LTABC Guide to
BASELINE INVENTORIES

LTA The Land Trust Alliance of British Columbia

www.landtrustalliance.bc.ca

helping to protect, steward and restore our natural and cultural diversity

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- ACKNOWLEDGEMENTS -

This Guide to Baseline Inventories is intended to direct the reader to appropriate methods for completing baseline inventories dependent on their needs and the long-term management, use or conservation of the land. It has been written not as a stand-alone technical manual, but rather as a guide to provide a "minimum" inventory methodology and to direct the user to existing protocols and samples with additional resources relative to the varying sizes, uses and purposes of the inventory. This guide is provided as a printed document and as a CD with references and additional protocols included.

The primary author, Ryan Durand, has worked with the Land Trust Alliance of British Columbia, (LTABC) providing baseline inventories and workshops for its member land trusts for several years. Previously, he worked with staff at The Nature Conservancy of Canada and the Habitat Acquisition Trust on an ecological Baseline Inventory Protocol.

The Land Trust Alliance of British Columbia provides education, research and services that support land trusts, conservancies and other agencies, organizations and individuals dedicated to the stewardship & conservation of our natural and cultural heritage. Additional assistance and editing of this guide was provided by Sheila Harrington, of the Land Trust Alliance of BC and reviews were generously provided by Nick Stanger and Nuala Murphy of the TLC The Land Conservancy of BC, Lynda Fyfe of the Comox Valley Land Trust and Eileen Palmer of the LTABC.

The Land Trust Alliance, its member land trusts, associate organizations, businesses and individual supporters are dedicated to the stewardship and conservation of British Columbia's natural and cultural heritage. Land Trusts steward, restore and protect significant ecological, recreational, and cultural sites, including sustainable working landscapes.

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- INTRODUCTION TO THE GUIDE -

The Guide to Baseline Inventories was created by The Land Trust Alliance of British Columbia (LTABC) in order to provide a comprehensive set of recommendations for completing baseline inventories, and to develop a standard for BC land trusts that is both appropriate for the legal enforcement of conservation covenants and applicable to specific types of management on conservation lands owned outright.

The guide contains five sections. Additional resources relevant for most sections can be found on the accompanying CD. The guide contents are organized as follows:

- **Section 1 - *The Baseline Inventory Process*** - this is a brief introduction to the process, outlining all the steps required to produce a baseline inventory report.

- **Section 2 - *The Baseline Inventory Report*** - structured in the same format as a baseline inventory report, this section describes the essential information that every report should include, as well as optional sections related to specific conservation covenant restrictions. It also indicates the necessary information to register the property with the BC Lands in Trust Registry[1].

- **Section 3 - *Land Title Office Summary*** - a description of the appropriate format of summary documents that need to be included with the covenant for registry at the Land Title Office.

- **Section 4 - *Data Storage and Archiving*** - a summary of best practices for the long-term storage and archiving of baseline inventory data (such as reports, photos, digital data, maps, etc.).

- **Section 5 - *Resources, Templates and Protocols*** - useful resources such as sample baselines, protocols, map resources and more.

[1] The *BC Lands in Trust Registry* records and provides statistics on all conservation covenants and properties owned by land trusts in BC. The Registry is the public website version of the custom land trust database, the Protected Lands Catalogue. Information on the Public Registry is selective – only information which is not private or location specific - is shown. The complete database has both a public and land trust section, which records data on the locations, protected or special features on the site, landowner contact information, and other pertinent data.

- THE BASELINE INVENTORY PROCESS -

> *"Baseline information…provides the benchmark against which to measure changes in the land and its features. It is essential to the monitoring process. Baseline information makes it easier for both present and future landowners to comply with the terms of the covenant."*
>
> *Hillyer & Atkins, 2005*[2]

To ensure that a comprehensive baseline inventory report is created, the following process is recommended:

1. Contact landowner (and if relevant, Land Trust representatives) to discuss access and participation.
2. Define the objectives of the inventory.
3. Determine how the inventory will facilitate future monitoring.
4. Compile existing background information and maps of the property.
5. Determine the time of year in which to do the inventory.
6. Determine mapping and survey needs/methods.
7. Create or modify field data forms.
8. Gather equipment and supplies.
9. Create a safety plan.
10. Conduct field work.
11. Create the report, maps and Land Title Office summary.
12. Review and revise until approved by all parties.
13. Submit final copies to the landowner and land trusts as relevant.
14. Submit LTO summary to Land Title Office with the covenant.
15. Label and archive the data.

