1999.

Furthermore, facilities that were not part of the Meter Reader's tenant list are assumed to be either Core or Ancillary facilities. Hampton Place, which also figured on the property database, was removed from the list as units are owned by a third party and are not part of UBC's energy grid. They are independently powered and heated.

**Recommendations** –A better methodology of establishing completion dates must be found and further research is needed to certify these lists. In addition, a better definition of 'new building' is required.

## **2 - Sources within a sector**

Once the source list is complete, the sources in step one must be separated into different industrial sectors. UBC's process-based or energy-based sources of emissions under managerial control can be split in two sectors: Power and Heating, and Transportation.

Direct participants are able to choose which sectors will be brought into the scheme, and which will remain outside. They are not permitted to 'cherry pick' their sources within a sector. They must include every source within a sector over which they have management control. In fact, as previously mentioned, there is an obligation to present a complete picture of emissions in order to prevent organizations from claiming reductions

in one area of their operations while simultaneously increasing emissions from other areas.

UBC is therefore obligated to include all facilities completed prior to April 1999 and under managerial control. The Power and Heating sector includes direct emissions from natural gas and light oil and indirect emissions from imported electricity.

UBC's complete vehicle fleet also falls under UBC's managerial control. All University-owned and leased vehicles should therefore be included in the Scheme. UBC's fleet consumes marked and unleaded fuel in addition to marked and regular diesel.<sup>16</sup>

### **3- Emissions data**

This section requires identifying the subset of sources in step 2 with verifiable emissions data for the baseline period. If a Direct Participant cannot fulfill this criterion for certain sources, at the consent of a verifier, these sources can remain outside the Scheme.

The author was unable to collect all required data from sources included in the Scheme. This is not because of a lack of existence, but because of unavailability of staff or lack of staff time and resources. This research will therefore concentrate on highlighting the qualitative aspects of the data and provide recommendations where sources of information could be improved. Sources of data will be defined for Power & Heating and Transportation sectors in the chronological order used to calculate UBC's GHG emissions.

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<sup>16</sup> UBC Energy Management Action Plan, December 2002.



## *Power and Heating Sector*

UBC purchases its bulk electricity and natural gas from BC Hydro and Terasen. Part of it is resold to Tenants at the prevailing market price. UBC also produces steam on campus by burning either natural gas or light oil, and distributes it to Core, Ancillaries and Tenants.

UBC's core facilities are not in most case metered individually. UBC therefore accounts for its total energy consumption by subtracting from its bulk utility purchase the utilities billed to tenants and ancillaries. Ancillaries' energy consumption is then added back to obtain the total energy consumption under managerial control. The next section describes how each step is performed to calculate UBC's total energy consumption. This is followed by an audit trail summary.

### ***Initial Invoice***

#### **Electricity and Gas**

UBC receives bills from BC Hydro and Terasen Gas that encompass energy consumption from Core, Ancillaries and Tenants. The Invoice is received at UBC Utilities and sent to Accounts Payable. The invoices are filed at Accounts Payable and records are kept for seven years.

#### **Steam**

UBC possesses a steam plant at 2040 West Mall. It burns natural gas and light oil to produce steam. Natural Gas consumption at the steam plant is metered separately from

the rest of the campus<sup>17</sup>. The invoice is received by UBC Utilities and sent to Accounts Payable. Invoices are again filed and kept for seven years.

Light oil is burned on occasion. The consumption of oil is calculated with a “dip stick” and records are kept with the Shift Engineer<sup>17</sup>. IT is assumed UBC Utilities accountants enter the figures in a database. Records of oil delivery are received by UBC Utilities and sent to Accounts Payable where the records are kept for seven years.

### ***Tenants and Ancillaries Meter Reading***

Gordon Apperley, Director of UBC Utilities, indicated that the University of British Columbia meters and meter reading procedures are certified by Measurement Canada. UBC follows rigorous standards established by the Canadian Government.

### **Electricity, Gas and Steam**

Every month, Ancillary and Tenant meters are read using the spreadsheet included in Appendix 11. The list includes the serial number of meters where available. The meter reader records the total consumption and, where available, the month’s consumption and then resets the instrument. These two records double-check each other. The meter reader then enters these figures in a database with limited password access.

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<sup>17</sup> Reference: UBC Utilities Chief Engineer, David Babich

## ***Controls***

There are two controls to verify that Tenant and Ancillary monthly energy consumption figures are accurate. First, the software performs an automatic verification every time data is entered. It performs a variance check in relation to the last twelve meter readings. If the figure surpasses 2 variances, a screen prompts the user to confirm the value.

A second verification involves the Meter Reader and a UBC Utilities accountant. Together, they compare the figure to previous figures for the same period. If there is a large discrepancy, the meter reader verifies his data, tries to find an explanation from the users and might also return to the site to reconfirm his reading. No records are currently kept to describe the discrepancy where abnormal figures are found to be accurate.

**Recommendation** - Under the UK trading mechanism, all abnormal events must be recorded to explain to a verifier the reasons for large discrepancies from previous records<sup>18</sup>.

## ***Invoices***

Once all the figures are verified, invoices are printed and sent out by the Meter Reader. All original files and data are kept with the Meter Reader at UBC Utilities. Original records are available from the baseline year to present.

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<sup>18</sup> Guidelines for the Measurement and Reporting of Emissions by Direct Participants in the UK Emissions Trading Scheme, DEFRA, October 2002, [www.defra.org.uk](http://www.defra.org.uk), July 16<sup>th</sup> 2003.

## ***Conclusion***

The above sources of data are both reliable and accurate. Original invoices are undisputable and UBC maintains seven years of records. Furthermore, the meters and the metering methodology follow rigorous principles regulated by Measurement Canada. Invoices and original records are also kept for seven years. With these sources of data, it is possible to calculate the baseline year energy consumption.

Calculation of annual emissions requires additional information and will be covered in the section on Adjustment of the Baseline Year Policy.

The actual calculation methodology is summarized in the section on Summary of UBC's Baseline and Annual Emissions Calculation.

## **Transportation**

Fuel consumption is also available for UBC's fleet. Plant Operations operates a fueling station and invoices every department using its facilities monthly. Records are maintained by Plant Operations and originals are kept for seven years. The contact person for this information is Jorge Marques, Energy Manager Sustainability. Furthermore, purchases off-site are recorded with credit card invoices. Supply Management manages the credit card accounts and maintains the records. Transportation emissions are not analyzed further because they do not constitute an eligible source of emission under the UK Emissions Scheme as described in the next section.

#### **4 - Eligibility for entry**

Sources that cannot be entered into the Scheme include the following:

- direct emissions from electricity or heat generations except where the electricity and heat are both generated and used on site.
- emissions from facilities within a target unit covered by an agreement
- emissions from land and water transport
- methane emissions from landfill sites covered by the landfill directive
- emissions from households (Section 8.4 of the framework document)

A note on the last point; emissions from households are already regulated in the UK under a different umbrella which explains why they are excluded from the scheme. It is assumed that Canada does not have such a program in place and therefore, we will disregard this limitation and included dwellings from UBC Housing into the scheme.

Since Transportation cannot be part of the trading scheme, only emissions from the Power and Heating sector are included in this section of the report. Furthermore, energy sold to the grid or other institutions over which UBC does not have managerial control (eg. Tenants in the case of UBC) is excluded from the scheme. Emission calculations in previous sections respect this regulation.

The scheme Guidelines<sup>19</sup> document also offers further descriptions of what is most likely part of the Direct Participant sources of emission. These include:

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<sup>19</sup> Guidelines for the Measurement and Reporting of Emissions by Direct Participants in the UK Emissions Trading Scheme, DEFRA, October 2002, [www.defra.org.uk](http://www.defra.org.uk), July 16<sup>th</sup> 2003.

- On-site combustion of fossil fuels for on-site use
- On-site consumption of electricity generated off-site
- On-site consumption of electricity generated on-site
- On-site consumption of heat or steam generated off-site
- On-site consumption of heat or steam generated on-site

In summary, all direct emissions from the steam plant consumed by UBC, direct emissions from natural gas for on-site use and indirect emissions from electrical consumption all fall under UBC's jurisdiction. UBC has managerial control over all of these sources of emissions. Transportation emissions are excluded from the Scheme for unspecified reasons.

## **5 - Coverage of GHG**

A direct participant can either enter only its carbon dioxide sources, or sources of all greenhouse gases.

In the Energy Management Action Plan, UBC has chosen to report all types of greenhouse gas emissions. It used protocols established by the VCR to calculate them. The calculation methodology should continue to follow Canada's standards, which is in agreement with the UK Emission Scheme's Protocol. In fact, both are in accordance with the Intergovernmental Panel on Climate Change (IPCC) guidelines. For further details, refer to the 'Energy Management Plan Guidelines' document.

## **6 - Coverage within the reporting guidelines**

If the Guidelines document does not offer protocols to calculate corresponding GHG emissions, the Direct Participant can either submit a protocol for approval or withdraw this source from the scheme.

UBC currently applies the VCR's calculation methodology offered in the 'Energy Management Action Plan Guidelines' document found in the accompanying CD. Protocols are available from the UK Scheme but they apply the same calculation methodology as the VCR's.

A summary of the calculation methodology consists of the following: once the total energy consumption figures are calculated, these are multiplied by conversion factors which convert energy figures into greenhouse gas emissions. These conversion factors vary somewhat between the VCR and the UK Scheme. However, since the future Canadian Trading Scheme will most likely use factors already established by the VCR, UBC should continue using calculation methodologies already established by the VCR.

### ***Conclusion of the 6 Steps***

Both the UK Scheme and the VCR offer the same calculation methodologies to derive greenhouse gas emissions from energy consumption, but only the UK Scheme offers a methodology to calculate the total energy consumption. Specifically, with the previous 6 steps methodology, the UK Scheme offers a proper method of defining the boundary and baseline with which to calculate the total energy consumption. Neither the VCR nor other guidelines to our knowledge offer a rigorous method of accurately defining the overall

energy consumption. The next section defines how the baseline is adjusted and how to maintain the established boundary and report annual energy consumption accurately.

### ***Adjustment of the Baseline year policy***

Since companies are not static entities, the UK Emissions Scheme devised ways the baseline can be adjusted to reflect changes in the organizational, as well as operational, structure. This may arise from acquisition or divestment of subsidiaries or other assets.

Each time a Direct Participant changes its structure, it must assess whether the baseline emissions from the sources involved in the change are equal to or greater than the Change Threshold: 25,000 tCO<sub>2</sub>e or 2.5 per cent of total verified baseline emissions at the time of the auction (whichever is less). This threshold is cumulative over the five compliance periods from 2002 to 2006.

This rule affects the maintenance of UBC's baseline over the years. UBC is indeed a growing institution. As was previously highlighted, many various infrastructures have been constructed since the baseline year 1998-1999. In fact, based on the definition of 'new building', five new buildings were completed since the baseline year (see Appendix 8).

Under the UK Trading Scheme, opening a new source of emissions such as a new construction is considered as an acquisition of a new source. Furthermore, new developments are considered as acquisitions from an entity other than another Direct Participant. In this case, paragraph B.16 of the framework document indicates that:



“Participant A is a Direct Participant in the Scheme and acquires sources that are not from another Direct Participant. (...) Participant A’s acquired sources remain outside the Scheme, until such a time as Participant A elects to enter them into the Scheme as new or late entrants, as appropriate.”<sup>20</sup>

On the other hand, if a Direct Participant acquires a source of emissions from another Direct Participant, and it surpasses the Change Threshold, it must then adjust its baseline emissions and targets.

In the case of divestiture outsourcing, if a change in emissions is greater than the Change Threshold, adjustments are also required. Otherwise, the Baseline remains unchanged. The nature of the changes is described in Appendix B of the UK scheme framework document found in the accompanying CD.

Any other construction that does not meet the definition of ‘new building’ must not be excluded from the scheme. The rationale for keeping additions within the scheme is because these could be considered as an expansion of the services offered of an existing department. It does not constitute a completely new department being created. In this case, even though this new construction increases the level of emissions, UBC must find other ways to reduce its emissions to compensate these additional emissions. As a Direct Participant, UBC could also purchase additional allowances or credits from other participants. There is currently no firm regulation on this specific issue on a definition for new buildings. Therefore a professional auditing organization should be consulted for clarification.

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<sup>20</sup> Guidelines for the Measurement and Reporting of Emissions by Direct Participants in the UK Emissions Trading Scheme, DEFRA, October 2002, [www.defra.org.uk](http://www.defra.org.uk), July 16<sup>th</sup> 2003.

A methodology is therefore required to remove the energy consumption of Core and Ancillary buildings built after the baseline year. Tenant buildings on the other hand always remain outside of the Scheme so there is no need for additional calculation procedures in this case.

Removal of energy consumption from Ancillary buildings built after the baseline year is straightforward since metering is performed monthly using the rigorous protocol described earlier.

New Core buildings are, on the other hand, not as rigorously monitored. Although new Core buildings are individually metered, meter reading is not performed as consistently nor as rigorously as for Tenant and Ancillary facilities.

When the Tenant and Ancillary meter readings are recorded, the meter reader reads the meters from the Core buildings. The monthly reading is sometimes omitted for lack of time to perform the duty. When the meter reader performs a survey, he gives a photocopy of the completed document found in Appendix 12 to Jorge Marques, Energy Manager, who then enters the data values into a separate database. For these readings, there are no sets of controls to ensure accuracy.

**Recommendations** – Meters for new Core buildings should be read every month to ensure data quality. If a meter breaks, it can be detected rapidly. Furthermore, proper sets of controls for Core buildings built after April 1999 should be implemented such as the ones used for Ancillary and Tenant meter readings.

## ***Summary of UBC's Baseline and Annual Emissions Calculation***

A summary of the calculation methodology for reporting UBC's absolute emissions from the baseline year onwards, in addition to the sources of data and contact person, is summarized in the following table. Even though it was assumed that buildings owned by UBC but leased to third parties remain out of the scheme, for demonstration purposes, the following summary table assumes that tenants who lease facilities owned by UBC are under UBC's managerial control and therefore included in UBC's energy usage.

**TABLE 2. Summary of baseline and annual emissions calculation**

<b>Step</b>	<b>Emission Data</b>	<b>Location</b>	<b>Contact person</b>
Bulk energy consumption	Terasen Invoice for UBC campus consumption	Accounts Payable	Frances Volard, A/P Manager
	BC Hydro Invoice for UBC campus consumption	Accounts Payable	Frances Volard, A/P Manager
	Terasen Invoice for the Steam Plant	Accounts Payable	Frances Volard, A/P Manager
	Light Oil Invoice in addition to the Shift Engineer consumption data	Accounts Payable UBC Utilities	Frances Volard, A/P Manager Anne-Marie Novak Accountant
Removal of all Tenants' and Ancillaries' energy consumption	List of original Meter Reading found in Appendix 11 Invoices also kept by the Meter Reader	UBC Utilities	Gavin Yap, Meter Reader Anne-Marie Novak, Accountant
Add back all Ancillary buildings energy consumption			
Add back Tenants who lease space in UBC owned buildings	Property database list found in Appendix 7	Campus and Community Planning for facility identification	Peter Jia, Senior Analyst, Space Analyst Unit
		UBC Utilities for energy consumption	Gavin Yap, Meter Reader
Remove energy consumption by Core and Ancillary buildings built after April 1999	Refer to Appendix 8	Campus and Community Planning for facility identification	Peter Jia, Senior Analyst, Space Analyst Unit
		Campus and Community Planning for energy figures	Jorge Marques, Energy Manager

Baseline emissions, annual emissions and targets must be expressed in units of tCO<sub>2</sub>e using the methodology referred to in steps 5 and 6 of the previous section.

The Direct Participant must maintain an effective data management system and demonstrate adherence to the reporting principles listed above. Verifiers assess the accuracy and transparency of the system during the verification process based on these

principles. Part of this process will require that UBC prepare the following documents annually.

### ***Documents that must be reported to the scheme annually***

Each accounting period, UBC will report the following information to verifiers as well as to those responsible for the UK Scheme to demonstrate compliance to annual emissions targets.

For the initial period,

- Source List (all facilities included in the Scheme found in Appendix 5) and Baseline Emissions
- A self-declaration, signed by management or a ‘designated representative’ that the data reported provide a faithful representation of the Direct Participant’s emissions.

Where there have been no changes to the Source List, Baseline or targets during the compliance period, the following minimum information must be reported to the verifier, in order to be verified at the end of each reconciliation period:

- Source List and Baseline emissions
- Annual emissions
- Computation methods including evidence of the sources of emission, factors used, and any changes in the methodology that may influence the comparability of the reported data with previously reported data

- A self-declaration, signed by management or a ‘designated representative’ that the data reported is a faithful representation of the Direct Participant’s emissions.

***Implications of reporting using this methodology considered in the context of UBC’s ability to trade GHG emissions in Canada.***

By following the entity-base approach of reporting GHG emissions under UK’s Trading Scheme, UBC could potentially have its emissions certified by an international firm such as Price Waterhouse Coopers, which is already certifying emissions in the UK. A complete list of accredited verification companies in the UK is found in Appendix 13.

Using this methodology, UBC will not be able to receive credits because it is using an entity-based approach of reporting emissions. Therefore, only if the Canadian GHG Trading Scheme replicates the UK Scheme will UBC be able to trade. In this case, the Scheme would oblige participating entities to set their baseline at a certain period, possibly prior to UBC’s planned energy retrofit programs. Participants would then be allocated emission allowances equivalent to the baseline period less the first year emission reduction target. UBC would over-comply in the first year without taking any measures due to current actions current energy retrofit programs and be able to sell its additional allowances on the market and earn immediate reward for its early actions.

Under the assumption that Canada will replicate the UK Scheme, the advantage of taking early measures to build a robust reporting methodology consists of being able to deal immediately with the issues and recommendations highlighted in the text and then fast-

track an application to the future Canadian Scheme. Unfortunately, this method of reporting does not allow early trading to occur between entities since no credits can be issued.

The next section offers guidelines to report emissions not covered by the UK Emissions Trading Scheme.

## **Section 5 – World Resource Institute**

The World Resource Institute (WRI) is an environmental research and policy organization that creates solutions to protect the planet and improve people's lives. They are an independent non-partisan organization that is funded through donations.

VCR's principles are based on documents from the WRI. In fact, VCR's principles of internal verification for Registered Emission Reduction replicate the principles found in the document: 'The Greenhouse Gas Protocol, a corporate accounting and reporting standard' also provided in the accompanying CD. This document is very thorough and covers how to report emissions in greater details than the VCR.

To go through each step is beyond the scope of this project. It is recommended that UBC review its GHG reporting system based on principles and methodologies offered by the WRI for emissions not covered by the UK Scheme. Specifically, the WRI offers guidelines for emissions classified in the following three categories. Each category is followed by a brief description of how it relates to UBC's emissions.

### **Scope 1 : Direct emissions**

These include:

- Production of electricity, heat or steam
- Physical or chemical processing
- Transportation of materials, products, waste and employees: use of mobile combustion sources, such as trucks, trains, ships, airplanes, buses and cars.
- Fugitive emissions



Emissions at UBC, qualifying as Scope 1 emissions include combustion of natural gas, natural gas and light oil for the steam plant and UBCs Fleet fuel consumption. The stationary sources, natural gas and light oil, are already covered by the UK emissions Scheme.

The Energy Management Plan currently reports transportation emissions using a calculation methodology and conversion factors supplied by the VCR. The calculation methodology consists of multiplying total fuel liters consumed by emission conversion factors to obtain total GHG emissions. Although the calculation methodology is identical between the VCR and WRI, UBC might consider reviewing their reporting principles using 'The Greenhouse Gas Protocol' document.

**Recommendation** - UBC might consider adding off-campus fuel consumption. The data can be found at Supply Management by contacting Christine Dedrick. Furthermore, transportation emissions are considered by the WRI as a direct source of emissions contrary to the Energy Management Plan, which classifies it as an indirect source of emissions. UBC might consider revising their assumption.

**Scope 2 : Indirect emissions from imports of electricity, heat or steam.**

Scope 2 accounts for indirect emissions associated with the generation of imported, purchased electricity, heat, or steam.

UBC imports electricity from BC Hydro. Only this source of emission falls in this category. The UK Trading Scheme also covers this section.

**Scope 3: Other indirect GHG emissions**

Scope 3 emissions account for other indirect emissions resulting from the activities of the reporting company, but arising from sources owned or controlled by another company, e.g. due to:

- Employee business travel
- Transportation of products, materials and waste
- Outsourced activities, contract manufacturing and franchises
- Emissions from waste generated by the reporting company when the GHG emissions occurs as sources or sites owned or controlled by another company, e.g. methane emissions from land filled waste sites.
- Emissions from the use and end-of-life phases of products and services produced by the reporting company
- Employees commuting to and from work
- Production of imported materials

This list is extensive. Many of these categories are currently not feasibly accountable. There is also room for conflict over double counting. Until policymakers clearly define

emission boundaries, it does appear to be worthwhile to commit resources to calculate these emissions. There is too much risk of not being able to claim ownership.

There is one exception; UBC has already made progress in accounting for GHG emissions from student and staff commuting. Jonathan Frantz, of the Campus Sustainability Office is responsible for this project.

In summary, with the UK Scheme protocols and guidelines offered by the WRI, UBC is able to solidify its emission reporting system. However, from recently published documents released only weeks before the completion of this project, it appears that Canada will not be following the same path as the UK. Section 6 summarizes recent developments in the proposed structure of the Canadian Emissions Trading Scheme and offers insights how the Canadian Scheme will impact UBC's GHG reporting methodology and trading opportunities.

## **Section 6 – Current discussions of the Canadian Offset System**

When this research was initiated, Canada had not released any clear plan or given any sense of direction of how a trading system would be developed in Canada. Only recently, in June 2003, has the Government of Canada published a discussion paper on the type of Offset system (trading system) that is likely to be implemented in Canada<sup>21</sup>. The following is a description of the proposition and its implications for UBC.

The Government proposes to reduce GHG emissions by 55 Mega tons of CO<sub>2</sub>e from Large Industrial Emitters (LIE) sources. The Government defines a LIE as average annual greenhouse gas emissions per facility of 8 CO<sub>2</sub>e kilotonnes or more and average annual emissions per \$1,000 output of 20 CO<sub>2</sub>e kilogrammes (kg) or more. The Government plans on achieving its target with LIEs through covenants with a regulatory or financial backstop. A backstop is legislation that allows the government to establish regulations setting out the emissions that will be allowed unless the company opts to negotiate and comply with a covenant.

Unlike the UK Scheme, the Government plans on adopting a rate-based approach for regulating emissions. Therefore, LIES will set relative emission targets instead of absolute ones. Furthermore, LIEs will receive allowances free of charge based on their relative emission targets in the case of over- or under- achievement they will then be able to trade the units. There is currently no sign that the government will offer any

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<sup>21</sup> Offset System Discussion Paper, Government of Canada, June 2003, [www.climatechange.bc.ca](http://www.climatechange.bc.ca), August 27<sup>th</sup> 2003.

incentives. The actual description of the scheme's operation is beyond the scope of this project.

In order to assist LIEs in achieving their target, the Canadian Government proposes to create an Offset system. This would provide a market incentive for identifying and developing projects to reduce GHG emissions not covered under the covenant system.

Emission sources included under the covenant system are:

- thermal electricity generation (coal, oil and gas)
- oil and gas (upstream extraction, oil and gas pipelines, gas utilities, petroleum refining)
- mining (both metal and non-metal)
- pulp and paper production
- chemical production (industrial inorganic chemicals, industrial organic chemicals and chemical fertilizers and fertilizer materials)
- iron and steel production
- smelting and refining
- cement and lime production

Only projects that meet certain requirements listed in the discussion document would be eligible for certification and issuance of credits. For further information, refer to the Discussion Paper in the accompanying CD.

## Implications for UBC emissions reporting

LIEs, like Direct Participants, trade allowances and report using an entity-based approach. Both are also able to purchase credits to help meet targets. But, whereas the UK Scheme did not restrict access to voluntary Direct Participants, the Canadian system offers a strict definition of LIEs. It is clear from the definition given above that UBC does not meet the requirement. Therefore UBC will not be able to participate in the scheme using this option. The Direct Participant approach of reporting defined in section 4 of this report is therefore not applicable. The only other option for UBC is to certify project-based emission reductions and sell them to the scheme to help LIEs meet their annual target.

Emission reduction projects not already covered by covenants are admissible. It appears that imports of natural gas and combustion of light oil and fuel to operate UBC's Fleet vehicles are eligible. It is still unclear whether import of electricity will be admissible.

It is important to exercise caution. Although the discussion paper indicates that energy retrofits could in principle be included in an offset system, other approaches to encourage or require these reductions/removals will also be considered by the Government according to the document.

## Conclusion

The coming into force of the Kyoto protocol seems imminent with Russia set to vote on the ratification of the protocol in fall of 2003. The likelihood of ratification is accelerating the field of Greenhouse Gas Trading, as National Emission targets set by Annex B countries might soon become legally binding.

Although the direction Canada was going to take was unclear at the beginning of this project, the Government recently released a Discussion paper indicating the probable mechanism of the National GHG Offset system. It appears that UBC will only be able to report on a project-based approach. UBC will therefore only be eligible to certify emission reductions from verified projects and obtain tradable credits. The assumption that UBC would be able to trade using an entity-based approach using allowances such as in the UK emissions scheme no longer appears to be valid. A protocol to report using a project-based approach is therefore required.

Caution remains, Discussion papers are not final and there are still chances that Canada decides to adopt a trading system similar to the UK's. Therefore the entity-based approach to reporting emissions could remain pertinent for UBC. Until Canadian politicians finalize the project, it is uncertain which option will be best for UBC.

Nevertheless, a few weeks before the completion of this research project, it was brought to the author's attention that UBC would be monitoring its energy retrofit projects using the International Performance Measurement & Verification Protocol (IPMVP). Further investigation of the protocol revealed that the IPMVP is the preferred international

approach for monitoring and evaluating energy efficiency projects because of its international acceptance. It covers many key issues in monitoring and evaluation and it allows for flexibility. It is expected that the IPMVP will contribute significantly to the international framework that will be developed for international greenhouse gas trading<sup>22</sup>.

By applying this internationally recognized protocol, UBC is heading in the right direction to trade GHG emission credits. In fact, once UBC has verifiable emission reductions, it could either trade these emission reductions immediately or wait until an Offset system is in place. By deciding to trade immediately, the GHG emission units would be priced more favorably than was initially possible without a recognized protocol. On the other hand, UBC could register its emissions reduction projects with the VCR's program entitled 'Registered Emission Reductions'. It is likely that projects registered with this program will receive credits when the Offset system is in place. UBC will then be able to trade these credits using the Offset system. The optimal trading strategy remains to be investigated.

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<sup>22</sup> International Performance Measurement and Verification Protocol, United States Department of Energy, 2001, revised March 2002, [www.ipmvp.org](http://www.ipmvp.org), September 8, 2003.



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**APPENDIX 1 – BC Hydro offer to purchase GHG emissions reduction projects.**

# Request for Greenhouse Gas Offset Proposals

June, 2002

## Background

BC Hydro is seeking 5.5 million tonnes of greenhouse gas (GHG) offsets in order to fulfill its commitment to offset 50 percent of the increase in GHG emissions through 2010 at two new natural gas-fired electricity generation plants.

BC Hydro has issued annual requests for GHG offset proposals (RFPs) since 2000. The RFP mechanism is one of many tools used by BC Hydro to investigate new sources of high quality GHG offset projects.

The 2002 RFP deadline of May 1, 2002, has now passed. However, BC Hydro will consider new proposals at any time and will feed these into its ongoing review and evaluation process.

## Criteria

BC Hydro applies two sets of criteria to proposed GHG offset projects: minimum and evaluation criteria. Proposed projects must fulfill the minimum criteria in order to be considered for investment. Evaluation criteria are then used to assess and rank those projects that meet the minimum criteria.

### *Minimum Criteria*

Location	Global
Offset Type	Emission reduction, emission avoidance or geological sequestration only. We will not consider biological sequestration projects, such as afforestation or soil sequestration, under this request.
Offset Timing	Future years only, with a preference for offsets occurring between 2003 and 2017.
Project Status	Not yet initiated. We will not consider offsets from projects that are already operating or under construction.
Volume	Minimum of 100,000 tonnes CO <sub>2</sub> e in total (e.g. 10,000 tonnes per year for 10 years).

Net Reduction	The project must achieve a net reduction in GHG emissions after accounting for any increase in GHG emissions as a result of the project (also known as leakage).
Voluntary	The change in GHG emissions must be surplus to direct or indirect regulatory requirements.
Ownership	The proponent must either have title to the emission reductions or be capable of acquiring such title.
Verifiable	The change in GHG emissions must be verifiable by a third party.

***Evaluation Criteria***

Price	Preference for lower cost offsets.
Volume	Preference for projects delivering at least 500,000 tonnes CO <sub>2</sub> e in total (e.g. 50,000 tonnes per year for 10 years).
Additionality	Preference for projects that would not otherwise occur without the sale of GHG offsets or BC Hydro's involvement.
Uncertainty	Preference for projects involving less uncertainty with respect to the delivery and volume of GHG emission reductions.
Guarantee	Preference for proponents that guarantee delivery of contracted GHG offsets, subject to liquidated damages in the event of non-delivery.
Risk	Preference for projects involving less risk and with strong risk mitigation plans.
Proponent Capabilities	Preference for proponents with demonstrated capability to carry out the project.
Transaction Costs	Preference for lower transaction costs.
Environmental Benefits	Preference for projects that generate non-GHG environmental benefits.
Social/Economic Benefits	Preference for projects that generate social and/or economic benefits (e.g. job creation, skill development, opportunities for disadvantaged groups, etc).

## Proposal Contents

Proposals should contain the following information at a minimum.

- Project name
- Project location
- Total volume of GHG offsets for sale (tonnes CO<sub>2</sub>e)
- Term of proposed contract (e.g. 2003-17)
- Asking price for offsets (Cdn or US \$ per tonne CO<sub>2</sub>e)
- Proponent contact information
- Project description
- Project status
- Potential dates for project construction, commissioning and decommissioning
- Regulatory requirements affecting GHG emissions
- Ownership of the GHG emission reductions
- Verifiability of the GHG emission reductions

In addition, proponents are welcome, but not required, to submit up to 5 additional pages of information on the proposed project and how it meets BC Hydro's criteria.

## Confidentiality

BC Hydro is prepared to enter into a confidentiality agreement substantially like the one attached in Appendix A when either BC Hydro or the proponent requests it.

## Calculating GHG Emission Reductions

BC Hydro is interested in projects that reduce emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (the six classes of GHGs listed in the Kyoto Protocol). All GHG emission reductions are to be quantified in metric tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) using recommended values for each gas' Global Warming Potential over a 100 year timeframe issued by the Intergovernmental Panel on Climate Change. They are to be estimated using a base case indicating all GHG emissions without the project and a project case indicating all GHG emissions with the project. The difference between the two cases represents the project's GHG emission reductions.

The following are two of many sources for GHG emission factors and Global Warming Potentials:

[http://www.vcr-mvr.ca/downloads/pdf/complete\\_guide.pdf](http://www.vcr-mvr.ca/downloads/pdf/complete_guide.pdf) (starting at page 41 of 63)

[http://www.ec.gc.ca/pdb/ghg/ghg\\_docs/Emission\\_Factors.pdf](http://www.ec.gc.ca/pdb/ghg/ghg_docs/Emission_Factors.pdf)

## **Proposal Submission**

Proposals may be submitted to:

Tim Lesiuk  
BC Hydro  
6911 Southpoint Drive  
Burnaby, BC  
Canada V3N 4X8  
Tel: 1-604-528-3119  
Fax: 1-604-528-7909  
E-mail: tim.lesiuk@bchydro.com

Proposals submitted electronically should be in Microsoft Word or PDF format.

Questions regarding this request should be directed to Mr. Lesiuk.

## **Disclaimer**

This Request For Proposal is not an offer by BC Hydro to purchase any rights, goods or services, and submission of project proposals does not create any rights whatsoever. BC Hydro is free to accept or reject any project proposal. It is not bound to accept the economically most favourable proposal, or any proposal at all, and may accept any proposal regardless of whether it conforms to the terms of this Request for Proposals. BC Hydro and its directors, officers, agents, employees or assigns are not liable at law or at equity to any project proponent or participant or any other party for any decision by any of them regarding submission, acceptance, rejection or modification of a proposal, or in any other connection with this Request for Proposals. All costs directly or indirectly related to preparation of a proposal or submission shall be the sole responsibility of, and shall be borne by, the submitter of the project proposal.

The information provided in connection with this Request for Proposals is provided "as is", without warranty or condition of any kind, either expressed or implied, including warranties of completeness, accuracy, usability, fitness for a particular purpose of merchantability. Liability in connection with this or any other information can only arise upon entry into a binding written agreement in connection with a project proposal pursuant to this Request for Proposals and not otherwise. The user's sole remedy for dissatisfaction with the information provided is to stop using the information.

BC Hydro, on behalf of its affiliates, officers, directors, employees, agents, consultants and contractors, completely disclaims all liability for the use of the information posted in this web site by any user or viewer, including liability for any losses, damages, lawsuits, claims or expenses, including, but not limited to, consequential losses anyone may incur as a result of using this information.



## Appendix A

### CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT

THIS AGREEMENT dated as of the \_\_\_\_\_ day of \_\_\_\_\_, 200\_

BETWEEN:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, a British  
Columbia Crown Corporation

(" BC Hydro")

AND:

XXX, a \_\_\_\_\_ corporation

("XXX")

WHEREAS:

- A. BC Hydro and XXX wish to enter into discussions (the "Discussions") concerning a potential business relationship between the parties in connection with the opportunity described on Schedule A (the "Opportunity");
- B. Over the course of the Discussions, the Parties expect to disclose to each other, whether orally or in a visual or written (including graphic, electronic or any other) form, and whether directly or indirectly, certain proprietary confidential business, technical or know-how information or data, which may or may not be expressly identified by the Party disclosing the same (the "Disclosing Party") as confidential (collectively, the "Confidential Information"); and
- C. The Parties desire to keep the Discussions, including the nature and scope thereof, confidential, and to protect their respective Confidential Information from unauthorized use and disclosure.

FOR GOOD AND VALUABLE CONSIDERATION, the receipt and sufficiency of which each Party acknowledges, the Parties agree as follows:

1. **(a) Non Disclosure.** Each Party will treat as confidential and will not disclose to any third party in any manner whatsoever any information pertaining to the Discussions, including the fact that the Parties may enter, or have entered, Discussions, or any Confidential Information of the other Party, except as required by law or any regulatory authority having jurisdiction so long as the Confidential Information is marked or summarised as provided in paragraph 1(b) hereof. Each Party will use at least the same precautions to protect the other Party's Confidential Information as it would use to protect its own Confidential Information of like importance and, in any event, no less than a reasonable standard of care.

**(b) Marking.** The Party receiving Confidential Information (the "Receiving Party") shall have a duty to protect Confidential Information that is (a) disclosed in writing, electronic or other tangible form and is marked as "Confidential" or is similarly marked at the time of disclosure, or (b) disclosed by the Disclosing Party in a manner other than in tangible

form, provided such Confidential Information is clearly identified as confidential or proprietary at the time of disclosure and promptly summarized in writing clearly identifying the same as confidential.

2. **Permitted Disclosure.** Notwithstanding Section 1, each of the Parties may disclose the other Party's Confidential Information to its employees, officers, agents, consultants and professional advisors (the "Representatives") to the extent such disclosure is reasonably necessary for the purposes of the Discussions or for the evaluation of the Opportunity, and provided that such Representatives have been informed of this Agreement and the need to maintain the confidentiality of information disclosed to them. In addition, BC Hydro may disclose Confidential Information and information pertaining to the Discussions to representatives of the Government of British Columbia who have a need to have knowledge of the Confidential Information and who have been informed by BC Hydro of this Agreement and the need to maintain the confidentiality of information disclosed to them.
3. **Disclosure Required by Law.** If disclosure is required by law or any regulatory authority having jurisdiction, the Receiving Party required to make disclosure of any of the Disclosing Party's Confidential Information will, to the extent not legally prohibited from so doing, notify the Disclosing Party in a timely manner of its obligation to disclose prior to making the disclosure, so as to allow the Disclosing Party to take steps to try to protect its Confidential Information. In no event will a Receiving Party disclose under this provision any portion of a Disclosing Party's Confidential Information except that which it is legally required to disclose.
4. **Freedom of Information Legislation.** XXX acknowledges that BC Hydro is subject to the British Columbia *Freedom of Information and Protection of Privacy Act* and associated regulations, and agrees that BC Hydro's non-disclosure obligations under this Agreement are subject to the provisions of that legislation, as the same may be amended or replaced from time to time. The Parties acknowledge that Confidential Information provided to a Receiving Party constitutes commercial and financial information of the Disclosing Party, which has been, or will be, disclosed in confidence. It is also acknowledged that disclosure of any Confidential Information publicly or to third persons could reasonably be expected to harm significantly the competitive position and/or interfere with the negotiating position of a Party, and further could reasonably be expected to harm the financial or economic interests of BC Hydro. Accordingly, the Parties confirm their intention that all Confidential Information disclosed to each other shall be deemed to be confidential and exempt from disclosure to third persons in accordance with Section 21 of the *Freedom of Information and Protection of Privacy Act* of British Columbia, as amended from time to time.
5. **Use.** Each of the Parties will use the other Party's Confidential Information only for the limited purpose of the Discussions and the evaluation of the Opportunity, and for no other purpose without the other Party's prior written permission. Each Party will further ensure that its Representatives use such Confidential Information only as permitted under this Agreement. The Receiving Party will be responsible and liable to the Disclosing Party for any unauthorized use of the Disclosing Party's Confidential Information by any third party to whom the Receiving Party discloses such Confidential Information, including unauthorized use by any of the Receiving Party's Representatives. The Disclosing Party who created or first disclosed Confidential Information warrants that it is authorized to make disclosure of Confidential Information for the purposes herein provided. A Disclosing Party that created or first disclosed Confidential Information may use that Confidential Information in any manner determined by it.
6. **Exclusions.** For the purposes of this Agreement, Confidential Information does not include, and this Agreement has no application to, any information that:

- (a) is used or disclosed in a manner consistent with the prior written authorization of the Disclosing Party who creates or first disclosed the information;
- (b) becomes available to the Receiving Party on a non-confidential basis from a source other than the Disclosing Party or any of the Disclosing Party's Representatives, provided that such source is not bound by a confidentiality agreement with the Disclosing Party or its Representatives or is not otherwise prohibited from disclosing Confidential Information to a Receiving Party or its Representatives by any contractual, legal or fiduciary obligation;
- (c) was known to or lawfully in the possession of the Receiving Party prior to the time of disclosure by the Disclosing Party, and with respect to which there is no existing obligation of confidentiality;
- (d) is developed independently by the Receiving Party or any of its Representatives without the use of or reliance upon any of the Disclosing Party's Confidential Information; or
- (e) is or becomes generally available to the public, other than through a violation of this Agreement by the Receiving Party, or any of its Representatives.

Confidential Information which is specific shall not be within the scope of any exclusion merely because it is embraced by general information within an exclusion. Any combination of information or data that comprises part of the Confidential Information shall not be within the scope of any exclusion because the individual parts of that information or data are within an exclusion, unless the combination itself is within an exclusion.

7. **Ownership.** To the extent the Confidential Information was the property of the Disclosing Party before the disclosure of it to the Receiving Party, the Confidential Information remains the property of the Disclosing Party to the same extent, and the Receiving Party acquires no ownership interest therein. A Receiving Party shall not remove any copyright, confidential, proprietary rights or intellectual property notices attached to or included in any Confidential Information received from the Disclosing Party. A Receiving Party shall reproduce all such notices on any copies.
8. **Competition Not Restricted.** The Parties recognize that a Party may be engaged in the development or marketing of projects, products, goods, services and commodities (collectively or individually, "Products") that are competitive with those of the other Party. Nothing in this Agreement prohibits a Party from engaging in the construction, research, development, marketing, sale, distribution or licensing of any Products independently developed and produced by it without the unauthorized use or disclosure of Confidential Information.
9. **Return of Confidential Information.** At any time upon the written request of the Disclosing Party made prior to the termination of the obligations of confidentiality, non-disclosure and restricted use in this Agreement, the Receiving Party will, within 30 days of such request, return, or if requested destroy, or ensure the return or destruction of, all copies or records of the other Party's Confidential Information in the possession or control of the Receiving Party or any of its Representatives, except that 1 copy of such Confidential Information may be retained by the Receiving Party's counsel. The obligation to delete or destroy shall also extend to any document prepared by the Receiving Party which substantially embodies or contains extracts from such Confidential Information. The Receiving Party's obligations under this Agreement shall, however, survive any such return or destruction of the Confidential Information.

10. **Schedules.** The following attached Schedule forms part of this Agreement:

Schedule A – the Opportunity

11. **Equitable Remedies.** Receiving Party acknowledges that irreparable harm may result to Disclosing Party if it breaches its obligations under this Agreement and acknowledges that such a breach would not be adequately compensable by an award of damages. Accordingly, Receiving Party agrees that remedies for any such breach may include, in addition to other remedies and damages available in law or equity or under this Agreement, specific performance, injunctive relief or other equitable relief enjoining such breach and agrees to waive any requirement for the securing or posting of any bond or other security in connection with the obtaining of any injunction or other equitable relief.
12. **Term.** The obligations of confidentiality, non-disclosure and restricted use contained in this Agreement will automatically terminate two (2) years after the date of this Agreement, except as otherwise agreed in writing by the Parties.
13. **Limitation of Liability.** In no event will either Party be liable to the other Party in connection with any breach of this Agreement for any indirect, incidental or consequential damages, including loss of profits. A Disclosing Party is not liable to a Receiving Party for any inaccurate or incomplete information, except in case of wilful misrepresentation or to the extent, if any, otherwise expressly agreed in writing, and information which may be disclosed shall not constitute any representation, warranty, assurance, guarantee, or inducement.
14. **Gender and Number.** Words in one gender include all genders, and words in the singular include the plural and vice versa.
15. **Severability.** If any term of this Agreement is partially or wholly invalid or unenforceable for any reason, it shall be deemed to be severed from this Agreement, and its invalidity or unenforceability will not affect the operation or any other provision of this Agreement.
16. **Governing Law and Jurisdiction.** This Agreement will be governed by and construed in accordance with the laws of British Columbia and the laws of Canada applicable in British Columbia. The Parties attorn to the non-exclusive jurisdiction of the courts of British Columbia, and courts to which appeals therefrom may be taken, in connection with any action or proceeding under or in relation to this Agreement.
17. **Notice.** Any notice or communication required to be given or made under this Agreement will be in writing and delivered by hand, courier, pre-paid registered mail or fax to the Party concerned at the following address:

If to BC Hydro:                      BC Hydro  
    \_\_\_ Floor, 333 Dunsmuir Street  
    Vancouver, BC  
    Canada V6B 5R3  
    Attention: \_\_\_\_\_  
    Fax No.: \_\_\_\_\_

If to XXX:                                XXX  
    \_\_\_\_\_  
    \_\_\_\_\_  
    Attention: \_\_\_\_\_  
    Fax No.: \_\_\_\_\_

Notices or communications given by hand, courier, or pre-paid registered mail shall be effective upon actual receipt. Notices and communications given by fax shall be effective upon actual receipt if received during the Recipient Party's normal business hours, or at the beginning of the Recipient Party's next business day after receipt if not received during the Recipient Party's normal business hours. Either Party may at any time change its address or representative for the purpose of notices or communications under this Agreement by a notice in writing in accordance with this provision.

18. **Enurement.** This Agreement will bind and benefit each of the Parties and their respective successors and permitted assigns.
19. **Entire Agreement.** This Agreement is the entire agreement between the Parties concerning the subject matter hereof and supersedes all prior agreements, communications, representations and understandings between the Parties, whether oral or written, in connection with such subject matter.
20. **No Relationship or Obligation.** Nothing in this Agreement obligates the Parties to enter into the Discussions or any business relationship and no relationship of partnership, joint venture, principal and agent or otherwise is created between the Parties as a result hereof. In addition, nothing in this Agreement obligates either Party to purchase or provide any services or products of any kind from the other Party, or to enter into any future agreements or business arrangements of any kind with the other Party.
21. **Amendment.** This Agreement may be amended or supplemented only by a written agreement signed by each Party.
22. **Assignment.** Neither Party may assign this Agreement without the prior consent of the other Party.
23. **Execution of Fax Copy.** Execution by either Party of a facsimile copy of this Agreement will be deemed to constitute effective execution of this Agreement by that Party.
24. **Counterparts.** This Agreement may be executed in any number of counterparts, and each executed counterpart will be considered to be an original. All executed counterparts taken together will constitute one agreement.
25. **Effective Date.** This Agreement takes effect as of the last date indicated below, but only after execution and delivery of this Agreement by both Parties.

TO EVIDENCE THEIR AGREEMENT each of the Parties has executed this Agreement as of the date first above written on the respective dates set forth below.

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

By its authorized signatory:

\_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**XXX**

By its authorized signatory:

\_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## **APPENDIX 2 – Joint Implementation Protocols**

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

## INITIAL VERIFICATION CHECKLIST

### Introduction

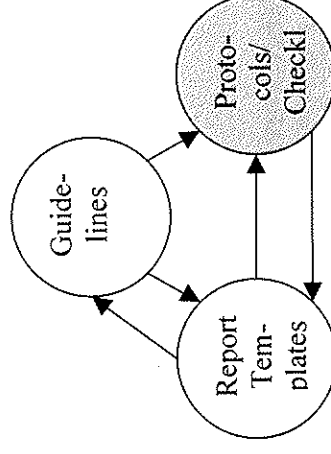
This document contains a generic Initial Verification Checklist for CDM and JI projects, which must be seen in conjunction with the *Validation and Verification Guidelines* and the *Initial Verification Report Template*.

This initial verification checklist serves the following purposes:

- It organises, details and clarifies the requirements a CDM/JI project is expected to meet straight before starting its operation; and
- It ensures a transparent initial verification process by inducing the verifier to document how a particular requirement has been verified and which conclusions have been reached;

This checklist contains a table with generic aspects for initial verification of a CDM or JI project. Project specific aspects set by the approved PDD have to be amended as a result of the review of the monitoring plan and the validation report. The use of initial verification and this checklist may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued as a consequence of the initial verification, a corrective action request, a forward action request or clarification request should be stated.

Before this generic checklist can be applied for the initial verification of a specific project, the verifier must review and adjust/amend the checklist to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the verifier's professional judgement and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance. Given the above, the checklist is neither exhaustive nor prescriptive.