1. Defining Inventory Objectives

It is essential to clearly define the objectives of the baseline inventory to ensure that the appropriate information is collected. Defining the objectives will ensure that the inventory is suitable to the nature of the property, the conservation goals and the covenant restrictions and in some cases, the rights, which must be monitored over time.

To define inventory objectives, consider the owner's long-term vision for the property, the objectives for protecting it, possible covenant restrictions and methods to measure monitoring and compliance over time. Once this is established, you can use the basic baseline inventory report structure and other resources in this guide to ensure that you are collecting the appropriate information while doing field work.

[2] Hillyer, A. & J. Atkins. 2005. *Greening Your Title; A Guide To Best Practices For Conservation Covenants.* Second Edition. West Coast Environmental Law.

2. Consider Monitoring Needs

When planning the baseline inventory it is important to first consider how it will best facilitate future monitoring. As the baseline is the document that future monitoring is measured against, it is essential that it contain the necessary information in a format that can be compared to future reports. To do this, it is advisable that the specific covenant restrictions be examined and clearly outlined in terms of:

1. how to measure compliance over time;
2. what information is required; and
3. what format will be conducive for future comparisons?

For some baseline reports, a simple set of descriptions, photographs and maps of the specific area is sufficient. However, due to certain restrictions or management objectives, it may be necessary to collect data in a format that can be quantified and, thus compared against similar data in future. Therefore, the inventory method may need to be repeatable.

For example, if a covenant restriction allows for a specific type and quantity of tree removal from the covenant area, then the baseline inventory must contain a detailed inventory of the forest cover (such as a timber cruise or other applicable forest inventory method). Such an inventory must be conducted using standardized methods so it can be accurately repeated in the future.

Another important consideration for future monitoring is to determine what areas are the most likely to be disturbed. For example, if a covenant is adjacent to a residential zone**,** then it is likely that the boundary between the two areas is more at risk of disturbance than other areas. Therefore, a relevant approach might be to take additional photos along the boundary and to limit photos in the remainder of the area to those of representative and important features.

3. Background Information

The next stage in the process is to collect background information including maps, reports, rare-species lists and any other information that pertains to the property and general area. This information is essential to complete the baseline inventory and to learn what is in the area before going into the field.

Some types of background information that may be useful include:

- *Cadastral maps.* Cadastral maps show all lot boundaries and are useful for determining the legal boundaries of the property and adjoining properties. They are available from municipalities and regional districts.

- *Legal plan and description.* Legal plans are the legal survey maps of the property. They typically show the type and location of boundary markers and the distance and azimuth or bearing between boundary markers. They are

available from municipalities and regional districts. Legal descriptions include Parcel Identifiers (PID) and various combinations of Lot, Plan, Sections and District. Legal descriptions should be provided by landowners, but are also available from title searches and local government offices.

- *Topographic maps*. Topographic maps show the elevation contours of the property. They are usually only available at large scales (1:250,000 is the standard coverage for the entire province, although other scales are available) and may not be accurate for smaller properties. Many types and formats are available both in hard copy and digital (such as provincial TRIM coverage) formats. The BC Base Mapping and Geomatic Services online store[3] is the provincial outlet from which to obtain these maps.

- *Geology and soil maps.* Geology and soil maps illustrate various types of surficial and bedrock geology and soil classifications. They are generally large scale provincial maps that are often available free from the provincial and federal government.

- *Rare species and ecosystem maps*. The BC Conservation Data Centre (CDC)[4] maintains records of known occurrences of rare and threatened species and ecosystems. Queries can be done online to determine which species and ecosystems are known to occur within a given area (normally defined by Forest Districts). Limited occurrence location data are available via an online mapping service. Specific occurrence data may be requested from the CDC, but confidentially of sensitive information will be an issue.

- *Sensitive Ecosystem Inventory (SEI) maps*. SEI mapping has been done on limited areas of the province to identify rare and fragile areas. Maps are available from the Ministry of Environment[5] and other local governments such as the Islands Trust.

- *Biogeoclimatic Ecosystem Classification (BEC)[6] and forest cover maps*. These maps cover the entire province. They describe the large forest ecosystems of BC and, in conjunction with regional handbooks, can be used to identify the predicted climatic ecosystem of a given area. These maps can be used to easily identify the BEC for a given area (such as CDFmm02).