*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

### Initial Verification Checklist

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARS)
<b>A. Opening Session</b>			
A.1. Introduction to audits			
A.2. Clarification of access to data archives, records, plans, drawings etc.			
A.3. Contractors for equipment and installation works <i>Who has installed the equipment? Who was contracted for planning etc.?</i>			
A.4. Actual status of installation works <i>Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.</i>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<p><b>B. Open issues indicated in validation report</b>  <i>Especially in projects which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues which should have been indicated by the validation report.</i></p>			
<p><b>B.1. Missing steps to final approval</b></p>			
<p><b>C. Implementation of the project</b>  <i>This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification</i></p>			
<p><b>C.1. Physical components</b>  <i>Check the installation of all required facilities and equipment as described by the PDD.</i></p>			
<p><b>C.2. Project boundaries</b>  <i>Check whether the project boundaries are still in compliance with the ones indicated by the PDD.</i></p>			
<p><b>C.3. Monitoring and metering systems</b>  <i>Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i></p>			
<p><b>C.4. Data uncertainty</b>  <i>How will data uncertainty be determined for later calculations of emission reductions? Is this in</i></p>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<p><i>compliance with monitoring and metering equipment?</i></p>			
<p><b>C.5. Calibration and quality assurance</b>  <i>Check how monitoring and metering systems are subject to calibration and quality assurance routines</i>  <i>a) with installation</i>  <i>b) during future operation</i></p>			
<p><b>C.6. Data acquisition and data processing systems</b>  <i>Check the eligibility of used systems.</i></p>			
<p><b>C.7. Reporting procedures</b>  <i>Check how reports with relevance for the later determination of emission reductions will be generated</i></p>			
<p><b>C.8. Documented instructions</b>  <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.</i></p>			
<p><b>C.9. Qualification and training</b>  <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.</i></p>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<p><b>C.10. Responsibilities</b>  <i>Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have been allocated to responsible employees.</i></p>			
<p><b>C.11. Troubleshooting procedures</b>  <i>Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)</i></p>			
<p><b>D. Internal Data</b>  <i>Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data..</i></p>			
<p><b>D.1. Type and sources of internal data</b>  <i>Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g. " continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".</i></p>			
<p><b>D.2. Data collection</b>  <i>How is data collected and processed? What are the means of quantifying emissions from the different data sources?</i></p>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<p><b>D.3. Quality assurance</b> Does internal data collection underlie sufficient quality assurance routines?</p>			
<p><b>D.4. Significance and reporting risks</b> Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.</p>			
<p><b>E. External Data</b> Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.</p>			
<p><b>E.1. Type and sources of external data</b> Acquire information on type and source of external data, which is used in calculations of emission reductions</p>			
<p><b>E.2. Access to external data</b> How is data transferred? How can reproducibility of data set be ensured?</p>			
<p><b>E.3. Quality assurance</b></p>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<i>Does external data underlie any quality assurance routines?</i>			
<b>E.4. Data uncertainty</b> <i>Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?</i>			
<b>E.5. Emergency procedures</b> <i>Are there any procedures which will be applicable if there is no access to relevant external data?</i>			
<b>F. Environmental and Social Indicators</b> <i>A Monitoring Plan may comprise environmental and/or social indicators which could be necessary to monitor for the success of the project activity.</i>			
<b>F.1. Implementation of measures</b> <i>A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.</i>			
<b>F.2. Monitoring equipment</b> <i>Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>			
<b>F.3. Quality assurance procedures</b>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARS/CARs)
<i>What quality assurance procedures will be applied for such data?</i>			
<b>F.4. External data</b> <i>Check the quality, reproducibility and uncertainty of external data.</i>			
<b>G. Management and Operational System</b> <i>In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system.</i>			
<b>G.1. Documentation</b> <i>The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.</i>			
<b>G.2. Qualification and training</b> <i>The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.</i>			
<b>G.3. Allocation of responsibilities</b> <i>The allocation of responsibilities should be documented in written manner.</i>			
<b>G.4. Emergency procedures</b>			

*This initial verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the template for initial verification report. The entries in the checklist should be adjusted and amended as appropriate to prepare for the initial verification of a particular project.*

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<p><i>The system should contain procedures which provide emergency concepts in case of unexpected problems with data access and/or data quality.</i></p>			
<p><b>G.5. Data archiving</b>  <i>The system should provide routines for the archiving of all data which is required for verifying the project's performance in the context of consecutive verifications.</i></p>			
<p><b>G.6. Monitoring report</b>  <i>The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.</i></p>			
<p><b>G.7. Internal audits and management review</b>  <i>The system includes internal control procedures, which allow the identification and solution of problems at an early stage.</i></p>			





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# INITIAL VERIFICATION REPORT

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## CLIENT NAME

### INITIAL VERIFICATION OF THE ABC PROJECT

Initial Verification Report Template  
Version 2.0, June 2003

REPORT No. XXXX

REVISION No. 01

## INITIAL VERIFICATION REPORT

Date of first issue:	Project No.:
Approved by:	Organisational unit:
Client: Client Name	Client ref.:

Summary:

*This is a report template to be used in Initial Verification of CDM/JI projects. Guiding text is presented in italic letters, as here.*

*This document must be seen in conjunction with the Validation and Verification Guidelines and the Initial Verification Checklist.*

*The summary should contain:*

- *the purpose and scope of the initial verification*
- *a brief description of the initial verification project and the GHG project*
- *the methodology and criteria used for initial verification*
- *any restrictions or uncertainties related to the initial verification*
- *main conclusions of the initial verification and presentation of forward action requests when relevant*
- *an initial verification statement on the appropriate implementation of the emission reduction project*

Report No.:	Subject Group:	
Report title:		
Work carried out by:		
Work verified by:		
Date of this revision:	Rev. No.:	Number of pages:

### Indexing terms

- No distribution without permission from the Client or responsible organisational unit
- Limited distribution
- Unrestricted distribution

INITIAL VERIFICATION REPORT

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**Abbreviations**

*Explain any abbreviations that have been used in the report here.*

**Conversion Factors and Definitions**

*Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.*

## INITIAL VERIFICATION REPORT

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Annex 1: Initial Verification Checklist

Annex 2: Photo Documentation (optional)

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**INITIAL VERIFICATION REPORT**

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## **1 INTRODUCTION**

*The introduction will contain:*

- *the objective of the initial verification project*
- *the scope of the initial verification project*
- *brief description of the main features of the GHG project and any remaining issues/ CARs from validation*
- *the verification team and the individual roles*

### **1.1 Objective**

*The objective of the project should explain the purpose of initial verification and refer to the requirements in the Terms of Reference.*

**Example:**

*The Client has commissioned an independent initial verification by XYZ Certification Ltd. of its ABC project. The client requires that each project successfully completes an initial verification process as soon as the project completes its commissioning. While initial verification is not a CDM/JI requirement, the Client regards it as an essential and the final step in the Client project preparation and implementation cycle.*

### **1.2 Scope**

*The scope of the project is typically defined in the Terms of Reference and should briefly be repeated here. The distinction between verification as a third party exercise and consulting should be mentioned. Reference to the Validation and Verification Manual could also be included here.*

### **1.3 GHG Project Description**

*A brief description of the GHG project should be included here. This can contain:*

- *generic project information such as name of the site, type of project, time period, technology used*
- *a description of the components generating the GHG reductions and estimated amount of GHG reductions*

## **2 METHODOLOGY**

*Explain the different means of verification used. This will typically include:*

- *review of project documentation*
- *on-site inspections; review of performance records, interviews with project participants and local stakeholders, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment;*
- *review of additional data from other sources if appropriate.*

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**INITIAL VERIFICATION REPORT**

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*A special focus is given on the*

- *proper implementation of the project as described by the (approved) PDD.*
- *the readiness of the system to deliver high quality emission reductions*

*There should also be a reference to the Validation and Verification Manual for explanation of methodologies and use of the initial verification protocol.*

*Findings established during the initial verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified. Corrective Action Requests (CAR) are issued, where:*

- i) *there is a clear deviation concerning the implementation of the project as defined by the PDD;*
- ii) *requirements set by the MP or qualifications in a validation opinion have not been met;*  
*or*
- iii) *there is a risk that the project would not be able to deliver (high quality) CERs or ERUs.*

*Forward Action Requests (FAR) are issued, where:*

- iv) *the actual status requires a special focus on this item for the next consecutive verification, or*
- v) *an adjustment of the MP is recommended.*

*The verification team may also use the term Clarification Request, which would be where:*

- vi) *additional information is needed to fully clarify an issue.*

### **3 INITIAL VERIFICATION FINDINGS**

*The conclusions regarding the main corrective action requests, forward action requests and the clarification requests should be summarised in this section. All the corrective action requests, forward action requests and the clarification requests should be described in Appendix 1, Initial Verification Checklist, but should also be listed here.*

*For the final initial verification report, the discussions and the conclusions that followed the preliminary initial verification report and possible corrective action requests should also be encapsulated in this section.*

#### **3.1 Remaining issues, CARs, FARs from previous validation**

*The discussion, findings and conclusion regarding the remaining issues/CARs/FARs from the validation/determination stage of the project should be summarised in this section.*

##### **3.1.1 Discussion**

##### **3.1.2 Findings**

##### **3.1.3 Conclusion**

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**INITIAL VERIFICATION REPORT**

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**3.2 Project Implementation**

*The discussion, findings and conclusion regarding the conformity of the actual project activity with the registered project design document should be summarised in this section.*

**3.2.1 Discussion****3.2.2 Findings****3.2.3 Conclusion****3.3 External data**

*The discussion, findings and conclusion regarding accessibility, quality and accuracy of external data required for calculating emission reductions should be summarised in this section.*

**3.3.1 Discussion****3.3.2 Findings****3.3.3 Conclusion****3.4 Environmental and Social Indicators**

*The discussion, findings and conclusion regarding the implementation of environmentally additional components and the monitoring equipment and procedures of environmental and social indicators should be summarised in this section.*

**3.4.1 Discussion****3.4.2 Findings****3.4.3 Conclusion****3.5 Management and Operational System**

*In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system. The discussion, findings and conclusions regarding the suitability of the management system for monitoring and reporting, i.e. organisational structure, responsibilities, competencies, non-conformance handling, internal audits and management review should be summarised in this section.*

**3.5.1 Discussion****3.5.2 Findings****3.5.3 Conclusion**



INITIAL VERIFICATION REPORT

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#### **4 INITIAL VERIFICATION STATEMENT**

*The initial verification statement should include an explanation of:*

- *initial verification scope, methodology and process*
- *remaining issues from validation*
- *initial verification engagement conclusion*
- *liability statement on the initial verification engagement*

*The initial verification statement should give the final verdict of the project in terms of the compliance of its implementation vs. the approved PDD, the readiness to start operation and likeliness to deliver high quality emission reductions.*

*The initial verification statement may have the following outcome:*

- A. *Unqualified initial verification statement*
- B. *Qualified initial verification statement*

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INITIAL VERIFICATION REPORT

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***Example of a qualified initial verification statement***

*XYZ Verification Ltd. has performed an initial verification of the ABC project in x-land due to requirements of the Client set as part of the MP for this specific project. Additionally this initial verification is based on the currently valid documentation of the UN Framework Convention on Climate Change (UNFCCC). In this context, the relevant documents are the "Marrakech Accords".*

*All issues indicated as "Forward Action Request" in chapter 4 should be submitted as indispensable information to the verification team of the next consecutive verification. All such issues should receive a special focus during the following verification.*

*The project is recommended to start the generation of emission reductions as a [Client Name] project. It is expected that the project can earn CERs in accordance with article 12 in the KP./ ERUs in accordance with article 6 in the KP*

*The initial verification is based on the information made available to us and the engagement conditions detailed in this report. XYZ Verification Ltd. can not guarantee the accuracy or correctness of this information. Hence, XYZ Verification Ltd. can not be held liable by any party for decisions made or not made based on this report.*

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**INITIAL VERIFICATION REPORT**

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## 5 REFERENCES

### **Category 1 Documents:**

*List documents provided by the Client that relate directly to the GHG components of the project. These should have been used as direct sources of evidence for the initial verification conclusions, and are usually further checked through interviews with key personnel.*

/1/

/2/

/3/

/4/

### **Category 2 Documents:**

*List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to cross-check project assumptions and confirm the validity of information given in the Category 1 documents and in verification interviews.*

/5/

/6/

/7/

### **Persons interviewed:**

*List persons interviewed during the initial verification, or persons contributed with other information that are not included in the documents listed above.*

/XX/

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*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

## JI DETERMINATION PROTOCOL

### Introduction

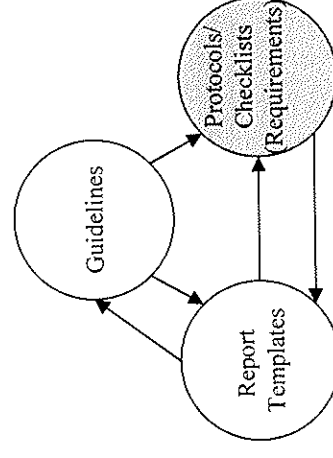
This document contains a generic Determination Protocol for JI projects, which must be seen in conjunction with the *Validation and Verification Guidelines* and the *Determination Report Template*. The JI Determination Protocol applies to projects that use the verification procedure under the Article 6 supervisory committee, i.e. for JI projects where the host country does not meet the eligibility requirements as stated in the Marrakech Accords (Decision 16/ CP.7) or for projects where the host country decides to use an accredited independent entity.

This determination protocol serves the following purposes:

- It organises, details and clarifies the requirements a JI project is expected to meet; and
- It ensures a transparent determination process by inducing the validator to document how a particular requirement has been validated and which conclusions have been reached;

This protocol contains two tables with generic requirements for JI projects. Table 1 shows the requirements that the GHG emission reduction project will be validated against. Table 2 consists of a checklist with determination questions related to one or more of the requirements in Table 1. The checklist questions may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued, a corrective action request or clarification request are stated. The resolution and final conclusions of these requests should be described in Table 3 of this protocol.

Before this generic determination protocol can be applied to validate a specific project, the validator must review and adjust/amend the protocol to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the independent entity's professional judgement and technical expertise should ensure that protocol amendments cover all necessary specific project requirements that have impact on project performance and acceptance of the project. Given the above, the protocol is neither exhaustive nor prescriptive.



*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

**Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities**

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
1. The project must have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)		
2. Emission reductions, or an enhancement of removal by sinks, must be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)		Table 2, Section B.2
3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7	Kyoto Protocol Article 6.1 (c)		
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)		
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects	Marrakech Accords, JI Modalities, §20		
6. The host Party is a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24		
7. The host Party's assigned amount has been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24		
8. The host Party has in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24		
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31		
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers	Marrakech Accords, JI Modalities, §32		

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

<b>REQUIREMENT</b>	<b>Reference</b>	<b>CONCLUSION</b>	<b>Cross Reference / Comment</b>
shall be invited to, within 30 days, provide comments	JI Modalities, §32		
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out	Marrakech Accords, JI Modalities, §33(d)		Table 2, Section F
12. The baseline for a JI project is the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B		Table 2, Section B.2
13. A baseline must be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B		Table 2, Section B.2
14. The baseline methodology must exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B		Table 2, Section B.2
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)		Table 2, Section D

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**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV <sup>2</sup>	COMMENTS	Draft Concl.	Final Concl.
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>					
<b>A.1. Project Boundaries</b> <i>Project boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?					
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?					
<b>A.2. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?					
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?					
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?					
A.2.5. Does the project make provisions for meeting training and maintenance needs?					
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the discussion and selection of the baseline methodology transparent?					
B.1.2. Does the methodology describe the general approaches for demonstrating the additionality of the project?					
B.1.3. Does the baseline methodology specify data sources and assumptions?					
B.1.4. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)					
B.1.5. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?					
B.1.6. Does the baseline methodology specify the spatial level of data (local, regional, national)?					

\* MoV = Means of Verification, DR= Document Review, I= Interview



*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p><b>B.2. Baseline Determination</b>  <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i></p>					
<p>B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?</p>					
<p>B.2.2. Has the baseline been determined using conservative assumptions where possible?</p>					
<p>B.2.3. Has the baseline been established on a project-specific basis?</p>					
<p>B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?</p>					
<p>B.2.5. Is the baseline determination compatible with the available data?</p>					
<p>B.2.6. Does the selected baseline represent a likely scenario in the absence of the project?</p>					
<p>B.2.7. Is it demonstrated that the project activity itself is not a likely baseline scenario (e.g. through investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers or through quantitative evidence that the project would otherwise not be implemented)?</p>					
<p>B.2.8. Have the major risks to the baseline been identified?</p>					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV <sup>2</sup>	COMMENTS	Draft Concl.	Final Concl.
B.2.9. Is all literature and sources clearly referenced?					
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?					
C.1.2. Is the project's crediting time clearly defined?					
<b>D. Monitoring Plan</b> <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.</i>					
<b>D.1. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Does the monitoring methodology reflect good monitoring and reporting practices?					
D.1.2. Is the selected monitoring methodology supported by the monitored and recorded data?					
D.1.3. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?					
D.1.4. Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?					
D.1.5. Does the monitoring methodology allow for conservative, transparent, accurate and					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV's	COMMENTS	Draft Concl.	Final Concl.
complete calculation of the ex post GHG emissions?					
D.1.6. Is the monitoring methodology clear and user friendly?					
D.1.7. Does the methodology mitigate possible monitoring errors or uncertainties addressed?					
<b>D.2. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?					
D.2.2. Are the choices of project GHG indicators reasonable?					
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?					
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?					
D.2.5. Will the indicators enable comparison of project data and performance over time?					
<b>D.3. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV <sup>2</sup>	COMMENTS	Draft Concl.	Final Concl.
necessary for determining leakage?					
D.3.2. Have relevant indicators for GHG leakage been included?					
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?					
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?					
<b>D.4. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining the baseline emissions during the crediting period?					
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?					
D.4.3. Will it be possible to monitor the specified baseline indicators?					
<b>D.5. Monitoring of Environmental Impacts</b> <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide for the collection and archiving of relevant data on environmental im pacts?					
D.5.2. Will it be possible to monitor the specified environmental im pact indicators?					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV <sup>2</sup>	COMMENTS	Draft Concl.	Final Concl.
<p><b>D.6. Project Management Planning</b></p> <p><i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i></p>					
D.6.1. Is the authority and responsibility of project management clearly described?					
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?					
D.6.3. Are procedures identified for training of monitoring personnel?					
D.6.4. Are procedures identified for emergency preparedness where emergencies can result in unintended emissions?					
D.6.5. Are procedures identified for calibration of monitoring equipment ?					
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?					
D.6.7. Are procedures identified for monitoring, measurements and reporting?					
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?					
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?					
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV's	COMMENTS	Draft Concl.	Final Concl.
requirements where applicable?					
D.6.11. Are procedures identified for project performance reviews?					
D.6.12. Are procedures identified for corrective actions?					
<b>E. Calculation of GHG Emissions by Source</b> <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
<b>E.1. Predicted Project GHG Emissions</b> <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?					
E.1.2. Are the GHG calculations documented in a complete and transparent manner?					
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?					
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?					
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?					

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV <sup>a</sup>	COMMENTS	Draft Concl.	Final Concl.
<p><b>E.2. Leakage Effect Emissions</b>  <i>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.</i></p>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?					
E.2.2. Have these leakage effects been properly accounted for in calculations?					
E.2.3. Does the methodology for calculating leakage comply with existing good practice?					
E.2.4. Are the calculations documented in a complete and transparent manner?					
E.2.5. Have conservative assumptions been used when calculating leakage?					
E.2.6. Are uncertainties in the leakage estimates properly addressed?					
<p><b>E.3. Baseline Emissions</b>  <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i></p>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?					
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?					
E.3.3. Are the GHG calculations documented in a complete and transparent manner?					

\* MoV = Means of Verification, DR= Document Review, I= Interview

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV <sup>2</sup>	COMMENTS	Draft Concl.	Final Concl.
E.3.4. Have conservative assumptions been used when calculating baseline emissions?					
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?					
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?					
<b>E.4. Emission Reductions</b> Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?					
<b>F. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?					
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?					
F.1.3. Will the project create any adverse environmental effects?					
F.1.4. Are transboundary environmental impacts					

\* MoV = Means of Verification, DR= Document Review, I= Interview



*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

CHECKLIST QUESTION	Ref.	MoV?	COMMENTS	Draft Concl.	Final Concl.
considered in the analysis?					
F.1.5. Have identified environmental impacts been addressed in the project design?					
F.1.6. Does the project comply with environmental legislation in the host country?					

*This determination protocol must be seen in conjunction with the Determination Guidelines and the determination report template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular projects.*

**Table 3 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
CAR 1.			
Clarification 1.			



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# DETERMINATION REPORT

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CLIENT NAME

DETERMINATION OF THE  
ABC PROJECT

JI Determination Report Template  
Version 2.0, June 2003

REPORT No. XXXX

REVISION No. 01

## DETERMINATION REPORT

Date of first issue:	Project No.:
Approved by:	Organisational unit:
Client: Client Name	Client ref.:

Summary:

*This is a report template to be used for the determination of JI projects. Guiding text is presented in italic letters, as here.*

*This document must be seen in conjunction with the Validation and Verification Guidelines and the JI Determination Protocol.*

*The summary should contain:*

- *a brief description of the JI determination process and the GHG project*
- *the scope of determination*
- *the methodology and criteria used for determination*
- *any restrictions or uncertainties related to the determination*
- *main conclusions and corrective action requests when relevant*
- *summary of the determination opinion*

Report No.:	Subject Group:	
Report title:		
Work carried out by:		
Work verified by:		
Date of this revision:	Rev. No.:	Number of pages: 12

**Indexing terms**

- No distribution without permission from the Client or responsible organisational unit
- Limited distribution
- Unrestricted distribution

DETERMINATION REPORT

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**Abbreviations**

*Explain any abbreviations that have been used in the report here.*

**Conversion Factors and Definitions**

*Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.*

## DETERMINATION REPORT

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## Appendix A: Determination Protocol

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**DETERMINATION REPORT**

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## 1 INTRODUCTION

*The introduction will contain:*

- *the objective of the determination,*
- *the scope of the determination,*
- *brief description of the main features of the JI project, and*
- *the names and roles of the determination team members.*

### 1.1 Objective

*The objective of the project should explain the purpose of determination and refer to the requirements in the Terms of Reference.*

#### **Example of Objective**

*The Client has commissioned XYZ Verification Ltd. to make a determination of the ABC project with regard to the relevant requirements for JI project activities. The determination serves as a design verification and is a requirement for all Client projects. The purpose of a determination is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).*

*UNFCCC criteria refer to the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.*

### 1.2 Scope

*The scope of the project is typically defined in the Terms of Reference and should briefly be repeated here. The distinction between determination as a third party exercise and consulting should be mentioned. Reference to the Validation and Verification Manual could also be included here.*

#### **Example of Scope**

*The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. XYZ Verification Ltd. has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the determination,*



## DETERMINATION REPORT

*focusing on the identification of significant risks for project implementation and the generation of ERUs.*

*The determination is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.*

***Examples of Documents to Review as Part of Scope***

- *Terms of Reference*
- *Project Design Document*
- *Baseline Study*
- *Monitoring Plan*
- *Memorandum of Understanding*
- *Environmental Impact Assessment*
- *Summary of Comments by Local Stakeholders*

**1.3 GHG Project Description**

*A brief description of the GHG project should be included here. This can contain:*

- *generic project information such as name of the site, type of project, time period, technology used*
- *a description of the components generating the GHG reductions and estimated amount of GHG reductions*

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**DETERMINATION REPORT**

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**2 METHODOLOGY**

*The determination may consist of the following three phases:*

- I a desk review of the project design documentation*
- II follow-up interviews with project stakeholders*
- III the resolution of outstanding issues and the issuance of the final determination report and opinion.*

*Explain the different means of verification used, and any considerations related to adjustments made to the use of the determination protocol. There is a reference to the complete protocol in Appendix A. There should also be a reference to the Validation and Verification Manual for methodology and protocol.*

*Findings established during the determination can either be seen as a non-fulfilment of determination protocol criteria or where a risk to the fulfilment of project objectives is identified. Corrective Action Requests (CAR) are issued, where:*

- i) mistakes have been made with a direct influence on project results;*
- ii) determination protocol requirements have not been met; or*
- iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be verified.*

*The term Clarification may be used where:*

- iv) additional information is needed to fully clarify an issue.*

**Example**

*In order to ensure transparency, a determination protocol was customised for the project, according to the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:*

- It organises, details and clarifies the requirements a JI project is expected to meet;*
- It ensures a transparent determination process where the independent entity will document how a particular requirement has been validated and the result of the determination.*

*The determination protocol consists of three tables. The different columns in these tables are described in Figure 1.*

*The completed determination protocol is enclosed in Annex A to this report.*

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<b>Determination Protocol Table 1: Mandatory Requirements</b>			
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>	<b>Cross reference</b>
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided ( <b>OK</b> ), or a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the determination report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent determination process.

<b>Determination Protocol Table 2: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in six different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided ( <b>OK</b> ), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question (See below). <b>Clarification</b> is used when the independent entity has identified a need for further clarification.

<b>Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Draft report clarifications and corrective action requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Summary of project owner response</b>	<b>Determination conclusion</b>
If the conclusions from the draft determination are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the independent entity should be summarised in this section.	This section should summarise the independent entity's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Determination protocol tables

## DETERMINATION REPORT

## 2.1 Review of Documents

*Explain how the determination is performed as an audit where the project design documents and any other supporting documents are reviewed and compared with identified and stated requirements.*

### **Example**

*The Project Design Document submitted by the Client and additional background documents related to the project design and baseline were reviewed.*

## 2.2 Follow-up Interviews

*Identify any personnel who have been interviewed and/or provided additional information to the presented documentation.*

### **Example**

*In the period of (yy-mm-dd), XYZ Verification Ltd. performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Company XYZ were interviewed. The main topics of the interviews are summarised in Table 1.*

**Table 1 Interview topics**

Interviewed organisation	Interview topics
	➤
	➤

## 2.3 Resolution of Clarification and Corrective Action Requests

*This section should explain how the Corrective Action Requests and Clarification Requests raised by the independent entity were resolved during communications between the Client and the independent entity.*

### **Example**

*The objective of this phase of the determination was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for the XYZ Verification's positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by XYZ Verification Ltd. were resolved during communications between the Client and XYZ Verification Ltd. To guarantee the transparency of the determination process, the concerns raised and responses given are summarised in chapter 3 below and documented in more detail in the determination protocol in Appendix A.*

*Since modifications to the Project design were necessary to resolve XYZ Verification Ltd.'s concerns, the Client decided to revise the documentation and resubmitted the project design documentation on (yy-mm-dd). After reviewing the revised and resubmitted project documentation, XYZ Verification Ltd. issued this final determination report and opinion.*

## DETERMINATION REPORT

### 3 DETERMINATION FINDINGS

*The conclusions regarding whether all relevant JI requirements have been met, including a summary of the main corrective action requests and the clarification requests, should be given in this section. All the corrective action requests and the clarification requests should be described in detail in Appendix A, Validation Protocol.*

*In the final determination report, the discussions and the conclusions that followed the preliminary findings in the draft determination report and possible corrective action requests should also be encapsulated in this section.*

**Example**

*In the following sections the findings of the determination are stated. The determination findings for each determination subject are presented as follows:*

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the determination protocol in Appendix A.*
- 2) Where XYZ Verification Ltd. had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, has been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the determination protocol in Appendix A. The determination of the project resulted in five Corrective Action Requests and three Clarification Requests.*
- 3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and XYZ Verification Ltd. to resolve these Clarification or Corrective Action Requests are summarised.*
- 4) The conclusions of the determination are presented.*

*The final determination findings relate to the project design as documented and described in the revised and resubmitted project design documentation.*

#### 3.1 Project design

*The conclusions regarding:*

- the technology used,*
- endorsement by host country focal point*
- project duration and crediting time*

*should be summarised in this section.*

#### 3.2 Baseline

*The conclusions regarding:*

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**DETERMINATION REPORT**

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- *the appropriateness of the baseline methodology,*
- *the determination and justification of the project baseline, and*
- *the project's environmental additionality*

*should be summarised in this section.*

### **3.3 Monitoring Plan**

*The conclusions regarding:*

- *the appropriateness of the monitoring methodology*
- *whether the monitoring plan provides for the collection and archiving of all relevant data needed to:*
  - a. *estimate or measure emissions occurring within the project boundary,*
  - b. *determine the baseline emissions, and*
  - c. *estimate changes in emissions outside the project boundary.*

*should be summarised in this section.*

*Emphasis must be on evaluating that all indicators of importance for controlling and reporting of project performance are incorporated in the monitoring plan. The frequency, responsibility and authority for registration, monitoring, measurement and reporting activities must be discussed.*

### **3.4 Calculation of GHG Emissions**

*The conclusions regarding:*

- *the appropriateness of the project boundaries,*
- *whether all relevant emissions are properly accounted for,*
- *the correctness and transparency of formulas and factors used,*
- *the assumptions made for estimating GHG emission reductions, and*
- *uncertainties*

*should be summarised in this section.*

### **3.5 Environmental Impacts**

*The conclusions regarding:*

- *requirements for and approval of an EIA and*
- *the sufficient documentation of environmental impacts*

*should be summarised in this section.*

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**DETERMINATION REPORT**

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**4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

*According to the modalities for the determination of JI projects, the validator shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited observers and make them publicly available.*

**Example**

*Verification XYZ Ltd. published the project documents on its website on yy-mm-dd and invited comments within yy-mm-dd by Parties, stakeholders and accredited observers. Three comments were received. These are referred to and further discussed in appendix C of this report.*

**5 DETERMINATION OPINION**

*The determination opinion should include a summary of:*

- *the determination methodology and process,*
- *the determination criteria, and*
- *the determination conclusion.*

*The determination opinion should also include:*

- *a statement on issues not covered in the determination engagement, and*
- *a liability statement on the accuracy of the determination engagement*

*The determination opinion should clearly state whether the project meets the relevant criteria for JI project activities and whether the project is likely to achieve estimated emission reductions.*

*The determination opinion may have the following outcome:*

- A. *Unqualified determination opinion*
- B. *Qualified determination opinion*
- C. *Denial of determination*

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**DETERMINATION REPORT**

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**Examples of determination Opinions:**Unqualified determination opinion

*"XYZ Verification Ltd. has performed a determination of the ABC project in Country X. The determination was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.*

*The review of the project design documentation and the subsequent follow-up interviews have provided XYZ Verification Ltd. with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for JI and all relevant host country criteria.*

*By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.*

*The determination is based on the information made available to XYZ Verification Ltd. and the engagement conditions detailed in this report. XYZ Verification Ltd. can not guarantee the accuracy or correctness of this information. Hence, XYZ Verification Ltd. can not be held liable by any party for decisions made or not made based on the determination opinion."*

Qualified determination opinion

*"...The determination has revealed that the procedures for monitoring and reporting are not yet sufficiently developed. The lack of such procedures may represent a risk for emission reductions not being verified and certified. Satisfactory procedures should hence be developed prior to project implementation. ..."*

*More information on determination opinions is found in the Validation and Verification Guidelines.*



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**DETERMINATION REPORT**

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**6 REFERENCES****Category 1 Documents:**

*List documents provided by the Client that relate directly to the GHG components of the project, (i.e. the Project Design Document and written approval of voluntary participation from the national focal point). These should have been used as direct sources of evidence for the determination conclusions, and are usually further checked through interviews with key personnel.*

/1/

/2/

/3/

/4/

**Category 2 Documents:**

*List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to check project assumptions and confirm the validity of information given in the Category 1 documents and in follow-up interviews.*

/5/

/6/

/7/

**Persons interviewed:**

*List persons interviewed during the determination, or persons contributed with other information that are not included in the documents listed above.*

/XX/

- o0o -

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

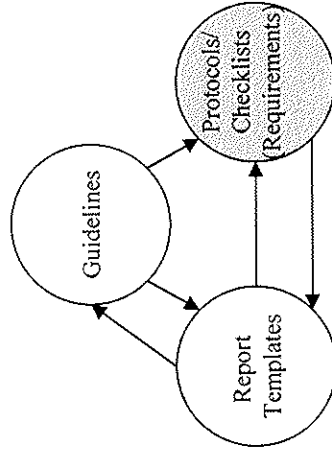
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## PERIODIC VERIFICATION CHECKLIST

### Introduction

This document contains a generic Periodic Verification Checklist for CDM and JI projects, which must be seen in conjunction with the *Validation and Verification Guidelines* and the *Periodic Verification Report Template*.

This periodic verification checklist ensures a transparent periodic verification process by inducing the verifier to document how emission reductions have been verified and the conclusion that have been reached.



Before this generic checklist can be applied for the periodic verification of a specific project, the verifier must review and adjust/amend the checklist to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. Particular attention must be given to make sure that the emissions/performance reporting system is in compliance with the project's monitoring plan, and that all issues that may cause risk for material misstatement of emission reductions are identified through the use of a project-specific checklist. The application of the verifier's professional judgement and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance. Given the above, the checklist is neither exhaustive nor prescriptive.

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

**Table 1: Data Management System/Controls**

The project operator's data management system/controls are assessed to identify reporting risks and to assess the data management system's/control's ability to mitigate reporting risks. The GHG data management system/controls are assessed against the expectations detailed in the table. A score is assigned as follows:

- Full - all best-practice expectations are implemented.
- Partial - a proportion of the best practice expectations is implemented
- Limited - this should be given if little or none of the system component is in place.

Expectations for GHG data management system/controls	Score	Verifiers Comments (including Forward Action Requests)
<p><b>1. Defined organisational structure, responsibilities and competencies</b></p>		
<p><b>1.1. Position and roles</b>  <i>Position and role of each person in the GHG data management process is clearly defined and implemented, from raw data generation to submission of the final data. Accountability of senior management must also be demonstrated.</i></p>		
<p><b>1.2. Responsibilities</b>  <i>Specific monitoring and reporting tasks and responsibilities are included in job descriptions or special instructions for employees.</i></p>		
<p><b>1.3. Competencies needed</b>  <i>Competencies needed for each aspect of the GHG determination process are analysed. Personnel competencies are assessed and training programme implemented as required.</i></p>		

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

Expectations for GHG data management system/controls	Score	Verifiers Comments (including Forward Action Requests)
<p><b>2. Conformance with monitoring plan</b></p>		
<p><b>2.1. Reporting procedures</b>  <i>Reporting procedures should reflect the monitoring plan content. Where deviations from the monitoring plan occur, the impact of this on the data is estimated and the reasons justified.</i></p>		
<p><b>2.2. Necessary Changes</b>  <i>Necessary changes to the monitoring plan are identified and changes are integrated in local procedures as necessary.</i></p>		
<p><b>3. Application of GHG determination methods</b></p>		
<p><b>3.1. Methods used</b>  <i>There are documented description of the methods used to determine GHG emissions and justification for the chosen methods. If applicable, procedures for capturing emissions from non-routine or exceptional events are in place and implemented.</i></p>		
<p><b>3.2. Information/process flow</b>  <i>An information/process flow diagram, describing the entire process from raw data to reported totals is developed.</i></p>		
<p><b>3.3. Data transfer</b>  <i>Where data is transferred between or within systems/spreadsheets, the method of transfer (automatic/manual) is highlighted - automatic links/updates are implemented where possible. All assumptions and the references to original data sources are documented.</i></p>		
<p><b>3.4. Data trails</b>  <i>Requirements for documented data trails are defined and implemented and all documentation are physically available.</i></p>		

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

Expectations for GHG data management system/controls	Score	Verifiers Comments (including Forward Action Requests)
<p><b>4. Identification and maintenance of key process parameters</b></p>		
<p><b>4.1. Identification of key parameters</b>  <i>The key physical process parameters that are critical for the determination of GHG emissions (e.g. meters, sampling methods) are identified.</i></p>		
<p><b>4.2. Calibration/maintenance</b>  <i>Appropriate calibration/maintenance requirements are determined.</i></p>		
<p><b>5. GHG Calculations</b></p>		
<p><b>5.1. Use of estimates and default data</b>  <i>Where estimates or default data are used, these are validated and periodically evaluated to ensure their ongoing appropriateness and accuracy, particularly following changes to circumstances, equipment etc. The validation and periodic evaluation of this is documented.</i></p>		
<p><b>5.2. Guidance on checks and reviews</b>  <i>Guidance is provided on when, where and how checks and reviews are to be carried out, and what evidence needs to be documented. This includes spot checks by a second person not performing the calculations over manual data transfers, changes in assumptions and the overall reliability of the calculation processes.</i></p>		
<p><b>5.3. Internal verification</b>  <i>Internal verifications include the GHG data management systems, to ensure consistent application of calculation methods.</i></p>		

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

Expectations for GHG data management system/controls	Score	Verifiers Comments (including Forward Action Requests)
<p><b>5.4. Internal validation</b>  <i>Data reported from internal departments should be validated visibly (by signature or electronically) by an employee who is able to assess the accuracy and completeness of the data. Supporting information on the data limitations, problems should also be included in the data trail.</i></p>		
<p><b>5.5. Data protection measures</b>  <i>Data protection measures for databases/spreadsheets should be in place (access restrictions and editor rights).</i></p>		
<p><b>5.6. IT systems</b>  <i>IT systems used for GHG monitoring and reporting should be tested and documented.</i></p>		

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

**Table 2: GHG calculation procedures and management control testing**

<p><b>Identification of potential reporting risk</b></p>	<p><b>Identification, assessment and testing of management controls</b></p>	<p><b>Areas of residual risks</b></p>
<p><i>Identify and list potential reporting risks based on an assessment of the emission estimation procedures, i.e.</i></p> <ul style="list-style-type: none"> <li>➤ <i>the calculation methods,</i></li> <li>➤ <i>raw data collection and sources of supporting documentation,</i></li> <li>➤ <i>reports/databases/information systems from which data is obtained.</i></li> </ul> <p><i>Identify key source data. Examples of source data include metering records, process monitors, operational logs, laboratory/analytical data, accounting records, utility data and vendor data. Check appropriate calibration and maintenance of equipment, and assess the likely accuracy of data supplied.</i></p> <p><i>Focus on those risks that impact the accuracy, completeness and consistency of the reported data. Risks are weakness in the GHG calculation systems and may include:</i></p> <ul style="list-style-type: none"> <li>➤ <i>manual transfer of data/manual calculations,</i></li> <li>➤ <i>unclear origins of data,</i></li> <li>➤ <i>accuracy due to technological limitations,</i></li> <li>➤ <i>lack of appropriate data protection measures? For example, protected calculation cells in spreadsheets and/or password restrictions.</i></li> </ul>	<p><i>Identify the key controls for each area with potential reporting risks. Assess the adequacy of the key controls and eventually test that the key controls are actually in operation.</i></p> <p><i>Internal controls include (not exhaustive):</i></p> <ul style="list-style-type: none"> <li>➤ <i>Understanding of responsibilities and roles</i></li> <li>➤ <i>Reporting, reviewing and formal management approval of data;</i></li> <li>➤ <i>Procedures for ensuring data completeness, conformance with reporting guidelines, maintenance of data trails etc.</i></li> <li>➤ <i>Controls to ensure the arithmetical accuracy of the GHG data generated and accounting records e.g. internal audits, and checking/ review procedures;</i></li> <li>➤ <i>Controls over the computer information systems;</i></li> <li>➤ <i>Review processes for identification and understanding of key process parameters and implementation of calibration maintenance regimes</i></li> <li>➤ <i>Comparing and analysing the GHG data with previous periods, targets and benchmarks.</i></li> </ul>	<p><i>Identify areas of residual risks, i.e. areas of potential reporting risks where there are no adequate management controls to mitigate potential reporting risks</i></p> <p><i>Areas where data accuracy, completeness and consistency could be improved should be highlighted.</i></p>

*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks
	<p><i>When testing the specific internal controls, one needs to consider the following questions:</i></p> <ol style="list-style-type: none"> <li><i>1. Is the control designed properly to ensure that it would either prevent or detect and correct any significant misstatements?</i></li> <li><i>2. To what extent have the internal controls been implemented according to their design;</i></li> <li><i>3. To what extent have the internal controls (if existing) functioned properly (policies and procedures have been followed) throughout the period?</i></li> <li><i>4. How does management assess the internal control as reliable?</i></li> </ol>	



*This periodic verification checklist must be seen in conjunction with the Validation and Verification Guidelines and the periodic verification report template. The entries in the checklist should be adjusted and amended as appropriate to prepare for the periodic verification of a particular project.*

**Table 3: Detailed audit testing of residual risk areas and random testing**

Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
<p>List the residual areas of risks (Table 2 where detailed audit testing is necessary). In addition, other material areas may be selected for detailed audit testing.</p>	<p>The additional verification testing performed is described. Testing may include:</p> <ul style="list-style-type: none"> <li>➤ Sample cross checking of manual transfers of data</li> <li>➤ Recalculation</li> <li>➤ Spreadsheet 'walk throughs' to check links and equations</li> <li>➤ Inspection of calibration and maintenance records for key equipment</li> <li>➤ Check sampling analysis results</li> <li>➤ Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</li> </ul>	<p>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties should be highlighted. Errors and uncertainty can be due to a number of reasons:</p> <ul style="list-style-type: none"> <li>➤ Calculation errors. These may be due to inaccurate manual transposition, use of inappropriate emission factors or assumptions etc.</li> <li>➤ Lack of clarity in the monitoring plan. This could lead to inconsistent approaches to calculations or scope of reported data.</li> <li>➤ Technological limitations. There may be inherent uncertainties (error bands) associated with the methods used to measure emissions e.g. use of particular equipment such as meters.</li> <li>➤ Lack of source data. Data for some sources may not be cost effective or practical to collect. This may result in the use of default data which has been derived based on certain assumptions/conditions and which will therefore have varying applicability in different situations.</li> </ul> <p>The second two categories should be explored with the site personnel, based on their knowledge and experience of the processes. High risk process parameters or source data (i.e. those with a significant influence on the reported data, such as meters) should be reviewed for these uncertainties.</p>

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# VERIFICATION REPORT

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CLIENT NAME

VERIFICATION OF THE  
ABC PROJECT

Periodic Verification Report Template  
Version 2.0, June 2003

REPORT No. XXXX

REVISION NO. 01

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## VERIFICATION REPORT

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Date of first issue:	Project No.:
Approved by:	Organisational unit:
Client: Client Name	Client ref.:

Summary:

*This is a report template to be used in Verification of CDM/JI projects. Guiding text is presented in italic letters, as here.*

*This document must be seen in conjunction with the Validation and Verification Guidelines.*

*The summary should contain:*

- *the purpose and scope of the verification*
- *a brief description of the verification project and the GHG project*
- *the methodology and criteria used for verification*
- *any restrictions or uncertainties related to the verification*
- *the conclusions of the verification, including the verified amount of emission reductions for the given period and any Forward Action Requests*

Report No.:	Subject Group:	
Report title:		
Work carried out by:		
Work verified by:		
Date of this revision:	Rev. No.:	Number of pages:
		9

### Indexing terms

No distribution without permission from the Client or responsible organisational unit

Limited distribution

Unrestricted distribution

VERIFICATION REPORT

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**Abbreviations**

*Explain any abbreviations that have been used in the report here.*

**Conversion Factors and Definitions**

*Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.*

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 VERIFICATION REPORT
 

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Annex 1: Periodic Verification Checklist

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 VERIFICATION REPORT
 

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## 1 INTRODUCTION

*The introduction will contain:*

- *the objective of the project verification*
- *the scope of the project verification*
- *brief description of the main features of the GHG project, the status of the project implementation and any remaining issues from validation or previous verification*
- *the verification team and the individual roles*

### 1.1 Objective

*The objective of the project should explain the purpose of verification and refer to the requirements in the Terms of Reference.*

**Example:**

*The Client has commissioned an independent verification by XYZ Certification Ltd. of its reported greenhouse gas emission reductions from the ABC project. The verifiers have reviewed the GHG data collected to date for the period between yy-mm-dd and yy-mm-dd.*

### 1.2 Scope

*The scope of the project is typically defined in the Terms of Reference and should briefly be repeated here. The distinction between verification as a third party exercise and consulting should be mentioned. Reference to the Validation and Verification Manual could also be included here.*

### 1.3 Description of the Project Activity

Project Parties:	<i>Name of Project Parties (Host and sponsor Party)</i>
Title of project activity:	<i>Name of project activity</i>
UNFCCC registration No:	<i>UNFCCC registration No.</i>
Project Entity:	<i>Name of project entity, address and name, telephone and e-mail of the responsible person of the project entity</i>
Location of the project activity:	<i>Detail on physical location, city/town/community, Region/State/Province, and country</i>

*A brief description of the GHG project should be included here. This can contain:*

- *generic project information such as name of the site and the technology used*
- *a description of the project components that generates GHG emission reductions.*

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## 2 METHODOLOGY

*Explain that a risk-based verification approach has been employed. Explain how key reporting risks were identified and whether it was assessed to which extend the project operator's control systems were adequate for mitigation of these key reporting risks. Key reporting risks that are not sufficiently addressed by the project operator's control system will represent residual risks areas where detailed audit testing is necessary. In addition, other areas that can have material impact on reported emission reductions shall be selected for detailed audit testing.*

*Explain that the verification process was guided by periodic verification checklist, which at the same time ensures a transparent periodic verification process, and documents how emission reductions have been verified and how the verification findings have been reached.*

### **Verification team**

Lead auditor: *Name of the audit team leader, XYZ Verification Operating Unit*

Auditor (s): *Name(s) of the auditors (s), XYZ Verification Operating Unit(s)*

### **Duration of verification**

Preparations: *From dd-mm-yyyy to dd-mm-yyyy*

On-site verification: *From dd-mm-yyyy to dd-mm-yyyy*

Reporting: *From dd-mm-yyyy to dd-mm-yyyy*

### **2.1 Review of Documentation**

*Explain how the verification has been performed, i.e. as an audit where the key design documents and monitoring records are reviewed and compared with identified and stated requirements and the specific reporting algorithms is the project Monitoring Plan. A risk based audit approach must be applied where issues of critical importance to the successful verification must be addressed in more detail.*

### **2.2 Site Visits**

*Describe the sites which have been visited and list the persons that were interviewed, together with a short summary of the interview topics.*

### **2.3 Assessment**

*Explain the different means of verification used. This will typically include:*

- *review of project documentation*
- *on-site inspections, including; review of performance records, interviews with project participants and local stakeholders, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment*
- *review of monitoring results and verification of the correct application of monitoring methodologies*
- *determination of the reductions in GHG emissions, and*
- *review of additional data from other sources if appropriate.*

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## 2.4 Reporting of Findings

*Findings established during the verification may be that:*

- i) the verification is not able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions shall not be verified and certified;*
- ii) the verification has identified material misstatements in the reported emission reductions. Emission reductions with material misstatements shall be discounted based on the verifiers ex-post determination of the achieved emission reductions.*

*A Forward Action Requests (FAR) should be issued, where:*

- the actual project monitoring and reporting practices requires attention and /or adjustment for the next consecutive verification period, or*
- an adjustment of the MP is recommended.*

*In the context of FARs, risks have been identified, which may endanger the delivery of high quality CERs in the future, i.e. by deviations from standard procedures as defined by the MP. As a consequence, such aspects should receive a special focus during the next consecutive verification. A FAR may originate from lack of data sustaining claimed emission reductions.*



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### 3 VERIFICATION FINDINGS

*The conclusions regarding the main corrective findings and FARs should be summarised in this section. All the conclusions should be described in Appendix 1, Periodic Verification Checklist, but should also be listed here.*

*For the final verification report, the discussions and the conclusions that followed the draft verification report and possible forward action requests should also be encapsulated in this section.*

#### 3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification

*The discussion, findings and conclusion regarding the remaining issues/CARs/FARs from previous validations/ verifications should be summarised in this section.*

#### 3.2 Project Implementation

*The discussion, findings and conclusion regarding the conformity of the actual project activity with the registered project design document should be summarised in this section.*

#### 3.3 Completeness of Monitoring

*The discussion, findings and conclusion regarding correct application of the monitoring methodologies and the completeness of the monitoring should be summarised in this section.*

#### 3.4 Accuracy of Emission Reduction Calculations

*The discussion, findings and conclusion regarding spreadsheet formulas and connections, conversions, aggregations, consistent use of factors in line with the monitoring plan, possible manual transposition errors between data sets, uncertainty of technology (e.g. metering) and appropriateness of default data where specific source data is lacking should be summarised in this section.*

#### 3.5 Quality of Evidence to Determine Emission Reductions

*The discussion, findings and conclusion related to that the evidence is of sufficient quantity and appropriate quality, the reliability of the evidence and the source and nature of the evidence (external/internal, oral, documented) should be summarised in this section.*

#### 3.6 Management System and Quality Assurance

*The discussion, findings and conclusions regarding the suitability of the management system for monitoring and reporting, i.e. organisational structure, responsibilities, competencies, non-conformance handling, internal audits and management review should be summarised in this section.*

### 4 PROJECT SCORECARD

Risk Areas	Conclusions			Error/Discounted Uncertainty Tonnes
	Baseline Emissions	Project Emissions	Calculated Emission Reductions	
<b>Completeness</b> <ul style="list-style-type: none"> <li>• Source coverage/ boundary definition</li> </ul>				
<b>Accuracy</b> <ul style="list-style-type: none"> <li>• Physical Measurement and Analysis</li> <li>• Data calculations</li> </ul>				
<b>Consistency</b> <ul style="list-style-type: none"> <li>• Data management &amp; reporting</li> <li>• Changes in the project</li> </ul>				

## VERIFICATION REPORT

**5 VERIFICATION STATEMENT**

The verification statement should include an explanation of:

- the scope of the verification
- the period of the verification
- conclusions of the verification, including the verified amount of emission reductions for the given period
- liability statement with regards to the accuracy of the verification statement
- statement of confidentiality

The verification statement should give the final verdict of the project in terms of the completeness, comparability, accuracy and correctness of the reported GHG emission reductions.