- *Air photos*. Air photos are available for most if not all of BC at various scales and dates. Air photos are one of the most useful resources for determining the

[3]The Base Mapping and Geomatic Services online store is run by the Integrated Land Management Bureau and can be accessed at: http://ilmbwww.gov.bc.ca/bmgs/ecommerce-intro.html

[4] The BC Conservation Data Centre can be accessed at: http://www.env.gov.bc.ca/cdc/

[5] Sensitive Inventory Mapping data can be found at: http://www.env.gov.bc.ca/sei/index.html

[6] BEC information can be obtained from the Ministry of Forests and Range at: http://www.for.gov.bc.ca/hre/becweb/

features of a given property. If possible, try to obtain digital orthophotos, as these photographs have already been ortho-corrected to remove distortion that occurs on the edge of air photos. Air photos can be ordered from the Base Mapping and Geomatic Services online store and various private sources. Free online services such as Google Maps Canada[7] may be able to provide you with surprisingly accurate and recent images. Other sources include the various local government online mapping sources such as the Capital Regional District's Natural Areas Atlas[8].

- *Archaeological and historic data.* The Archaeological Branch[9] of the BC Ministry of Tourism, Sports and the Arts maintains records of all known archaeological sites in the province. While these records are far from complete, they are a useful source. Additional historic information may be obtained from local museums, adjacent landowners and First Nations.

- *Pervious studies and reports.* Many properties have had previous studies, or are within a larger study area. There is no one source for these types of data, but possible sources include the landowner, government agencies, non-profit societies and forestry companies.

4. Time of Year

Once the objectives of the inventory have been identified and the background information has been collected it is necessary to consider the best time of year to conduct field work. The time of year may be very important if the property is known to contain any rare or endangered species or ecosystems. If rare or endangered species are known to occur, then it is important to research their life cycles to determine what time of year they may be present or visible.

The time of the year should also be considered when determining what details should be captured using photography. For the best photography, consider how different features like deciduous trees or watercourses will appear in the spring as compared to the fall. Other factors may require consideration depending on what information is to be collected. It may also be beneficial to conduct the baseline inventory at the same time of the year as the land trust typically schedules monitoring visits.

5. Mapping and Inventory Methods

It is important to determine what inventory methods will be used prior to entering the field. Inventory methods may be used for describing ecosystems or human disturbances, compiling vegetation and wildlife lists or taking photographs. Tools include data forms, BEC handbooks or other resources to facilitate the data collection. Examples include the

[7] Google Maps Canada can be accessed from: http://maps.google.ca/

[8] The CRD Natural Areas Atlas can be accessed at: http://www.crd.bc.ca/es/natatlas/

[9] The BC Archaeological Branch can be accessed at: http://www.tsa.gov.bc.ca/archaeology/

Standard for Terrestrial Ecosystem Mapping in British Columbia[10], a provincial standard for detailed ecosystem mapping and *Giving the Land a Voice, Mapping Our Home Places*[11] which provides examples of basic field mapping techniques.

Descriptions of these topics are provided in the ***Baseline Inventory Report*** and ***Resources*** sections of this guide.

6. Data Forms

To ensure that all of the required data is collected while conducting fieldwork, it is advisable that data forms are used. Data forms are pre-formatted with headings and spaces for all the types of data that will be collected. They ensure that fieldwork will be complete and that data remains consistent throughout. The *NCC/HAT Baseline Inventory Protocol*[12] contains data forms (available on the accompanying CD) that can be easily adapted to meet your needs.

7. Equipment and Supplies

Prior to entering the field, make a list of all the equipment and supplies required based on the type of inventory that will be conducted. This can be used as a simple checklist in preparation to entering the field. The *NCC/HAT Baseline Inventory Protocol* contains an example of a checklist (available on the accompanying CD).

8. Safety Plan

While conducting fieldwork, safety is an important consideration. A safety plan should be created and if possible, all fieldwork should be conducted in pairs or groups. A safety plan should include a checklist to ensure that staff or volunteers have the necessary training and equipment to deal with emergencies. In addition, the plan should include a course of action that is to be followed in case of an emergency. The plan should include such things as:

- Contact information for emergency assistance in the area;
- List of any specific medical needs of staff and volunteers;
- Contact person for staff and volunteers in case of an emergency;
- First aid training and supplies that are appropriate for the conditions;
- Description of emergency access to the property;
- Procedure to ensure that others are aware of when you are working and how long you expect to be there;

[10] Resources Inventory Committee. May, 1998. *Standard for Terrestrial Ecosystem Mapping in British Columbia*. Province of British Columbia.