**Reporting period:** From dd-mm-yyyy to dd-mm-yyyy

**Verified emission in the above reporting period:**

Project emissions	yy	t CO <sub>2</sub> equivalents
Baseline emissions	zz	t CO <sub>2</sub> equivalents
Emission reductions	xx	t CO <sub>2</sub> equivalents

**Example of unqualified verification statement**

*“XYZ Verification Ltd. has been engaged by the Client to verify the emission reductions achieved by ABC-project in x-land.*

*This verification engagement was carried out during the period of dd-mm-yyyy to dd-mm-yyyy.*

*XYZ Verification Ltd. has verified that the monitoring methodologies for estimating emission reductions conform with the project design documents, have been applied correctly and their documentation is complete and transparent.*

*Based on the information we have seen and evaluated, it is our opinion that xx tonnes of CO<sub>2</sub>-equivalents have been abated by the project in the period of yy-mm-dd to yy-mm-dd.*

*This Verification Statement is based on the information made available to us and the engagement conditions above.*

**Reporting period:** From dd-mm-yyyy to dd-mm-yyyy

**Verified emission in the above reporting period:**

Project emissions	yy	t CO <sub>2</sub> equivalents
Baseline emissions	zz	t CO <sub>2</sub> equivalents
Emission reductions	xx	t CO <sub>2</sub> equivalents

*More information on verification opinions is found in the Validation and Verification Guidelines*

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VERIFICATION REPORT

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## 6 REFERENCES

*List documents provided by the Client or the project entity, such as the monitoring report, the PDD, the monitoring plan, the validation/determination report, the initial verification report (if applicable), written management manuals and operation licenses.*

/1/

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/3/

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### Appendix 3 - Off UBC Point Grey campus properties owned by UBC

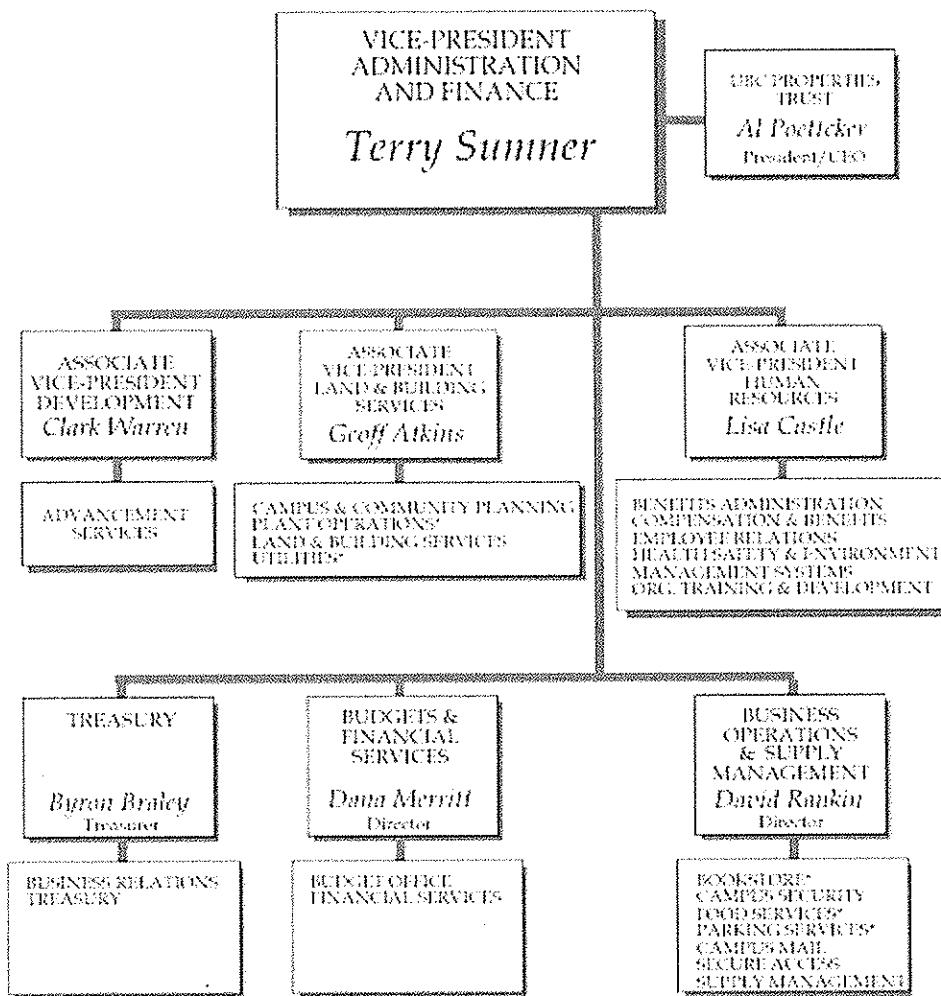
<u>BUILDING NAME</u>	<u>YEAR</u>	<u>ADDRESS</u>	<u>Occupants</u>
MEETING HALL, MALCOLM KNAPP RESEARCH FOREST		RR2, MAPLE RIDGE	
OYSTER RIVER FARM (UNIVERSITY RESEARCH FARM)	1954	OYSTER RIVER RRI	
UNIVERSITY HOSPITAL - SHAUGHNESSY SITE		950 WEST 28TH AVENUE (OFF-CAMPUS)	
WHISTLER MOUNTAIN CABIN			
Agazzi Research Station	1997	Agazzi	
Alex Fraser Research Forest		Williams Lake	
Jack Bell Research Centre - VGH		855 W. 12th Ave	
Jan E. Holdings		855 W. 10th Ave	
Mandarte Island		Saanich Peninsula	
Michelle's Ladies Wear		1140-44 Robson St	Women's Resource Ctr
Research Centre at Children's Hospital		1984 4500 Oak St	
San Rafael Res. Foundation	1993	3977 Nicomek Rd. Surrey	
Sunset Tower		6450 Inverness Street	
VGH-Medical Student & Alumni Cntr		685 & 695 W. 12th Ave	
OddGuys Holdings Ltd.		319 W Hastings St	
Cedar Lodge Society	1989	3741 Holland Rd. (Van.Island)	
Alex Fraser Research Forest	1999	3005 Rodeo Drive Williams Lake	
Bamfield Marine Research Station	1972	Barkley Sound (Van Isl.)	
Geology Field School (Oliver Property)	1961	38216-149th St. Oliver (near Osoyoos)	
Oyster River Res. Farm #2 & Bldg.611	1954/1987	Campbell River	
Prideaux Haven (The Hunt Estate)	1966	14 Miles North of Powell River	
Thacker Mountain (Thacker Ecological Research)	1959	near Hope	
U Res Forest-Maple Ridge (Malcom Knapp)(Bldg.#441)	1943/1968	Maple Ridge	
Dept. of Medicine (under the Faculty of Medicine)		VGH - 950 10th Ave	



**Appendix 4 – Organizational chart demonstrating managerial control of Ancillary Services**

**Organizational Chart:**

**Vice President Administration & Finance**



September 2002

\* = ancillary

## Appendix 5 - Core and Ancillary buildings built prior to April 1999

<u>BUILDING NAME</u>	<u>YEAR</u>	<u>ADDRESS</u>
CECIL GREEN PARK COACH HOUSE	1911	6323 CECIL GREEN PARK ROAD
CECIL GREEN PARK HOUSE	1911	6251 CECIL GREEN PARK ROAD
CHEEZE FACTORY ENGINEERING UNDERGRADUATE	1919	2335 ENGINEERING ROAD
LANDSCAPE ARCHITECTURE ANNEX	1921	2371 MAIN MALL
MATHEMATICS ANNEX	1924	1986 MATHEMATICS ROAD
OLD ADMINISTRATION BUILDING	1924	6328 MEMORIAL ROAD
ARTS ONE BUILDING	1925	6358 UNIVERSITY BOULEVARD
AUDITORIUM	1925	6344 MEMORIAL ROAD
BARN COFFEE SHOP	1925	2323 MAIN MALL
CHEMISTRY BUILDING	1925	2036 MAIN MALL
GEOGRAPHY BUILDING	1925	1984 WEST MALL
HUT M-17	1925	6373 UNIVERSITY BOULEVARD
HUT M-18	1925	6361 UNIVERSITY BOULEVARD
MATHEMATICS BUILDING	1925	1984 MATHEMATICS ROAD
POWER HOUSE	1925	2040 WEST MALL
STORES ROAD ANNEX	1925	6368 STORES ROAD
OLD FIRE HALL	1926	2038 WEST MALL
MAIN LIBRARY	1927	1956 MAIN MALL
CECIL GREEN PARK SQUASH COURT	1929	6251 CECIL GREEN PARK ROAD
GREEN COLLEGE - GRAHAM HOUSE, SEMINAR ROOM	1930	6201 CECIL GREEN PARK ROAD
B.C. BINNING M.F.A. STUDIOS	1940	6363 STORES ROAD
BROCK HALL - WEST WING	1940	1874 EAST MALL
HUT B-5	1940	2202 MAIN MALL
HUT M-22	1940	2109 WEST MALL
HUT MS-3 HEALTH SCIENCES	1940	5826 FAIRVIEW AVENUE
HUT MS-4 HEALTH SCIENCES	1940	5826 FAIRVIEW AVENUE
HENNINGS BUILDING	1945	6224 AGRICULTURAL ROAD
CAMPUS & COMMUNITY PLANNING II	1947	2210 WEST MALL
POWER HOUSE - ADDITION I	1947	2040 WEST MALL
SOUTH CAMPUS WAREHOUSE	1947	6116 NURSERIES ROAD
THE LEONARD S. KLINCK BUILDING	1947	6356 AGRICULTURAL ROAD
BIOLOGICAL SCIENCES BUILDING	1948	6270 UNIVERSITY BOULEVARD
HORTICULTURE BUILDING	1948	6394 STORES ROAD
HUT B-3 - FISHERIES CENTRE	1948	6248 BIOLOGICAL SCIENCES ROAD
HUT B-6 - FISHERIES CENTRE & ZOOLOGY	1948	6266 BIOLOGICAL SCIENCES ROAD
HUT O-4	1948	6365 BIOLOGICAL SCIENCES ROAD



WESBROOK BUILDING	1949	6174 UNIVERSITY BOULEVARD
ANTHROPOLOGY AND SOCIOLOGY BUILDING - ANNEX	1950	6303 NORTH WEST MARINE DRIVE
ANTHROPOLOGY AND SOCIOLOGY BUILDING - ISAB	1950	6303 NORTH WEST MARINE DRIVE
EARTH AND OCEAN SCIENCES - EAST	1950	2219 MAIN MALL
GEORGE F. CURTIS BUILDING	1950	1822 EAST MALL
HILLEL HOUSE	1950	6145 STUDENT UNION BOULEVARD
MARY BOLLERT HALL	1950	6253 NORTH WEST MARINE DRIVE
NORMAN MACKENZIE HOUSE (PRESIDENT'S RESIDE	1950	6565 NORTH WEST MARINE DRIVE
WAR MEMORIAL GYMNASIUM	1950	6081 UNIVERSITY BOULEVARD
PLANT OPERATIONS ANNEX F	1951	6381 STORES ROAD
CAMPUS & COMMUNITY PLANNING I	1952	2210 WEST MALL
BOTANY ANNEX	1954	6386 UNIVERSITY BOULEVARD
EMPIRE POOL	1954	6081 UNIVERSITY BOULEVARD
ARTS ONE BUILDING ANNEX	1955	6358 UNIVERSITY BOULEVARD
HEADER HOUSE	1955	2336 WEST MALL
MAIN SUBSTATION - SWITCHING STATION 4KV	1955	6009 AGRONOMY ROAD
ANTHROPOLOGY AND SOCIOLOGY BUILDING - MAR	1956	6303 NORTH WEST MARINE DRIVE
BROCK HALL ANNEX	1956	1874 EAST MALL
CHEMISTRY STORAGE	1956	2036 MAIN MALL
BIOLOGICAL SCIENCES BUILDING - SOUTH WING	1957	6270 UNIVERSITY BOULEVARD
HUT M-2I	1957	2109 WEST MALL
WESBROOK PLACE	1957	2250 WESBROOK MALL
ACADIA FACULTY ROW HOUSING	1958	5501-5515 PRESIDENT'S ROW
ACADIA FACULTY ROW HOUSING	1958	5517-5529 PRESIDENT'S ROW
ACADIA FACULTY ROW HOUSING	1958	5603-5617 PRESIDENT'S ROW
BUCHANAN BUILDING BLOCK A	1958	1866 MAIN MALL
BUCHANAN BUILDING BLOCK B	1958	1866 MAIN MALL
BUCHANAN BUILDING BLOCK C	1958	1866 MAIN MALL
INTERNATIONAL HOUSE	1958	1783 WEST MALL
THE LEON AND THEA KOERNER UNIVERSITY CENTRE	1958	6331 CRESCENT ROAD
CHEMISTRY BUILDING SOUTH WING	1959	2036 MAIN MALL
FOOD SCIENCE BUILDING	1959	6640 NORTH WEST MARINE DRIVE
JAPANESE TEA HOUSE - NITOBE GARDENS	1959	1903 WEST MALL
PLACE VANIER RESIDENCE - ROBSON HOUSE	1959	1935 LOWER MALL
TOTEM POLE SHED	1959	2373 LOWER MALL
BUCHANAN BUILDING BLOCK D	1960	1866 MAIN MALL
BUCHANAN BUILDING BLOCK E	1960	1866 MAIN MALL
GEORGE CUNNINGHAM BUILDING (PHARMACEUTIC	1960	2146 EAST MALL
NORTH WEST MARINE DRIVE RESEARCH STATION	1960	2259 LOWER MALL
PLACE VANIER RESIDENCE - ALDYEN HAMBER HO	1960	1935 LOWER MALL

PLACE VANIER RESIDENCE - DOROTHY MAWDSLEY	1960	1935	LOWER MALL
PLACE VANIER RESIDENCE - GORDON SHRUM COMI	1960	1935	LOWER MALL
PLACE VANIER RESIDENCE - MARGARET MACKENZIE	1960	1935	LOWER MALL
PLACE VANIER RESIDENCE - OKANAGAN HOUSE	1960	1935	LOWER MALL
PLACE VANIER RESIDENCE - PHYLLIS ROSS HOUSE	1960	1935	LOWER MALL
PLACE VANIER RESIDENCE - SHERWOOD LEFT HOUSE	1960	1935	LOWER MALL
ANIMAL SCIENCE - BEEF CATTLE RESEARCH	1961	3473	WESBROOK MALL
CHEMICAL ENGINEERING BUILDING	1961	2216	MAIN MALL
D.H. COPP BUILDING	1961	2146	HEALTH SCIENCES MALL
FRIEDMAN BUILDING	1961	2177	WESBROOK MALL
HAIDA HOUSE	1961	6393	NORTH WEST MARINE DRIVE
MEDICAL SCIENCES BLOCK C	1961	2176	HEALTH SCIENCES MALL
MORTUARY HOUSE	1961	6393	NORTH WEST MARINE DRIVE
PLACE VANIER RESIDENCE - KOOTENAY HOUSE	1961	1935	LOWER MALL
POWER HOUSE - ADDITION 2	1961	2040	WEST MALL
POWER HOUSE - METER STATION	1961	2040	WEST MALL (SOUTH OF POWER HOUSE)
THEA KOERNER HOUSE	1961	6371	CRESCENT ROAD
ANIMAL SCIENCE - SMALL RUMINANT RESEARCH UNIT	1962	3473	WESBROOK MALL
CHEMISTRY BUILDING NORTH WING	1962	2036	MAIN MALL
FREDERIC LASSERRE BUILDING	1962	6333	MEMORIAL ROAD
NEVILLE SCARFE BUILDING - LECTURE BLOCK	1962	2125	MAIN MALL
SOUTH STAFF OFFICE BLOCK	1962	6298	BIOLOGICAL SCIENCES ROAD
ANIMAL SCIENCE - MAIN SHEEP UNIT	1963	3473	WESBROOK MALL
ANIMAL SCIENCE - SHEEP DIGESTIBILITY UNIT	1963	3473	WESBROOK MALL
CHEMISTRY BUILDING EAST WING	1963	2036	MAIN MALL
FREDERIC WOOD THEATRE	1963	6354	CRESCENT ROAD
MACLEOD BUILDING	1963	2356	MAIN MALL
PONDEROSA CENTRE	1963	2071	WEST MALL
RUGBY PAVILION	1963	2584	EAST MALL
TOTEM FIELD STUDIOS	1963	2613	WEST MALL
HEBB BUILDING	1964	2045	EAST MALL
PLANT SCIENCE GARAGE	1964	2613	WEST MALL
TOTEM PARK RESIDENCE - COQUIHALA COMMON B	1964	2525	WEST MALL
TOTEM PARK RESIDENCE - DENE HOUSE/NOOTKA H	1964	2525	WEST MALL
TOTEM PARK RESIDENCE - HAIDA HOUSE/SALISH H	1964	2525	WEST MALL
WOODWARD BIOMEDICAL LIBRARY	1964	2198	HEALTH SCIENCES MALL
HENRY ANGUS BUILDING	1965	2053	MAIN MALL
NEVILLE SCARFE BUILDING - CLASSROOM BLOCK	1965	2125	MAIN MALL
NEVILLE SCARFE BUILDING - OFFICE BLOCK	1965	2125	MAIN MALL
THUNDERBIRD WINTER SPORTS CENTRE	1965	6066	THUNDERBIRD BOULEVARD

HENNINGS BUILDING PENTHOUSE ADDITION	1966	6244 AGRICULTURAL ROAD
JOHN OWEN PAVILION AND ALLAN MCGAVIN SPOR	1966	3055 WEBBROOK MALL
ACADIA PARK - KEREMEOS COURT	1967	2702-2780 KEREMEOS COURT
ACADIA PARK - MELFA COURT	1967	2731-2795 MELFA COURT
ACADIA PARK - OYAMA COURT	1967	2702-2784 OYAMA COURT
ACADIA PARK - PRE-SCHOOL	1967	2750 ACADIA PARK LANE
ACADIA PARK - REVELSTOKE COURT	1967	2801-2875 REVELSTOKE COURT
ACADIA PARK - SALMO COURT	1967	2802-2882 SALMO COURT
D.H. COPP BUILDING ADDITION	1967	2146 HEALTH SCIENCES MALL
FRIEDMAN BUILDING ADDITION	1967	2177 WEBBROOK MALL
H. R. MACMILLAN BUILDING	1967	2357 MAIN MALL
J. B. MACDONALD BUILDING	1967	2199 WEBBROOK MALL
LOWER MALL HEADER HOUSE	1967	2269 LOWER MALL
MEDICAL SCIENCES BLOCK C ADDITION	1967	2176 HEALTH SCIENCES MALL
MUSIC BUILDING	1967	6361 MEMORIAL ROAD
THUNDERBIRD STADIUM	1967	6288 STADIUM ROAD
BUCHANAN BUILDING BLOCK B - DEANS OFFICE	1968	1866 MAIN MALL
DOROTHY SOMERSET STUDIO	1968	6354 CRESCENT ROAD
FISHERIES CENTRE - HUT B-8	1968	2204 MAIN MALL
FRANK FORWARD BUILDING	1968	6350 STORES ROAD
LADNER CLOCK TOWER	1968	1956 MAIN MALL
PLACE VANIER RESIDENCE - CARIBOO HOUSE	1968	1935 LOWER MALL
PLACE VANIER RESIDENCE - TWEEDSMUIR HOUSE	1968	1935 LOWER MALL
PLANT OPERATIONS NURSERY - GARDENER'S RESID	1968	6136 NURSERIES ROAD
PLANT OPERATIONS NURSERY - GREENHOUSE NO. 1	1968	6136 NURSERIES ROAD
PLANT OPERATIONS NURSERY - SOIL SHED	1968	6136 NURSERIES ROAD
STUDENT UNION BUILDING (SUB)	1968	6138 STUDENT UNION BOULEVARD
THE LEON AND THEA KOERNER UNIVERSITY CENTRE	1968	6331 CRESCENT ROAD
TOTEM PARK RESIDENCE - KWAKWITL HOUSE/SHUS	1968	2525 WEST MALL
ANIMAL SCIENCE - AQUACULTURE TEACHING & RE:	1969	3473 WEBBROOK MALL
AUDITORIUM ANNEX OFFICES A	1969	1924 WEST MALL
AUDITORIUM ANNEX OFFICES B	1969	1924 WEST MALL
CIVIL AND MECHANICAL ENGINEERING STRUCTURE	1969	2246 MAIN MALL
ENVIRONMENTAL SERVICES FACILITY - INCINERATI	1969	6025 NURSERIES ROAD
FISH AND GAME BRANCH WORKSHOPS	1969	5773 FISHERIES ROAD
GENERAL SERVICES ADMINISTRATION BUILDING	1969	2075 WEBBROOK MALL
THE LEONARD S. KLINCK BUILDING ADDITION	1969	6356 AGRICULTURAL ROAD
WEST MALL OFFICES	1969	1933 WEST MALL
BIOLOGICAL SCIENCES BUILDING - WEST WING	1970	6270 UNIVERSITY BOULEVARD
CARR HALL - CENTRE FOR CONTINUING STUDIES	1970	5997 IONA DRIVE

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FISH AND GAME BRANCH WORKSHOPS - BOAT STOF POWER HOUSE - ADDITION 3	1970	5773 FISHERIES ROAD
ROBERT F. OSBORNE CENTRE - UNIT I	1970	2040 WEST MALL
SHERWOOD BUILDING - PHYSIOLOGY RESEARCH	1970	6108 THUNDERBIRD BOULEVARD
WOODWARD BIOMEDICAL LIBRARY ADDITION	1970	3473 WEBBROOK MALL
DUKE HALL	1970	2198 HEALTH SCIENCES MALL
BOTANICAL GARDENS - GREENHOUSE AND WORKS	1971	5997 IONA DRIVE
BOTANICAL GARDENS - LUNCHROOM	1971	6088 SOUTH CAMPUS ROAD
CIVIL AND MECHANICAL ENGINEERING LABORATOI	1971	6088 SOUTH CAMPUS ROAD
EARTH AND OCEAN SCIENCES - MAIN	1971	2246 MAIN MALL
GEORGE CUNNINGHAM BUILDING ADDITION (PHARI	1971	6339 STORES ROAD
PONDEROSA OFFICE ANNEX A	1971	2146 EAST MALL
PONDEROSA OFFICE ANNEX B	1971	2011 WEST MALL
PONDEROSA OFFICE ANNEX C	1971	2029 WEST MALL
SOUTH CAMPUS SUBSTATION - SWITCHING STATION	1971	2021 WEST MALL
THEA KOERNER HOUSE ADDITION	1971	6075 NURSERIES ROAD
BUCHANAN TOWER	1972	6371 CRESCENT ROAD
INSTRUCTIONAL RESOURCE CENTRE	1972	1873 EAST MALL
JAMES MATHER BUILDING	1972	2194 HEALTH SCIENCES MALL
PONDEROSA OFFICE ANNEX D	1972	5804 FAIRVIEW AVENUE
PONDEROSA OFFICE ANNEX E	1972	2014 LOWER MALL
PONDEROSA OFFICE ANNEX F	1972	2034 LOWER MALL
ROBERT F. OSBORNE CENTRE - UNIT II	1972	2008 LOWER MALL
SEDGEWICK LIBRARY	1972	6108 THUNDERBIRD BOULEVARD
WALTER H. GAGE RESIDENCE - COMMON BLOCK	1972	1958 MAIN MALL
WALTER H. GAGE RESIDENCE - COURT	1972	5959 STUDENT UNION BOULEVARD
WALTER H. GAGE RESIDENCE - EAST TOWER	1972	5961 STUDENT UNION BOULEVARD
WALTER H. GAGE RESIDENCE - NORTH TOWER	1972	5959 STUDENT UNION BOULEVARD
WALTER H. GAGE RESIDENCE - SOUTH TOWER	1972	5959 STUDENT UNION BOULEVARD
ANIMAL SCIENCE - SHEEP BREEDING I	1973	5959 STUDENT UNION BOULEVARD
ANIMAL SCIENCE - SHEEP BREEDING II	1973	3473 WEBBROOK MALL
ENVIRONMENTAL SERVICES FACILITY - SOLVENT S	1973	3473 WEBBROOK MALL
MACMILLAN ANNEX B	1973	6025 NURSERIES ROAD
PONDEROSA ANNEX H	1973	6363 AGRONOMY ROAD
DAIRY CATTLE TEACHING AND RESEARCH UNIT	1974	2074 LOWER MALL
EARTH AND OCEAN SCIENCES - SOUTH	1974	3473 WEBBROOK MALL
MACMILLAN ANNEX C	1974	6339 STORES ROAD
MACMILLAN ANNEX D	1974	6367 AGRONOMY ROAD
MACMILLAN ANNEX E	1974	6365 AGRONOMY ROAD
MACMILLAN ANNEX F	1974	6361 AGRONOMY ROAD
	1974	6369 AGRONOMY ROAD

OLD FIRE HALL - TRAILER 1	1974	2038 WEST MALL
ANTHROPOLOGY AND SOCIOLOGY BUILDING	1975	6303 NORTH WEST MARINE DRIVE
ASIAN CENTRE	1975	1871 WEST MALL
JOHN OWEN PAVILION ANNEX	1975	3055 WEBBROOK MALL
MAIN SUBSTATION	1975	2446 HEALTH SCIENCES MALL
MUSEUM OF ANTHROPOLOGY	1975	6393 NORTH WEST MARINE DRIVE
OCEAN ENGINEERING CENTRE	1975	3760 WEBBROOK MALL
OLD FIRE HALL - TRAILER 2	1975	2038 WEST MALL
PLANT SCIENCE FIELD BUILDING	1975	6182 SOUTH CAMPUS ROAD
ANIMAL CARE CENTRE - ADMINISTRATION BUILDIN	1976	6199 SOUTH CAMPUS ROAD
ANIMAL CARE CENTRE - LARGE WILD MAMMALS - 2	1976	6199 SOUTH CAMPUS ROAD
ANIMAL CARE CENTRE - MEDIUM LAB ANIMAL BUI	1976	6199 SOUTH CAMPUS ROAD
ANIMAL CARE CENTRE - SMALL WILD MAMMALS - 2	1976	6199 SOUTH CAMPUS ROAD
BERWICK MEMORIAL CENTRE	1976	2765 OSOYOOS CRESCENT
BIOLOGICAL SCIENCES BUILDING - NORTH WING	1976	6270 UNIVERSITY BOULEVARD
BIOLOGICAL SCIENCES BUILDING - WORKSHOP	1976	6270 UNIVERSITY BOULEVARD
BOTANICAL GARDENS WORKSHOP (TRAILER)	1976	6450 STADIUM ROAD
CIVIL AND MECHANICAL ENGINEERING BUILDING	1976	2324 MAIN MALL
GEORGE F. CURTIS BUILDING ADDITION	1976	1822 EAST MALL
HENRY ANGUS BUILDING ADDITION	1976	2053 MAIN MALL
POWER HOUSE - OIL STORAGE FACILITY	1976	UNIVERSITY BOULEVARD (NORTH OF 6358)
AQUATIC CENTRE	1978	6121 UNIVERSITY BOULEVARD
INSTRUCTIONAL RESOURCE CENTRE LECTURE THE.	1978	2194 HEALTH SCIENCES MALL
BIOLOGICAL SCIENCES - PAPER RECYCLING/FLAMM	1979	6270 UNIVERSITY BOULEVARD
D.H. COPP BUILDING ADDITION 2	1979	2146 HEALTH SCIENCES MALL
LIBRARY PROCESSING CENTRE	1979	2206 EAST MALL
OLD FIRE HALL - TRAILER 3	1979	2038 WEST MALL
BIOLOGICAL SCIENCES BUILDING - WORKSHOP - AD	1980	6270 UNIVERSITY BOULEVARD
BOTANICAL GARDENS - WORKSHOP	1980	6088 SOUTH CAMPUS ROAD
FORESTRY FIELD HOUSE SOUTH CAMPUS	1980	6186 SOUTH CAMPUS ROAD
HEALTH SCIENCES PARKADE	1980	2250 HEALTH SCIENCES MALL
ANIMAL CARE CENTRE - RODENT BREEDING UNIT	1981	6199 SOUTH CAMPUS ROAD
BOTANICAL GARDEN - GARDEN PAVILION	1981	6804 SOUTH WEST MARINE DRIVE (ACCESS FROM)
COAL AND MINERAL PROCESSING LABORATORY	1981	2332 WEST MALL
PONDEROSA OFFICE ANNEX G	1981	2044 LOWER MALL
POULTRY SCIENCE - ADMINISTRATION AND LABOR,	1981	3455 WEBBROOK MALL
STUDENT UNION BUILDING (SUB) - ADDITION I	1981	6138 STUDENT UNION BOULEVARD
TOTEM FIELD STUDIOS ADDITION	1981	2613 WEST MALL
BOTANICAL GARDENS - GREENHOUSE	1982	6088 SOUTH CAMPUS ROAD
BOTANICAL GARDENS - SHADE HOUSE	1982	6088 SOUTH CAMPUS ROAD

BOTANY GREENHOUSE 1	1982	6182 SOUTH CAMPUS ROAD
BOTANY GREENHOUSE 2	1982	6182 SOUTH CAMPUS ROAD
FRASER RIVER PARKADE	1982	6440 MEMORIAL ROAD
SCHOOL OF FAMILY AND NUTRITIONAL SCIENCES B	1982	2205 EAST MALL
BOOKSTORE	1983	6200 UNIVERSITY BOULEVARD
DOUGLAS KENNY BUILDING	1983	2136 WEST MALL
EARTH AND OCEAN SCIENCES ANNEX	1983	2157 EAST MALL
MAIN SUBSTATION ADDITION	1983	2446 HEALTH SCIENCES MALL
NORMAN MACKENZIE HOUSE (PRESIDENT'S RESIDE	1983	6565 NORTH WEST MARINE DRIVE
WESBROOK ANNEX - ANIMAL CARE UNIT	1983	6174 UNIVERSITY BOULEVARD
STUDENT UNION BUILDING (SUB) - ADDITION 2	1984	6138 STUDENT UNION BOULEVARD
WALTER H. GAGE RESIDENCE - APARTMENTS	1984	5959 STUDENT UNION BOULEVARD
FAIRVIEW CRESCENT STUDENT HOUSING - PARKING	1985	2600-2804 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 1	1985	2706-2714 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 10	1985	2798-2804 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 11	1985	2757-2769 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 12	1985	2743-2755 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 13	1985	2729-2741 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 14	1985	2721-2727 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 15	1985	2711-2719 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 16	1985	2697-2709 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 17	1985	2689-2695 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 18	1985	2681-2687 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 19	1985	2673-2679 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 2	1985	2716-2722 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 20	1985	2665-2671 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 21	1985	2651-2663 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 22	1985	2643-2649A FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 23	1985	2629-2641 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 24	1985	2615-2627 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 25	1985	2601-2613 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 26	1985	2600-2612 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 27	1985	2614-2620 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 28	1985	2622-2634 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 29	1985	2636-2642 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 3	1985	2724-2734 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 30	1985	2644-2650 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 31	1985	2652-2664 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 32	1985	2666-2674 FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 33	1985	2676-2684 FAIRVIEW CRESCENT

FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 34	1985	2686-2696	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 35	1985	2698-2704	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 4	1985	2736-2748	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 5	1985	2750-2756	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 6	1985	2758-2764	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 7	1985	2766-2778	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 8	1985	2780-2786	FAIRVIEW CRESCENT
FAIRVIEW CRESCENT STUDENT HOUSING - UNIT 9	1985	2788-2796	FAIRVIEW CRESCENT
KIDS CLUB	1985	2855	ACADIA ROAD
POULTRY SCIENCE - QUAIL UNIT	1985	3455	WESBROOK MALL
BOTANICAL GARDENS SCHOLARS' RETREAT	1986	6380	STADIUM ROAD
ENVIRONMENTAL SERVICES FACILITY - CHEMICAL	1986	6025	NURSERIES ROAD
VANIER PUMP STATION	1986	1935	LOWER MALL
BIOMEDICAL RESEARCH CENTRE	1987	2222	HEALTH SCIENCES MALL
THE LEON AND THEA KOERNER UNIVERSITY CENTRE	1987	6331	CRESCENT ROAD
ACADIA FAMILY HOUSING PHASE II - UNIT 1	1988	2500-2510	MELFA LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 10	1988	5644-5654	YALTA PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 11	1988	2601-2609	PEARKES LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 12	1988	5621-5649	YALTA PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 13	1988	2601-03 / 5501-05 / 5601-19	YALTA PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 14	1988	2501-2517	MELFA LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 15	1988	5600-5620	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 16	1988	5622-5628	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 17	1988	2500 / 5630-5644	PEARKES LANE / MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 18	1988	2502-2508	PEARKES LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 19	1988	2501-2527	PEARKES LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 2	1988	2512-2518	MELFA LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 20	1988	5639-5643	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 21	1988	5631-5637	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 22	1988	5623-5629	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 23	1988	5615-5621	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 24	1988	5607-5613	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 25	1988	5509 / 5601-5605	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 26	1988	5501-5507	MONTGOMERY PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 3	1988	2520-2522	MELFA LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 4	1988	2600-2610	MELFA LANE
ACADIA FAMILY HOUSING PHASE II - UNIT 5	1988	5502-5508	YALTA PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 6	1988	5510-5606	YALTA PLACE
ACADIA FAMILY HOUSING PHASE II - UNIT 7	1988	5608-5618	YALTA PLACE

ACADIA FAMILY HOUSING PHASE II - UNIT 8	1988	2621-2635	TENNIS CRESCENT
ACADIA FAMILY HOUSING PHASE II - UNIT 9	1988	5636-5642	YALTA PLACE
CEME TRAILER	1988	2324	MAIN MALL (NORTH OF)
JOHN OWEN PAVILION AND ALLAN MCGAVIN SPORTS NORTH PARKADE	1988	3055	WESBROOK MALL
ACADIA COMMUNITY CENTRE	1988	6115	STUDENT UNION BOULEVARD
ACADIA FAMILY HOUSING PHASE III - UNIT 1	1989	2707	TENNIS CRESCENT
ACADIA FAMILY HOUSING PHASE III - UNIT 10	1989	2612-2618	MELFA LANE
ACADIA FAMILY HOUSING PHASE III - UNIT 2	1989	2657-2663	TENNIS CRESCENT
ACADIA FAMILY HOUSING PHASE III - UNIT 3	1989	2620-2626	MELFA LANE
ACADIA FAMILY HOUSING PHASE III - UNIT 4	1989	2628-2634	MELFA LANE
ACADIA FAMILY HOUSING PHASE III - UNIT 5	1989	2636-2642	MELFA LANE
ACADIA FAMILY HOUSING PHASE III - UNIT 6	1989	2605-2635	MELFA LANE
ACADIA FAMILY HOUSING PHASE III - UNIT 7	1989	2637-39 / 5501-05 , 5601-11	MELFA LANE / FAIRVIEW PLACE
ACADIA FAMILY HOUSING PHASE III - UNIT 8	1989	2622-2644	TENNIS CRESCENT
ACADIA FAMILY HOUSING PHASE III - UNIT 9	1989	2646-2664	TENNIS CRESCENT
AUDIOLOGY AND SPEECH SCIENCES TRAILER	1989	2637-2655	TENNIS CRESCENT
CHEMISTRY PHYSICS BUILDING	1989	5826	FAIRVIEW AVENUE
CHILD CARE SERVICES - BUILDING 1	1989	6221	UNIVERSITY BOULEVARD
CHILD CARE SERVICES - BUILDING 2	1989	5690	OSOYOOS CRESCENT
	1989	5660	OSOYOOS CRESCENT
	1989	5620	OSOYOOS CRESCENT
	1989	5590	OSOYOOS CRESCENT
	1989	5580	OSOYOOS CRESCENT
ENVIRONMENTAL SERVICES FACILITY - PCB EQUIPMENT	1989	6025	NURSERIES ROAD
GAS GUN FACILITY	1989	6301	STADIUM ROAD
MACMILLAN ANNEX A	1989	6371	AGRONOMY ROAD
BOTANICAL GARDEN CENTRE - CAMPBELL BUILDING	1990	6804	SOUTH WEST MARINE DRIVE
BOTANICAL GARDEN CENTRE - GATE HOUSE AND STORAGE	1990	6804	SOUTH WEST MARINE DRIVE
BOTANICAL GARDEN CENTRE - LOOKOUT TOWER	1990	6804	SOUTH WEST MARINE DRIVE
BOTANICAL GARDEN CENTRE - RECEPTION AND EDUCATION	1990	6804	SOUTH WEST MARINE DRIVE
CENTRE FOR RESEARCH IN WOMEN'S STUDIES & GALLERY	1990	1896	EAST MALL
CHILD CARE SERVICES ADMINISTRATION BUILDING	1990	2881	ACADIA ROAD
FERIC - FOREST ENGINEERING RESEARCH INSTITUTE	1990	2601	EAST MALL
FOREST SCIENCES GREENHOUSE	1990	6186	SOUTH CAMPUS ROAD
KOERNER GALLERY	1990	6393	NORTH WEST MARINE DRIVE
MACMILLAN TRAILERS I	1990	6359	AGRONOMY ROAD
MATH/STATS RESOURCE CENTRE	1990	6357	AGRICULTURAL ROAD
WOOD PRODUCTS LABORATORY	1990	2324	WEST MALL



ACADIA HOUSE - 2700	1991	2700 ACADIA ROAD
ACADIA HOUSE - 2710	1991	2710 ACADIA ROAD
ACADIA HOUSE - 2720	1991	2720 ACADIA ROAD
FACULTY OF LAW - ANNEX 1	1991	6050 MILITARY ROAD
NETWORKS OF CENTRES OF EXCELLENCE	1991	2125 EAST MALL
PLANT SCIENCE FIELD STATION	1991	2613 WEST MALL
RESEARCH STATION ANNEX VIII	1991	6660 NORTH WEST MARINE DRIVE
SOPRON HOUSE	1991	2730 ACADIA ROAD
99 CHAIRS/TREK EXPRESS	1992	2015 MAIN MALL
CONTINUING STUDIES IN DAVID LAM MANAGEMENT	1992	6326 AGRICULTURAL ROAD
DAVID LAM MANAGEMENT RESEARCH CENTRE	1992	2033 MAIN MALL
ENGINEERING HIGH HEAD ROOM LABORATORY	1992	2225 EAST MALL
FACULTY OF LAW - ANNEX 2	1992	6020 MILITARY ROAD
JACK BELL BUILDING FOR THE SCHOOL OF SOCIAL '1	1992	2080 WEST MALL
PLANT OPERATIONS EXTERIOR STORAGE SHED	1992	2214 LOWER MALL
RITSUMEIKAN HOUSE	1992	6460 AGRONOMY ROAD
UNIVERSITY SERVICES BUILDING	1992	2329 WEST MALL
WEST PARKADE	1992	2140 LOWER MALL
BROCK HALL - EAST WING	1993	1874 EAST MALL
CENTRE FOR INTEGRATED COMPUTER SYSTEMS RE	1993	2366 MAIN MALL
ENVIRONMENTAL SERVICES FACILITY - OFFICE	1993	6025 NURSERIES ROAD
FIRST NATIONS LONGHOUSE	1993	1985 WEST MALL
INSTITUTE FOR COMPUTING, INFORMATION AND GC	1993	2366 MAIN MALL
POINT GREY APARTMENTS (OSOYOS HOUSING)	1993	2875 OSOYOS CRESCENT
SPIRIT PARK APARTMENTS - 2705	1993	2705 OSOYOS CRESCENT
SPIRIT PARK APARTMENTS - 2715	1993	2715 OSOYOS CRESCENT
SPIRIT PARK APARTMENTS - 2725	1993	2725 OSOYOS CRESCENT
BIOLOGICAL SCIENCES BUILDING - WORKSHOP - AD	1994	6270 UNIVERSITY BOULEVARD
ENVIRONMENTAL SERVICES FACILITY - SOLVENT &	1994	6025 NURSERIES ROAD
GREEN COLLEGE - ADMINISTRATION -BUILDING F	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - BUILDING A NORTH	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - BUILDING A SOUTH	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - BUILDING B EAST	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - BUILDING E	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - KITCHEN	1994	6201 CECIL GREEN PARK ROAD
GREEN COLLEGE - PRINCIPAL'S RESIDENCE - BUILDI	1994	6205 CECIL GREEN PARK ROAD
ROSE GARDEN PARKADE	1994	6278 NORTH WEST MARINE DRIVE
SOUTH CAMPUS TELECOMMUNICATION HUB SITE	1994	3425 WEBBROOK MALL
MORRIS AND HELEN BELKIN ART GALLERY	1995	1825 MAIN MALL
NEVILLE SCARFE BUILDING - LIBRARY	1995	2125 MAIN MALL

STUDENT RECREATION CENTRE	1995	6000 STUDENT UNION BOULEVARD
THE BRIMACOMBE BUILDING	1995	2355 EAST MALL
THUNDERBIRD RESIDENCE - BUILDING A1	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING A2	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING A3	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING A4	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING B1	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING B2	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING B2 STORE	1995	6315 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING B3	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING B4	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING C1	1995	6335 THUNDERBIRD CRESCENT
THUNDERBIRD RESIDENCE - BUILDING C2	1995	6335 THUNDERBIRD CRESCENT
C. K. CHOI BUILDING FOR THE INSTITUTE OF ASIAN I	1996	1855 WEST MALL
NEVILLE SCARFE BUILDING - TEACHER EDUCATION	1996	2125 MAIN MALL
SERVICE AND INFORMATION KIOSK: DAVID LAM SITI	1996	
SERVICE AND INFORMATION KIOSK: MACMILLAN SITI	1996	
WALTER C. KOERNER LIBRARY	1996	1958 MAIN MALL
CENTRE FOR CONTINUING STUDIES	1997	2121 WEST MALL
CHAN CENTRE FOR THE PERFORMING ARTS	1997	6265 CRESCENT ROAD
SING TAO BUILDING	1997	6388 CRESCENT ROAD
ST. JOHN'S COLLEGE PHASE I	1997	2111 LOWER MALL
ST. JOHN'S COLLEGE PHASE I	1997	2111 LOWER MALL
UBC TENNIS CENTRE	1997	6160 THUNDERBIRD BOULEVARD
FOREST SCIENCES CENTRE	1998	2424 MAIN MALL
ST. JOHN'S COLLEGE PHASE II & III	1998	6620 NORTH WEST MARINE DRIVE
LABOR HUT - SOUTH CAMPUS	Pre-1999	6120 NURSERIES ROAD
LOWER MALL GREENHOUSE I	Pre-1999	6660 NORTH WEST MARINE DRIVE
LOWER MALL GREENHOUSE II	Pre-1999	6660 NORTH WEST MARINE DRIVE
LOWER MALL GREENHOUSE IV	Pre-1999	6660 NORTH WEST MARINE DRIVE
LOWER MALL GREENHOUSE VII	Pre-1999	6660 NORTH WEST MARINE DRIVE
PLANT OPERATIONS NURSERY	Pre-1999	6116 NURSERIES ROAD
REFUSE COMPACTON SITE	Pre-1999	6055 NURSERIES ROAD
RESEARCH STATION ANNEX III	Pre-1999	6660 NORTH WEST MARINE DRIVE
RESEARCH STATION ANNEX IX	Pre-1999	2249 LOWER MALL
RESEARCH STATION ANNEX VI	Pre-1999	6660 NORTH WEST MARINE DRIVE
BOTANICAL GARDENS - GREENHOUSE, ALPINE GARDEN		6804 SOUTH WEST MARINE DRIVE (ACCESS FROM)
BOTANY TRAILER UNIT		6182 SOUTH CAMPUS ROAD
PLAYING FIELDS		

Appendix 6 - Tenant list of tenant owned facilities

<u>BUILDING NAME</u>	<u>YEAR</u>	<u>ADDRESS</u>	<u>Comment</u>	<u>Contact Person</u>
DONALD RIX BUILDING	2000	2389 HEALTH SCIENCES MALL	Non-UBC-Multi-Tenant Facility	Discovery Park
GERALD McGAVIN BUILDING	1995	2386 EAST MALL	Non-UBC	Discovery Park
TEF 3	2003		Non-UBC	Discovery Park
ACADIA PARK HIGHRISE	1967	2725 MELFA ROAD	Non-UBC	
AMBULANCE STATION	1991	2333 WEBBROOK MALL	Non-UBC	
FORINTEK WESTERN RESEARCH FACILITY	1990	2665 EAST MALL	Non-UBC	
ISAC - ISOTOPE SEPARATOR ACCELERATOR (TRIUMF)	1998	4004 WEBBROOK MALL	Non-UBC	
PAPRICAN BUILDING	1985	3800 WEBBROOK MALL	Non-UBC	
PUBLIC SAFETY BUILDING	1982	2992 WEBBROOK MALL	Non-UBC	
ST. ANDREW'S HALL - CHAPEL	1958	6040 IONA DRIVE	Non-UBC	
ST. ANDREW'S HALL - LOUNGE	1958	6040 IONA DRIVE	Non-UBC	
ST. ANDREW'S HALL - MANSON HOUSE	1958	6040 IONA DRIVE	Non-UBC	
ST. ANDREW'S HALL RESIDENCE - BLOCK A - ROSS HOUSE & MCLEAN BLOCK	1996	6040 IONA DRIVE	Non-UBC	
ST. ANDREW'S HALL RESIDENCE - BLOCK B - WALKER HOUSE	1996	6040 IONA DRIVE	Non-UBC	
ST. ANDREW'S HALL RESIDENCE - BLOCK C - LENNOX HOUSE	1996	6040 IONA DRIVE	Non-UBC	
ST. MARKS COLLEGE	1958	5935 IONA DRIVE	Non-UBC	
ST. MARK'S COLLEGE CHAPEL	1997	5935 IONA DRIVE	Non-UBC	
TRIUMF - ACCELERATOR AND EXPERIMENTAL BUILDING		4004 WEBBROOK MALL	Non-UBC	
TRIUMF - OFFICES, LABORATORY & WORKSHOPS		4004 WEBBROOK MALL	Non-UBC	
TRIUMF - WORKSHOP BUILDING		4004 WEBBROOK MALL	Non-UBC	
TRIUMF HOUSE	1983	4004 WEBBROOK MALL	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - CHANCELLOR BUILDING	1974	5745 AGRONOMY ROAD	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - CHANCELLOR BUILDING - ADDITION 1	1977	6030 CHANCELLOR BOULEVARD	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - CHANCELLOR BUILDING - ADDITION 2	1963	6030 CHANCELLOR BOULEVARD	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - CHANCELLOR BUILDING - CHAPEL OF EPIPHANY	1989	6030 CHANCELLOR BOULEVARD	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - COLUMBIAN HOUSE	1963	6030 CHANCELLOR BOULEVARD	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - IONA BUILDING	1960	6020 IONA DRIVE	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - PRINCIPAL'S RESIDENCE	1929	6000 IONA DRIVE	Non-UBC	
VANCOUVER SCHOOL OF THEOLOGY - STAFF RESIDENCE	1960	6010 IONA DRIVE	Non-UBC	
CAREY HALL - LOUNGE BLOCK	1959	6006/6010 CHANCELLOR BOULEVARD	Non-UBC	
CAREY HALL ADDITION	1985	5920 IONA DRIVE	Non-UBC	
B.C RESEARCH INC	1969	5920 IONA DRIVE	Non-UBC	
NRC INSTITUTE FOR MACHINERY RESEARCH	1995	3650 WEBBROOK MALL	Non-UBC but will revert to UBC	
ACUTE CARE UNIT PATIENT PARK		3250 EAST MALL	Non-UBC	