[11] Harrington, S. (Ed.). rev. 1999. *Giving the Land a Voice; Mapping our Home Places.* The Land Trust Alliance of BC, Salt Spring Island BC.

[12] Durand, R., T. Ennis, R. Best, E. Lofroth, & A. Cleveland. 2003. *Baseline Inventory Protocol; A guideline to inventorying and mapping protected areas*. Third Edition. Nature Conservancy of Canada and Habitat Acquisition Trust Fund. Victoria, BC.

- Description of possible hazards (such as adjacent logging, etc.).

The *LTABC Best Practices CD* contains examples of safety plans that various land trusts use.

9. Landowner Participation

Contacting the landowner(s) to schedule a date for conducting fieldwork is a necessary component of your landowner/land trust relationship. Landowners should be contacted in advance to ensure access is granted and to discuss the baseline inventory. Many landowners know their land better then anyone, so inviting their participation in the inventory process may be very rewarding. Having the landowner involved in the creation of the baseline inventory report may also reduce the chances of covenant violations and increase the validity of the baseline inventory report. The NCC/HAT protocol contains a series of questionnaires that are useful to help guide this process.

10. Field Work

Prior to conducting field work it is important to prepare a base map and work plan. Base maps can be as simple as a copy of the legal plan which clearly defines property boundaries, or as advanced as an ecosystem map overlain on air photos. It is important to have multiple copies of the base map in order to adjust the map during fieldwork to ensure it accurately represents the property. *Giving the Land a Voice, Mapping Our Home Places*[13] provides examples of basic field mapping techniques.

The base map can provide you with a general work plan. Prior to field work, record any important features and information that you collected during background research on the base map. These features may include main topographical or ecological features, access points or property pins. Ensure that the most important areas of the property are checked during field work. Much of this planning can be done in the office with maps and air photos. The work plan will assist field work by ensuring that the important areas of the property that were identified in the first steps of this process are covered.

On entering the field it is advisable to do a quick walk through of the entire area to get a feel for what is there and to help refine the work plan. On large properties this may not be a feasible option, so preparation work with maps and air photos can help to determine which areas need to be visited.

After the initial inspection of the property and completion of the plan, review the chosen inventory methods to determine how fieldwork will be conducted. In some cases it may be useful to create a simple map or record of the inventory route to aid with future monitoring, should repeating the inventory be necessary.

[13] *Giving the Land a Voice, op cit.*

Field work should be done in a systematic method that ensures that the necessary data are collected, and that the entire property is covered. The specific field work methods are dependant on the type of inventory and data that are to be collected.

11. Reports, Maps and LTO Summary

Once fieldwork is complete, the next stage includes compiling information, writing the baseline inventory report, creating final maps, developing and labelling photographs, and finally creating the LTO summary. Each of these subjects is discussed in subsequent sections of this guide.

12. Reviews and Edits

First drafts of the baseline inventory report and maps should be given to the landowner and others involved for review. It is important that the landowner carefully consider all the materials to ensure accurate representation of the property.

13. Final Copies

After reviewing and editing the inventory report and maps, the final copies can be produced. All parties must sign and date the baseline inventory report stating they agree that the report is accurate and complete. The landowner must also initial the LTO summary.

14. Land Title Office (LTO)

Once the covenant is finalized, then the LTO summary can be attached as a Schedule. This summary should include only part of the baseline inventory information (maximum 10 pages), black and white maps, and no photographs. All of the data are then submitted at once to the Land Title Office. Details on the LTO summary can be found in the ***LTO Summary*** section of this guide.

15. Label and Archive Data

The methods chosen to store and archive the data are as important as collecting it in the first place. It is essential that appropriate methods be taken to ensure that the data does not degrade over time and that it can be properly identified.

Data storage refers to the physical methods taken to ensure that the data remains viable in the long run Archiving involves the proper labelling and identification of your data to ensure identification in the future. The ***Data Storage and Archiving*** section of this guide discusses this issue in detail.

- THE BASELINE INVENTORY REPORT -

The following is the recommended structure for baseline inventory reports. A brief description of the information that should be included in each section of the report is provided, along with sample text for some sections. As this is intended to be the basic structure, land trusts may need to include additional components in order to ensure that the baseline inventory report is a suitable document for the future monitoring of specific covenant restrictions or management goals. Some additional sections are provided as ***Optional Sections*** throughout the document.