**Appendix 7 - Tenants leasing space in facilities owned by UBC**

BUILDING NAME	YEAR	ADDRESS	Ownership UBC share	Comment	Contact Person	On meter reader, Tenant list
PULP AND PAPER CENTRE	1985	2385 EAST MALL	100% UBC	w/ Non-Institutional Agency	Paprica	leased space/other UBC acad dept.
DETWILLER PAVILION 1	1968	2255 WESBROOK MALL	13% UBC/Non-UBC	Shared		Pulp and Paper Detwiler
DETWILLER PAVILION 2	1969	2255 WESBROOK MALL	86% UBC/Non-UBC	Shared		
PURDY PAVILION	1977	2221 WESBROOK MALL	5% UBC/Non-UBC	Shared		
KOERNER PAVILION	1980	2211 WESBROOK MALL	100% UBC			Acute Care - Extended Care

## Appendix 8 - Core and Ancillary Buildings built after 1999

<u>BUILDING NAME</u>	<u>YEAR</u>	<u>ADDRESS</u>	<u>OWNER</u>	<u>CONTACT</u>	<u>NB</u>
BIOTECHNOLOGY LABORATORY Earthquake engineering facility	2004				
HAWTHORN	2003	6388 corner thunderbird blvd and west mall	Housing - UBC Properties Trust	Janet Goulet - Property Mgr.	Tenants are billed individually
HAWTHORN	2003	6385 corner thunderbird blvd and west mall	Housing - UBC Properties Trust	Janet Goulet - Property Mgr.	Tenants are billed individually
HAWTHORN	2003	6395 corner thunderbird blvd and west mall	Housing - UBC Properties Trust	Janet Goulet - Property Mgr.	Tenants are billed individually
VANTER KOREA HOUSE	2002	1935 LOWER MALL			
CIVIL AND MECHANICAL ENGINEERING ANNEX TRAILER	2002	2345 EAST MALL			
LIU CENTRE FOR THE STUDY OF GLOBAL ISSUES	2000	6476 NORTH WEST MARINE DRIVE			

Appendix 9 Fleet Appendix

Plate	Unit	Company	Contact	Count	Final	Remarks	Class	Year	Year	Make/Make	GVN
736 C/JH	AGS1	AgriGen Sciences		2-331		Michelle, call me back	7	0	2007	Ford Focus 4DRSW	1166
8471EC	AGS10	Bay Busch					170	0	85	John Deere Tractor	3010
5079PF	AGS12	Bay Busch					7	0	89	NISSAN ZVADR Pickup	2003
DC7P82	AGS13	Bay Busch					7	0	94	FORD Explorer 4DRSW	1722
W82248	AGS14	Bay Busch					7	0	88	FORD Explorer 4DRSW	1728
32121C	AGS15	Bay Busch					7	0	2000	CHEV ZVADR Pickup	1728
5079PF	AGS16	Bay Busch					7	0	2000	CHEV ZVADR Pickup	1728
5079PF	AGS17	Bay Busch					7	0	2000	CHEV ZVADR Pickup	1728
EM4290	AGS18	Bay Busch					11	0	92	DOODGE ZVADR Pickup	1580
AT1885	AGS25	Bay Busch					7	0	91	DOODGE CRVAN 4DRSW	1471
8264PF	AGS27	Sherman Yeo		2-6782			101	0	88	FORD Lariat Pickup	9400
15864F	AGS28	Bay Busch					7	0	89	CHEV ZVADR Van	4200
5079PF	AGS29	Bay Busch		2-321			100	0	90	KUBOTA Tractor	900
5079PF	AGS29	Bay Busch		2-321			7	0	85	CHEV S10 Pickup	1500
2755PF	ALEX1	Alex Fraser Research Forest		(520) 332-2207		To contact, Chelsey Peterson Supply Mgmt 604-922-2557, Christine Desjard 2-6915, Linda Hill 2-6838	7	0	96	TOYOTA Tacoma PU	2500
2470FX	ALEX2	Dawn Lewis					7	0	93	TOYOTA Tacoma PU	3000
5281FR	ALEX3	Dawn Lewis					7	0	93	TOYOTA Tacoma PU	3000
6955VF	ALEX4	Dawn Lewis					7	0	94	TOYOTA Tacoma 4DRSW	2500
692559	ALEX5	Dawn Lewis					892	0	2000	1991LT Utility Trailer	1882
716359	ALEX6	Dawn Lewis					892	0	2000	1991LT Utility Trailer	1882
659690	ANCA1	Dobson Cook					13	0	97	CHEV 4DRSW	1178
26573N	ANCA5	Dobson Cook					7	0	84	FORD Escort 4DRSW	1058
300384	ANTH1	Palacia Omstead/Research 2-5402		2-6864			13	0	2002	Chevrolet Express Cargo	3111
WVAK59	ANTH2	Palacia Omstead/Research 2-5402		2-6867			403	0	2002	Chevrolet Express Van	5413
300384	ANTH3	Palacia Omstead/Research 2-5402		2-6867			510	0	96	EZ LOADER Boat Trailer	1708
300384	ANTH4	Palacia Omstead/Research 2-5402		2-6867			7	0	93	CHEV Suburban 4DRSW	2268
300384	ANTH5	Palacia Omstead/Research 2-5402		2-6867			7	0	92	ABLE Utility Trailer	700
300384	ANTH6	Palacia Omstead/Research 2-5402		2-6867			13	0	83	Chevrolet ZVADR PU	2800
64547X	ATHL1	Joe Patten		2-5419		joepatten@ubc.ca	671	0	85	THOMAS Bus	7812
65337X	ATHL2	Joe Patten		2-9113		joepatten@ubc.ca	671	0	87	THOMAS Bus	4200
65337X	ATHL3	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL4	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL5	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL6	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL7	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL8	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL9	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL10	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL11	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL12	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL13	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL14	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL15	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL16	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL17	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL18	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL19	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL20	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL21	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL22	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL23	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL24	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL25	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL26	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL27	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL28	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL29	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL30	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL31	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL32	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL33	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL34	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL35	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL36	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL37	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL38	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL39	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL40	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL41	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL42	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL43	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL44	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL45	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL46	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL47	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL48	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL49	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL50	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL51	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL52	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL53	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL54	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
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65337X	ATHL56	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL57	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL58	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL59	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL60	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL61	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL62	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL63	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL64	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL65	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL66	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL67	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL68	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL69	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL70	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL71	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL72	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL73	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL74	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL75	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL76	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL77	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL78	Joe Patten		2-9113		joepatten@ubc.ca	671	0	89	THOMAS Bus	4200
65337X	ATHL79	Joe Patten		2-							

AX521	FSC22	June Li	2-1185	1784	59716
1599FA	FSC22	June Li	2-1185	1784	59716
1599FA	FSC24	June Li	2-1185	3001	00001
58837L	GE03	Samy Lespy	2-8530	3900	AS266
58837L	GE03	Samy Lespy	2-8530	1731	37515
300052	GE03	Samy Lespy	2-8530	700	02887
5786FF	GE03	Samy Lespy	2-8530	3801	00000
0081GL	GE04	Samy Lespy	2-8530	2015	00000
581302	GE06	Samy Lespy	2-8530	2015	00000
64897J	GE07	Samy Lespy	2-8530	2000	00000
0001JH	GE08	Samy Lespy	2-8530	2000	00000
1028EL	GE08	Samy Lespy	2-8530	2000	00000
3010D1	HANV1	Gerard Kasaban	604-963-8148	1781	00118
3483TX	HANV2	Gerard Kasaban	604-963-8148	2402	11328
3483TX	HANV4	Gerard Kasaban	604-963-8148	1782	AS100
328804	HANV5	Gerard Kasaban	604-963-8148	2706	03852
3483TX	HANV6	Gerard Kasaban	604-963-8148	700	3020
3483TX	HANV7	Gerard Kasaban	604-963-8148	2800	00000
3483TX	HANV8	Gerard Kasaban	604-963-8148	2900	00000
3483TX	HANV9	Gerard Kasaban	604-963-8148	1794	00000
5837FW	HANV10	Gerard Kasaban	604-963-8148	1794	00000
1382WJ	HSE01	Richard Henkelman	2-8706	2402	11328
2144PX	HSE02	Richard Henkelman	2-8706	2706	03852
2689PX	HSE03	Richard Henkelman	2-8706	700	3020
1577GJ	HSE04	Richard Henkelman	2-8706	2800	00000
1577GJ	HSE05	Richard Henkelman	2-8706	2900	00000
3309FF	HSE06	Richard Henkelman	2-8706	1794	00000
3309FF	HSE08	Richard Henkelman	2-8706	1794	00000
3309FF	HSE10	Richard Henkelman	2-8706	1794	00000
3309FF	HSE11	Richard Henkelman	2-8706	1794	00000
10150G	HSE15	Richard Henkelman	2-8706	1794	00000
56782G	HSE16	Richard Henkelman	2-8706	1794	00000
10160G	HSE17	Richard Henkelman	2-8706	1794	00000
9909PW	HSE19	Richard Henkelman	2-8706	1794	00000
FB0134	HSE20	Richard Henkelman	2-8706	1794	00000
0171AW	HSE21	Richard Henkelman	2-8706	1794	00000
0171AW	HSE22	Richard Henkelman	2-8706	1794	00000
0171AW	HSE23	Richard Henkelman	2-8706	1794	00000
0040CY	HSE25	Richard Henkelman	2-8706	1794	00000
9284YJ	HSE26	Richard Henkelman	2-8706	1794	00000
9284YJ	HSE27	Richard Henkelman	2-8706	1794	00000
1338AA	HSE28	Richard Henkelman	2-8706	1794	00000
9300EE	HSE30	Richard Henkelman	2-8706	1794	00000
9300EE	HSE32	Richard Henkelman	2-8706	1794	00000
9300EE	HSE33	Richard Henkelman	2-8706	1794	00000
9300EE	HSE34	Richard Henkelman	2-8706	1794	00000
1338YV	IRE1	Lesley Stephenson	2-1492	2000	00000
1338YV	IRE2	Lesley Stephenson	2-1492	2000	00000
3309YF	IRE3	Lesley Stephenson	2-1492	2000	00000
3309YF	IRE4	Lesley Stephenson	2-1492	2000	00000
5884PP	IRE5	Lesley Stephenson	2-1492	2000	00000
7045YJ	IRE6	Lesley Stephenson	2-1492	2000	00000
1162AK	MAL2	John Howe	2-8533	2000	00000
1162AK	MAL3	John Howe	2-8533	2000	00000
1162AK	MAL4	John Howe	2-8533	2000	00000
1162AK	MAL5	John Howe	2-8533	2000	00000
3348E1	MAL6	John Howe	2-8533	2000	00000
5830ZF	MEC11	Jan Morrison, Supervisor Admin	2-3738	2000	00000
3888EL	MEC16	Jan Morrison	2-3738	2000	00000
42ALB1	MAP1	Mary Ghemsel	2-8217	2000	00000
2475Y1	MAP2	Frank Schmeider	2-3987	2000	00000
1152AK	NTWK1	Marilyn Hay	2-4137	2000	00000
2478PX	NTWK2	Shan Sim	2-4517	2000	00000
GS9542	NTWK3	Marilyn Hay	2-4127	2000	00000
FF9538	NTWK4	Marilyn Hay	2-4127	2000	00000
47A45B	NTWK5	Alpine Coyne	2-6851	2000	00000
47A45B	NTWK6	Alpine Coyne	2-6851	2000	00000
5885YJ	ONS2	Alpine Coyne	2-6851	2000	00000
5885YJ	ONS3	Alpine Coyne	2-6851	2000	00000
30621B	ONS4	Marcus Labadie	2-8584	2000	00000
3262T1	OPH1	Marcus Labadie	2-8587	2000	00000
45602A	OYS16	Barbara Arden Occupational and Environmental Hygiene	250-523-4219-22	2000	00000
9629PW	P1006	Mike Lake - Plant Ops Garage	2-8622	2000	00000
9629PW	P1014	Mike Lake	2-8622	2000	00000
X1547D	P1015	Mike Lake	2-8622	2000	00000
1507ZF	P1017	Mike Lake	2-8622	2000	00000
1508XF	P1018	Mike Lake	2-8622	2000	00000
1508XF	P1019	Mike Lake	2-8622	2000	00000
1512WJ	P1020	Mike Lake	2-8622	2000	00000
6303AA	P1021	Mike Lake	2-8622	2000	00000
6303AA	P1022	Mike Lake	2-8622	2000	00000
6303AA	P1023	Mike Lake	2-8622	2000	00000
6665FN	P1024	Mike Lake	2-8622	2000	00000
6665FN	P1025	Mike Lake	2-8622	2000	00000
6665FN	P1026	Mike Lake	2-8622	2000	00000
6665FN	P1027	Mike Lake	2-8622	2000	00000
6665FN	P1028	Mike Lake	2-8622	2000	00000







Appendix 10 - UBC Property Trust list of properties under

<b>Master Project List - July 14-03</b>					
<b>PROJECTS</b>	<b>COMMENTS</b>	<b>Demolition</b>	<b>Construction</b>	<b>Completion</b>	<b>Roadways Affected</b>
<b>INSTITUTIONAL</b>					
Michael Smith	82,600 sq. ft. 4 storey biotech lab fronting onto East Mall and Biosciences Road. work requires structural upgrading of Bookstore and SLAT on East Mall and Biosciences Road		Feb-03	Jun-04	East Mall/Biosciences Road
Chem-Bio and CERFC	115,000 sq. ft. high head lab and 6 storey component fronting onto East Mall/Health Sciences Mall and Health Sciences parkade		Dec-03	Jun-05	Health Sciences Mall, East Mall, Laneway beside Health Sciences Parkade
Macleod II (ECE)	88,000 sq. ft. 4 storey infill building fronting onto Main Mall located between McLeod building and the lowrise portion of CEMÉ on Main Mall		Jun-03	Nov-04	Main Mall, Biosciences Road
IKB Learning Centre (Main Library)	195,000 sq. ft. of demolition and new construction and 46,500 sq. ft. of renovations to existing heritage building	Apr-03	Jan-04	Dec-05	East Mall
ICICS addition	123,000 sq. ft. to be added to the east of the existing CICS building and a new Lecture Theatre to be located across from Engineering Road	Mar-03	May-03	Jul-04	Main Mall, Agronomy, Engineering Road
Aquatics (AERL)	43,000 sq. ft. fronting Main Mall and access road leading to Biosciences Road	Oct-03	Dec-03	Dec-04	Main Mall, Biosciences Road
Museum of Anthropology (MOA)	6,700 sq. ft. fronting East Mall and laneway to the north of Health Sciences	Apr-03	Apr-04	Dec-05	SW Marine Drive
Earthquake	Parkade		May-02	Jun-03	East Mall
Life Sciences	556,000 sq. ft. of new 5 storey construction fronting on Health Sciences Mall, Wesbrook and Agronomy Road		Sep-02	Mar-05	Health Sciences Mall, Agronomy Road, Wesbrook Mall
Multi User Facility for Functional Proteomics (MUFFP)	6,300 square feet fronting on Health Sciences Mall		Nov-03	Aug-04	Health Sciences Mall
Dentistry	60,000 square feet on 3 stories fronting onto Wesbrook/University Boulevard intersection				
Food Sciences	500,000 square feet				
<b>ROADWORKS/SITE SERVICING PROJECTS</b>					
Chancellor Gate	Various roadworks and utility upgrades at Theology, Wesbrook, Military, Iona		Jan-03	Jul-03	Marine Drive/Wesbrook
Wesbrook Mall utility upgrades	Installation of storm sewer and gas mains along Wesbrook Mall at 16th		Jun-03	Aug-03	Wesbrook/SW Marine
Wesbrook/Agronomy intersection re-configuration			n/a	n/a	Wesbrook/Agronomy
Wesbrook/University Boulevard re-configuration and utility relocation			Jun-03	Aug-03	Wesbrook/University Boulevard
Temporary Parking South Campus	Temporary gravel parking lot for 1000 stalls and 40 stall impound facility		Jun-03	Aug-03	Marine Drive/Wesbrook
Temporary Parking East Campus	Temporary gravel parking lot. Will add additional 84 spots for a total of 153 stalls. Also includes relocation of JM Trailer to North end of parking lot.	Jun-03	Jun-03	Aug-03	Wesbrook
Gate 8 roundabout fountain upgrades	Installation of water feature at Gate 8 roundabout		Jun-03	Aug-03	SW Marine Drive
Main Mall landscape upgrading			Jun-03	Aug-03	SW Marine Drive
Life Sciences off-site works	Installation of site services for Life Sciences Centre		Jun-03	Aug-03	n/a
Dump Site	Removal of existing spoil materials from south campus site. Site to be used for excavation materials from various sites		Jun-03	Aug-03	Wesbrook/16th
<b>FACULTY/STAFF/STUDENT/EMPLOYEE/FRATERNITY HOUSING</b>					
Phase III of F&S	Guesthouse for visiting scientists. 35 rooms, 17,563 sq. ft. in total.		May-03	Jun-04	West Mall/SW Marine Drive
Triumph House	Residential building meant to house sorority members and accommodate their meetings. 72 rooms, 33,565 sq. ft. in total.		Sep-03	Apr-04	Wesbrook Mall
Sororities	7 stand-alone residential structures. Total sq. ft. n/a. total # of rooms n/a		Aug-03	Jul-04	Wesbrook Mall
Fraternities			Jun-02	Jun-03	n/a
<b>MARKET HOUSING</b>					
Polygon - mid campus	18-storey residential structure. 95 units, 49,659 sq. ft. in total		Aug-03	Dec-04	West Mall
Ledingham Mcalister - mid campus	28, 3-storey townhomes. 53,000 sq. ft. in total		Aug-03	Jun-04	West Mall
Intracorp - VST	49 apartment units, 6 duplexes. 65,000 sq. ft. in total.		Aug-03	Aug-04	Chancellor Blvd.
Former Co-housing Site			Aug-03	Jun-04	West Mall
<b>COMMERCIAL</b>					
South Campus Retail centre	Proposed 5 acre, 55,000 sq. foot shopping centre with underground parking			Apr-04	SW Marine Drive/Wesbrook
<b>UBC UTILITIES/PLANT OPS PROJECTS/CAPITAL PROJECTS</b>					
Agronomy Road Upgrade			2003		Agronomy Road
West Mall					West Mall
University Boulevard - U-Pass Project			Aug-03		University Boulevard
Main Mall Upgrade (University Boulevard to Agriculture Road)			2003		Main Mall
Main Mall Upgrade (Memorial Road to Crescent Road)			2004		Main Mall
Memorial Road Upgrade			2004		Memorial Road
Lower Mall Upgrade (University Boulevard to Memorial Road)			2004		UBC Food Court

**Meter Route  
September 2003**

<b>Cust #</b>	<b>UBC Meter # / Key</b>	<b>Customer Name and Location</b>	<b>Date</b>	<b>High / KWHs</b>	<b>Low / Demand / Incorrected Volume</b>
120 steam	MEI	Totem Park – Food Services SN#97380567			
120 gas		Totem Park – Food Services SN#94250723; in the same room as elec		00 ft <sup>3</sup>	
120 elec	50461-1173 MEI	Totem Park – Food Services SN# 10333462; 2 <sup>nd</sup> from right <b>119 – 120 – 406</b>			
119 steam	MEI	Totem Park Residence (Kwakiutl) SN#97300969; mech. Room #19			
119 elec	MEI	Totem Park Residence SN#9578514; Kwakiutl Room #18; all the way to the back <b>119 – 120 – 406</b>			
406 elec	50461-1160 MEI	Ritsumeikan Residence SN#2414505; Kwakiutl Room #18, 2 <sup>nd</sup> cabinet on the wall <b>119 – 120 – 406</b>			
406 steam	MEI	Ritsumeikan Residence SN#97431393; mech. Room #121, back of bldg.			
318 elec	1132 AE-1	St. John's SN#10453393; in centre of South room			
318 gas		St. John's (Kitchen) SN#97-5639951; east side of Bldg, facing West Parkade		00 ft <sup>3</sup>	
329 gas		St. John's Residence SN#96-430569; cut across courtyard		00 ft <sup>3</sup>	
229 elec	132 X2B	West Parkade SN#9992624; dial meter; level 2 <b>213 – 229</b>			No Demand
213 elec	132 X2B	West Parkade SN#9464791; digital meter, left from dr <b>213 – 229</b>			
315 elec	E149-333 AE-1	Continuing Education SN#10477514; bsmt room #A120			
315 steam	X2V	Continuing Education Room #A121			
456 gas		Korea House		ft <sup>3</sup>	
141	50461-	Place Vanier Dining Room –			

**Meter Route  
September 2003**

elec	1174	Common Block (right) SN#10333491 <b>141 – 142</b>			
141 steam		Place Vanier Dining Room – Common Block (Gordonshrum) SN#96201850; bsmt by elec room; go down the back stairway			
141 gas		Place Vanier Dining Room SN#95-423678		$\frac{00}{\text{ft}^3}$	
142 elec	50461- 1175 MEI	Place Vanier Residences SN# 10349862 <b>141 – 142</b> (left) Front desk: Rhonda			
142 steam	9R5 / H	Place Vanier Residence (Okanagan) SN#97081363 ; mech. Room #9			
332 steam	17R5 or 8R5 / H	Place Vanier Residence (Kootenay)			
331 steam	17R5 / H	Place Vanier Residence (Tweedsmuir) Room #17			
219 elec	1106  E	First Nations Long House SN#10100452; Room #124. Subtract from Fraser River Parkade Meter. <b>116 – 219</b>			
116 elec	50461- 1168 AE-1	Fraser River Parkade SN#10333492; level 1 elec rm <b>116 – 219</b>			
812 elec		Faculty Club (for previous non- billable record) Digital Meter			
340 elec		Peter Wall Institute for Advanced Studies (=University Center)			
341 elec	X2A	University Center (to Food Services) Lasserre Electrical Room; dig		MWH	KWD
341 steam	X2A	University Center (to Food Services)		lbs	
341 gas		University Center (to Food Services)		$\frac{00}{\text{ft}^3}$	
226 elec	X2A	Rose Garden Parkade Lasserre elec Room #10; digital <b>226 – 230</b>			
230 elec	E	Rose Garden Parkade Street Light SN#2039709; top level on 5 <sup>th</sup> floor <b>226 – 230</b>			No demand
221 elec	H , E	Green College SN#PA-9807A376-06			
228 elec		Green College Principal's Residence SN#2877159; check-in with office:			No demand

**Meter Route  
September 2003**

	H	Seymour to call the house before entering; office close at 4p.m. <b>Billed every 3 months</b>			
221 steam		Green College			
177 elec	50461 – 1162	St. Mark's College SN#2434162			
317 gas		St. Mark's Chapel SN#97-153737		$\frac{00}{ft^3}$	
317 elec	E149 – 1125	St. Mark's Chapel SN#10482025; meter in St. Marks College			
102 elec	1107  H	VST Anglican College SN#10116313; (down) in same (Chancellor) bldg <b>102 – 104 – 181</b>			
102 steam	H	VST Chancellor Bldg SN#97311437; bsmt mech. Room#31			
102 gas		VST Anglican College SN#EM-576220		$m^3$	
264 elec	50461- 1161	St. Andrew's Residence SN#2596765; in elec room access from outside; bldg 817 at SE corner			
264 gas		St. Andrew's Residence SN#95283203		$\frac{00}{ft^3}$	
111 steam	P4-7	St. Andrew's			
180 elec	E149- 1107 H	VST Columbian House SN#9978695			
180 steam	H	VST Columbian House Bsmt. mech. Room			
182 elec	314	VST Principal's Residence SN#2065572; meter in vault behind Iona Bldg – <b>read by electricians</b>			No demand
182 gas		VST Principal's Residence SN#93-1963344; in cabinet besides the front door entrance		$\frac{00}{ft^3}$	
168 elec	50461- 1170 H	VST Union College SN#10348825			
168 steam	H	VST Union College SN#97300970; mech. room bsmt			
103 gas		Carey Hall SN#102002		$\frac{00}{m^3}$	
103	735	Carey Hall			

**Meter Route  
September 2003**

elec	Weisel E14103+ Schlage 74774 C	SN#3584632; contact: Felicity 103 – <b>184</b>			
184 elec	242	Carey Hall outside lighting SN#1123551; <b>103 – 184</b>			No demand
187 elec	50461- 1169 X2B	North Parkade SN#10333451			
302 elec	50461- 1164 ME2	Gage Residences SN#2330149; in room off parking stall #58			
302 steam	H	Gage Residence Up the loading dock; RHS.			
191 elec	1102 E	Trekkers SN#9464699; room #32			
191 gas		Trekkers SN#91-450329		$\frac{00}{\text{ft}^3}$	
250 elec	790	Student Union Bldg SN#4041089; cabinet in room next to transformer, RHS; room is next to the Deli. Close cabinet door gently			
106 elec	749	Bank of Montreal SN#3685675			
107 elec	751	The Deli SN#3445556			No demand
105 elec	748	The Thunderbird Shop SN#3692806			No demand
236 elec	E149-807 X2X/AE-1	Aquatic Centre SN#5283112			
236 steam	X2X AE-1	Aquatic Centre Meter on wall inside mech. room near door off loading area			
240 steam	12G-8	Empire Pool Down the stairs, meter unit on inside wall in mech. room next to 99 bus- stop; last door.			
263 elec		Student Recreation Centre SN#10337755; level 1			
263 steam		Student Recreation Centre SN#97380570; mech. room			
237 elec	197  X2X/F	War Memorial Gym SN#2442736; at the very back of the room; turn around			
237 steam		War Memorial Gym Meter on wall to the right of water			

**Meter Route  
September 2003**

	X2F	Pro-read			
401 elec	823 AE-1	Bookstore SN#1199021; the middle one			
178 elec	E149-742 X2B	HSCH Parkade SN#3692939; street level <b>113 – 178</b>			
112 elec	50461- 1108 16M337B +X2B	Acute Care Unit (Koerner Pavillion) SN#10306763 Access at Plant Office at Penthouse Room #P105. Take elevator #5.			
112 steam	16M337B	Acute Care Unit (Koerner Pavillion) in Penthouse			
114 elec	50461- 1110 16M337B	Psychiatry (Detwiller Pavilion) SN#10306765; Room G958			
114 steam	16M337B	Psychiatry (Detwiller Pavilion)			
113 steam	16M337B	E.C.U. (Long Term Care=Purdy Pavilion) Room #G501			
113 elec	50461- 01109- 110 X2B	Extended Care Unit (Long Term Care =Purdy Pavilion) SN#10306764 <b>113 – 178</b>			
241 steam		TEF 1:Multi Tenant Facility (McGavin) Rooftop, leftmost door.			
241 elec	313	TEF 1:Multi Tenant Facility SN#10350072; in penthouse			
241 gas		TEF 1:Multi Tenant Facility (McGavin) SN#69053496/95 (9736637011) north side by entrance. Room #G69001. <b>Two decimal places.</b>		00  ft <sup>3</sup>	
342 gas		Technology Enterprise Facility 2 Donald Rix Building		m <sup>3</sup>	Uncorr. m <sup>3</sup>
342 elec	?	Technology Enterprise Facility 2: M1 Donald Rix Building – Main Dig; Room #			
342 elec	?	Technology Enterprise Facility 2: M2 Donald Rix Building – House Dig; Room #			
190 elec	438	Barn Coffee Shop SN#3455541; in kitchen			
333 elec	AE-1	Forest Science Centre: Bread Garden SN#PA 9807A381-06; main floor room 1405 SE corner; Room 1505; access from Room 1501 or 1702			

**Meter Route  
September 2003**

233 gas		Thunderbird "A" – 1000 SN#69053330/94; 2000 block; gas is on east side. <b>Meter has 1 decimal point.</b>			m <sup>3</sup>
233 elec	1116  H	Thunderbird "A" SN#10351816; go right, open up cabinet on wall; in the room by car entrance to parkade			
234 elec	1117  H	Thunderbird "B" SN#10351817; in parkade, room #4006			
234 gas		Thunderbird "B" North – 2000 SN#884563; UBC# G.780.02; <b>meter has decimal point.</b>			m <sup>3</sup>
149 gas		BC Ambulance Station SN#EG 93667; need mirror			$\frac{00}{ft^3}$
314 elec	1131  E	Tennis Bubble SN#10439631			
314 gas		Tennis Bubble (N/W Corner of Bldg) SN#96-528432 (4 digits)			$\frac{00}{ft^3}$
410 elec	50461- 01192	Tennis Courts at Winter Sports SN#2916443 <b>238 – 410</b>			No demand
238 elec	768 X2F , E	Winter Sports Centre SN#2821453 <b>238 – 410</b>			
238 gas		Winter Sports Centre SN#2821453			$\frac{00}{ft^3}$
169 gas		Acadia Park SN#1163-X-29752B <b>169 – 126 – 157 – 156 – 159</b>		Corr.	$\frac{00}{ft^3}$ Uncorr.
150 elec	831  MEI	Fairview Crescent SN#2261479; in parkade by stall #146			
153 elec	50461- 1166	Acadia South SN#10348804; Yalta block 5638- 5640			
152 elec	50461- 1172	Acadia North SN#10356643; Montgomery Place 5617-5619			
143 elec	E149- 1141	Melfa Lane 2637-2639; lower counter, digital meter, one digit (decimal). In the same room as next two meters. <b>143 – 156 – 159 (– 157)</b>			
156 elec	E149-814	Tillicum Child Care SN#6877675; left, on wall			



**Meter Route  
September 2003**

		<b>143 – 156 – 159 (– 157)</b>			
156 gas		Tillicum Child Care SN#89-213139 ; left next to gate <b>169 – 126 – 157 – 156 – 159</b>		<u>00</u> ft <sup>3</sup>	
159 gas		Child Study Centre (= UBC Childcare Services) SN#89-480299; go left & follow fence to small path besides the office <b>169 – 126 – 157 – 156 – 159</b>		<u>00</u> ft <sup>3</sup>	No uncorr.
159 elec	50461- 1156 H	Child Study Center SN#2541979; meter in Melfa Court elec room <b>143 – 156 – 159 (– 157)</b>			
157 elec	1098 H	Prince Rupert Child Care SN#3455178 <b>143 – 156 – 159 (– 157)</b>			No demand
157 gas		Prince Rupert Child Care <b>Do not enter 00</b> SN#88696; hidden in a bush straight ahead <b>169 – 126 – 157 – 156 – 159</b>		<u>00</u> ft <sup>3</sup>	
elec	T	Mystery meter in Melfa Lane SN#5090469			No demand
126 elec	1101	Faculty Housing (Sopron House) Digital			
126 gas		Faculty Housing SN#91T114987; go right & take the path, meter is to the left <b>169 – 126 – 157 – 156 – 159</b>		<u>00</u> ft <sup>3</sup>	
334 elec	50461- 1148 MEI	Acadia Highrise E-comm Facility SN#50461-1148; SN#11273848 <i>Contact front desk: Greg</i>			
231 elec	800 16A54	Keremeous Court SN#2414407			
223 elec	H	Spirit Park Apartments SN#10147361			
223 gas	50461- 10053	Spirit Park Apartments			
222 elec	H	Point Grey Apartments SN#10147360			
222 gas	50461- 10054	Point Grey Apartments			
115 elec	50461- 1171	Firehall = Public Safety Building SN#10326574; downstairs in room 12 located in larger training room			
115 gas		Firehall SN#95-257297; alternative SN#19408326; meter on NE side		<u>000</u> ft <sup>3</sup>	Uncorr.

**Meter Route  
September 2003**

125 elec		Forintec SN#2525791; <i>contact: Keith Hicks or Al Matsalla</i>			
125 gas		Forintec SN#959019; alternative SN#LR59221		<u>000</u> ft <sup>3</sup>	Uncorr. <u>00</u>
262 elec	405	T-Bird Stadium SN#2916447; electrical room access from field level. Room is on north end.			
210 elec	E149- 1124	NRC SN#10391324 [pass is in top drawer]			
210 gas		NRC SN#9455536842		<u>00</u> ft <sup>3</sup>	
323 elec	332 Comm Room #4 bunch	Telecommunication Hub (sign out security card & Abloy key at Restel for access). Poultry Science entrance in shed. SN#2617054 (=Quail Hut) IT Services : Gary/Dean 2-6141/2-2074 Parking & Security: 2-2222			No demand
900 elec	H	Plant Science SN#4978576			
129 elec	447	BC Research Inc. SN#3685352; Room 1049; contact: Mafari; (on the wall, RHS) <b>129- 199</b>			
129 gas		BC Research Inc. SN#887209; south of library		ft <sup>3</sup>	Uncorr.
140 gas		Ocean Engineering SN#95-5536952; meter on North side Two meter devices connected together		ft <sup>3</sup>	Uncorr. <u>00</u> ft <sup>3</sup>
109 elec		Discovery Parks Inc. (Paprican) SN#2417926; <i>Receptionist: Alison Maintenance: Howie</i>			
109 gas		Discovery Parks Inc. (Paprican) SN#DE-0934-G09-EZ1; two meter devices connected together		ft <sup>3</sup>	Uncorr. <u>00</u> ft <sup>3</sup>
202 gas		TRIUMF Office Block T3648185; outside the compound, next to office block, besides the water remote		<u>00</u> ft <sup>3</sup>	
gas		Triumf Meson Hall SN#78-233320		ft <sup>3</sup>	
gas		Triumf Isac Experimental Hall SN# ? ; not billed yet		ft <sup>3</sup>	
203		TRIUMF Accelerator		<u>000</u>	Uncorr. <u>00</u>

**Meter Route  
September 2003**

gas		SN#96-55089; two meter devices connected together			ft <sup>3</sup>	ft <sup>3</sup>
elec		TRIUMF #1 SN#4300128; transformer 1 Accelerator Bldg floor B2 <i>Triumf Control Room #: 2-7333</i>				
elec		TRIUMF #2 SN#4300129; transformer 2 Accelerator Bldg flr. B2. Store: Jerry				
elec	832 X2A+Blue Abloy	SUB Station SN#2387493				
411 elec	50461- 01189 X2A	Logan Field Lighting Kiosk SN# 0537348 <i>Manager: John Hellen</i> <i>Ph: 862-5672</i>				
413 elec		Temporary Construction meter at Fraternity Village site by Berwick				
414 elec		Life Sciences Construction site Temporary Construction Power #3 electrical shed				
457 elec		TEF III				
936 gas		TEF III				
937 elec		Michael Smith Construction Site				
938 elec		Michael Smith Construction Trailers				

\* **Electrical meters: ALWAYS read the BLACK needle.**

\* **Gas: DO NOT enter 00**

**NON-BILLABLE - ELECTRICAL METERS  
SEPTEMBER 2003**

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>Reading</i>	<i>Demand</i>
		<b>SOUTH WEST QUADRANT</b>			
911	540 ME1 + H	Totem Primary: MTR# 424 SN# 3119611			
912	540 ME1 + H	Totem Men's: MTR# 425 SN# 2916028			
913	540 ME1 + H	Totem Women's: MTR# 427 SN# 3114578			
932	353 X2V	Forest Sciences Center T1: main elec room T1 MTR#1129 SN# 10428629			
933	353 X2V	Forest Sciences Center T2: main elec room T2 MTR#1130 SN# 10428630			
850	386 X2A + E	MacMillan: digital MTR# 762 SN# 3826800			
897	562	Forward: MTR# 446 SN# 3458962			
847	184 X2A + E	Coal & Mineral: thru MR room104 MTR# 826 SN# 6875173			
843	402 X2A + AE-1	Geological Sciences Building: MTR# 780 SN# 3944550 843 - 845			
845	406 X2A + AE-1	Geophysics & Astronomy: MTR# 445 SN# 3685401 843 - 845			
108	X2A	Agriculture Canada MTR# SN#3068525			
800	641 X2A + E	University Services Building: MTR# 1105 SN# 9464700			
	647 X2V + AE-1	Plant Science Greenhouse: MTR# 1128 SN# 10311008			
839	232 E	Scarfe: MTR# 1110 SN# 10317910			

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	E	Scarfe: digital 3710 ACM Clear password: 0		KWH -- F = (fn)	KWD
841	732 X2F + E	Kenny: room1205 MTR# 827 SN# 7676477 841 - 842			

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>Reading</i>	<i>Demand</i>
		<b>NORTH WEST QUADRANT</b>			
842	192 X2F + E	Ponderosa Cafeteria: MTR# SN# 9463974 841 - 842			0 W
917	865	Ponderosa Annex 'A-F': MTR# 793 SN# 4041091			
904	750	School of Social Work: Digital MTR		MWH	KWD
838	724	Steam Plant Main Bus: MTR# 1122 SN# 10391322			
840	724	Steam Plant Booster Pump: MTR# 1123 SN# 10391323			
824	308	Computer Science 'A': MTR# 821 SN# 1638049			
825	308	Computer Science 'B': MTR# 760 SN# 3698334			
835	NW	Lam Research: MTR# 1104 SN# 9464701 835 - 836			
836	023	Henry Angus: MTR# 745 SN# 3691478 835 - 836			
899	017 T	Old Admin Building: MTR# SN# 4664022			
820	045 AE-1	Auditorium Annex: MTR# 770 SN# 3831778			
822	518	Math: MTR# 400 SN# 2823310 822 - 823			
823	401 X2A +	Geography: MTR# 804 SN# 4978600			

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	E	822 - 823			
802	046	Asian Centre Master: room 220 MTR# 795 SN# 4675621			
803	046	Asian Centre: room 220 MTR# 815 SN# 6875101			
916	478 AE-1	CK Choi: MTR# 1120 SN# 10311009			
914	004	School of Journalism: MTR# SN# 10472119			
915	028 X2A + AE-1	Lasserre Main Bus: Digital MTR, actual meter in Lasserre elec room		MWH	KWD
813	028 X2A + AE-1	Lasserre Building: Digital MTR, meter in Lasserre elec room 811 - 812 - 813 - 814 - 815 - 816 - 226		MWH	KWD
815	575 X2A + AE-1	Music: Digital MTR, meter in Lasserre elec room 811 - 812 - 813 - 814 - 815 - 816 - 226		MWH	KWD
811	376 X2A + AE-1	Freddy Wood: Digital MTR, meter in Lasserre elec room 811 - 812 - 813 - 814 - 815 - 816 - 226		MWH	KWD
814	121 X2A + AE-1	Buchanan West: Digital MTR, meter in Lasserre elec room		MWH	KWD
?	? X2A	Liu Centre: Digital MTR			
243	472 X2A	International House: Digital MTR (in Liu Centre)			
242	408 AE-1	Graduate Student Centre: Digital MTR SN# 2823304			
	130 X2V + E	Chan Centre: MTR# 1126 SN# 10413226			
	130 X2V + E	Chan Centre: MTR# 1127 SN# 10413227			
898	570	Museum of Anthropology: room 107 bsmt MTR# 799 SN# 4975524			

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807	048 AE-1	Anthropology / Sociology :bsmt elec room MTR# 796 SN# 4685161 807 - 808 - 892			
892	421	Cecil Green: Room 8 bsmt MTR# 813 SN# 6477115 807 - 808 - 892			

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>Reading</i>	<i>Demand</i>
<b>NORTH EAST QUADRANT</b>					
808	614	Mary Bollert: room 17B SN# 1118665 807 - 808 - 892			
829	480	Curtis Law: bsmt o/s access MTR# 798 SN# 4380604 829 - 832			
832	120	Buchanan East: meter in Curtis Law bsmt elec room MTR# 394 SN# 2821274 829 - 832			
828	121	Buchanan Tower: meter in tower C bmst room 4 MTR# 789 SN# 4040191			
830	112 T	Brock Hall Old: room 169 bsmt MTR# 435 SN# 3453941			
918	113 F	Brock Hall Student Service: MTR# 1118 SN# 10383123			
826	516 X2F	Main Library: Map Library bsmt room 160 MTR# SN# 826 - 827			
827	516 X2F	Clock Tower: annex bsmt room 106 MTR# 756 SN# 3696036 826 - 827			
886	132	Chemistry: bsmt o/s access, <b>digital</b> MTR# 587 SN# 2725004(?)			
887	447	Chem / Physics: bsmt room A045 SN# 8971822			0 W
831	656	Hebb: bsmt room 9h <b>digital</b> MTR# 448 SN# 3685402			
		Hennings			

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	F + E + AE-1	MTR#	SN#			
921	790	Sub Bowling Alley: bsmt MTR# 552 SN# 3457879				
922	790	Sub dist 3 Sub Food Services: bsmt MTR# 754 SN# 3693206				
929	872 ME-2	Walter Gage Food Service: parking underground MTR# 50461-1165 SN# 1309307				
856	018	GSAB: bsmt MTR# 755 SN# 3695633				
923	428	War Memorial Secondary: MTR# 329 SN# 1881029				
924	428	War Memorial Secondary: MTR# 328 SN# 1880926				

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>Reading</i>	<i>Demand</i>
<b>SOUTH EAST QUADRANT</b>					
905	864 X2B + E	Wesbrook: bsmt MTR# 757 SN# 3696106			
859	625	Cunningham Pharoomacy: bsmt Room 77 MTR# 783 SN# 4036261			
860	513 X2F + E	Library Processing Ctr: bsmt Room 27 MTR# 809 SN# 5880842			
895	523 X2B	Medical A-C: room1012 bsmt MTR# 402 SN# 2916012			
896	525 E	Medical B: main floor, room 16 MTR# 443 SN# 3453940			
855	198	MacDonald Dentistry: Medical B Bldg			



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		MTR# 444 SN# 3453966			
585	473 X2B + E	IRC Woodward: room 31 bsmt MTR# 429 SN# 3337329			
121	461	Biomedical Research - Terry Fox: MTR# 419 SN# 3115464			
902	747 X2F / E	Pulp & Paper: roof level room 402 MTR# SN# 2194387			
930	020 E	Ampel Substation: bsmt 6DI Digital MTR 3720ACM		KWH*IM= (fn)	KW*MX= (gp1)
931	020 E	Ampel Substation: bsmt 2D1 Digital MTR 3720ACM		KWH*IM= (fn)	KW*MX= (gp1)
919	165 X2F / E	CICSCR: Digital MTR			MWH KW
862	312 X2F / E	MacLeod: bsmt, digital MTR# 806 SN# 5583255			
893	306 X2A + AE-1	Civil / Mech Complex: bsmt stairwell MTR# 805 SN# 5282616 844 - 863 - 893 - 894			
863	304	Chemical Eng: Room 30 MTR# 404 SN# 2823303 844 - 863 - 893 - 894			
844	307 X2F	Civil / Mech Hut: bsmt o/s MTR# 787 SN# 4037676 844 - 863 - 893 - 894			
920	383	Hut B8: room 113D MTR# 761 SN# 3698589			
861	449 AE-1	Family Nutrition Home Econ: room 11 bsmt MTR# 825 SN# 7678651			
313	081 AE-1	NCE: bookstore elec room MTR# 824 SN# 1495048			
212	081 AE-1	Oceanography: MTR# 432 SN# 3447642 (bookstore elec room)			
865	064	Bio Science Old: near room 111 & 1000 MTR# SN# 3828571			
179		B Lot Lighting - MH 122:			

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		MTR# 1005 SN# 8566120 (read by electricians)			
	blue Abloy IU-12	Logan Field Unit Sub-station MTR# SN# 50461-01188, left panel			

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>Reading</i>	<i>Demand</i>
		<b>GARDENS: SW MARINE</b>			
867	094 S1- 307	Botanical Garden (Kiosk Shed): MTR# SN# 8972451 867 - 868			
868	098 corbin	Botanical Garden Office: room 102 MTR# SN# 2653835 867 - 868			
868 gas		Botanical Garden: SN# 89-21345		m <sup>3</sup>	
		<b>FIELDS (BETWEEN THUNDERBIRD BOULEVARD &amp; WEST 16<sup>TH</sup> AVE</b>			
255	430 T + E	Osborne I: room 204 MTR# 771 SN# 3828390			
256	430 X2A + AE-1	Osborne II: o/s access MTR# 792 SN# 4045257			
gas		Osborne 1:		00 ft <sup>3</sup>	
256 gas		Osborne 2: SN# 2960007		00 ft <sup>3</sup>	
		<b>RESIDENCE &amp; HOUSING EAST WESBROOK MALL</b>			
876	524	Mather: room 102 main floor MTR# 808 SN# 5881183			
875	858	Berwick BCMRI: room 76 main floor, maintenance: Paul MTR# 781 SN# 3946599			
		<b>SOUTH CAMPUS (SOUTH WEST 16TH AVE)</b>			

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927	383 misc 35C (H)	Fisheries S. Campus: o/s MTR# 416 SN# 3113703			
928	383 misc 35C (H)	Fisheries S. Campus: o/s MTR# 246 SN# 1122985			
849	679 corbin	Poultry Science S. Campus: o/x shed MTR# 816 SN# 6877671			
890	032 X2F	Dairy Cattle: main floor MTR# 744 SN# 3693965			
925	793	Swine Unit, Sherwood Bldg S. Campus: o/s, Derrick MTR# 779 SN# 3966405			
903	090	Rhododendrum Gardens: o/s bldg MTR# 758 SN# 3695766			
884	027 IU-12	Animal Care: o/s shed MTR# 801 SN# 4685964			
204	854 H	Triumpf Office: Lab block main floor room 38, Robin MTR# 769 SN# 3831785			
926	142 H	Incinerator: Don MTR# 763 SN# 3827247			

<i>Cust #</i>	<i>Bldg No. / Keys</i>	<i>Location Name</i>	<i>Date</i>	<i>High Reading</i>	<i>Low Reading</i>
		<b>NORTH WEST QUADRANT</b>			
916 steam	478 AE-1	C.K. Choi: mech room 159 SN# 96361928		lbs	
916 water	478	C.K. Choi:		m <sup>3</sup>	
steam	X2A	Liu Centre:		lbs	
water	X2A	Liu Centre:		m <sup>3</sup>	m <sup>3</sup>
		<b>NORTH EAST QUADRANT</b>			
250		Student Union Building:		000	

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gas		SN# R-10543		ft <sup>3</sup>	
		<b>SOUTH EAST QUADRANT</b>			
121 steam	461	Biomedical Research - Terry Fox: Tom. temp receptionist: Shawna		lbs	
260 gas		Rugby Pavillion		ft <sup>3</sup>	
		<b>SOUTH WEST QUADRANT</b>			
932 steam	353	Forestry Sciences: room 0332 or thru door at bsmt of stairwell		lbs	
932 gas	353 X2V	Forestry Sciences: SN# 97-107249		00 ft <sup>3</sup>	
932 water	353 X2V	Forestry Sciences: (Domestic) room 0332 or thru door at bsmt stairwell		m <sup>3</sup>	
932 water	353 X2V	Forestry Sciences: (irrigation) room 0332 or thru door at bsmt stairwell		----- m <sup>3</sup>	
891 gas	378	Food Science Building: Manager: Sheroman		m <sup>3</sup>	
800 steam	641	University Services Building:		lbs	
800 water	641	University Services Building:		m <sup>3</sup>	m <sup>3</sup>
800 gas	641	University Services Building:		X 1000 ft <sup>3</sup>	
108 steam	X2A	Agriculture Canada Master: room 125		lbs	
339 steam	X2A	Agriculture Canada subsidiary Room 125		lbs	
108 gas		Agriculture Canada: lower one SN# 87-412373		m <sup>3</sup>	
343 gas		Agriculture Annex (Research Station); higher one SN# 97-750947		m <sup>3</sup>	
108 water		Agriculture Canada			

Number of electrical meters: 103  
 Number of steam meters: 5  
 Number of gas meters: 6  
 Number of water meters: 5  
 Total: 119

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\*Electrical meter #910 Applied Conservation Biology taken off the list - unable to locate.

\*Electrical meter #891 Food Science - disconnected (not in service). Last reading pegged at 5334 KWH (Since ? – 3/13/2001).