This document has been designed with the LTABC BC Lands in Trust Registry[14] in mind. Throughout the document sections have been underlined to indicate data required to complete the Protected Lands Catalogue (PLC) for the BC Lands in Trust Registry program**.** The Land Trust side of the PLC can also be used to organize and track additional information, including baseline reports, photographs, maps and monitoring reports beyond what is sent to the LTABC office for inclusion with other land trust data and posted to the BC Lands in Trust portion of the LTABC Website.

Covenants are public information. They are in the public interest and are simply not a private matter once registered. This is the reason that land trusts are allowed by the land title act to hold them - because they are in the public interest. What is available to the public or anyone online is not personal – i.e. no identification of the location of the covenant is made – the closest location information is the nearest town only. The UTM or latitude/longitude coordinates are used to locate the property on the maps, but they are not identifiable at the scale shown on the website.

Several sections also contain references to various protocols and methodologies, many of which are located in the ***Resources*** section on the accompanying CD.

TABLE OF CONTENTS – THE BASELINE INVENTORY REPORT

[14] The LTABC BC Lands in Trust Registry can be found at www.landtrustalliance.bc.ca/registry

1.0 Introduction and Acknowledgement

This section contains a brief overview of the purpose of the report, the name used to describe the property or covenant and definitions of any terms used in the report that may be misconstrued.

Example:

> This report describes the physical and biological conditions of the ABC Nature Reserve as of the 15th day of June, 2006. It will be used as a baseline inventory to perform monitoring to ensure that the property is managed in accordance with the terms and conditions of the conservation covenant held by the ABC Land Trust.
>
> The area of the ABC Nature Reserve that the conservation covenant will be attached to will be referred to as the Covenant Area.
>
> The terms *survey* and *surveyor* used in this report are in reference to the baseline inventory survey, not a legal land survey or legal land surveyor.

This section should also contain an acknowledgement by the landowner, covenant holder(s) and any third parties as to the completeness and accuracy of the baseline report. The final copy should be signed and dated by all parties.

Example:

The Owner and John Smith (Biologist, Land Trust Alliance of BC – 204-338 Lower Ganges Road, Salt Spring Island, BC V8K 2V3 - info@landtrustalliance.bc.ca - 250-538-0112) hereby acknowledge and agree that the following is an accurate description of the ABC Nature Reserve, as of the reference date of this Agreement.

The Owner and Covenant Holder acknowledge that this document is a summary of the XX page baseline documentation report that contains additional information, maps, and XX photographs. Copies of the full report and all photographs are held by each party.

Signed by: _____ on behalf of the owner, on the____ day of _____

Signed by: _____ on behalf of the ABC Land Trust, the Covenant Holder, on the____ day of _____

2.0 Contact Information

Include contact information for all parties involved in the baseline inventory, including third parties such as legal land surveyors and baseline inventory contractors, etc. Pertinent information describing the education and experience of individuals involved in data collection may be useful.

3.0 Property Location

3.1 Legal Description

State the legal description of the property as provided by legal land surveyor, Land Title Office, or other appropriate source. This should include:

- The full legal description and PID of the property or all parcels affected by the covenant;
- The latitude and longitude, and/or the UTM of the approximate centre of the property;
- An accurate surface area of the property in hectares and acres;
- The surface area of the covenant area, if it does not include the entire property
- Current zoning designation of the property (also include a reference to a zoning map in an appendix if necessary) including Agricultural Land Reserve; and
- Any right-of-ways, easements, covenants, etc. attached to the title (also include a reference to the property title describing it in greater detail in an appendix if necessary).

If the covenant includes specific areas of the property that are defined (such as a designated development area) they should also be described and the above listed information provided as necessary.

3.2 Directions

Provide a brief description of the property in relation to nearby towns or cities and, if applicable, the regional district in which it is located. General directions to the property should be provided and should include access points from the nearest town and major roads or features, such as ferry docks. If deemed necessary, include a map showing the location as an appendix.

Add any additional descriptions as necessary, such as a specific access point/route that has been identified for monitoring purposes.

4.0 Significance of Land and Amenities[15]

4.1 Ecological Significance

Describe the ecological significance of the property in relation to the larger landscape and any adjacent or nearby protected areas. A description of possible intrusions by adjacent landowners can also be included if applicable.

This section should also describe the following ecological classifications that pertain to the property:

- Ecoprovince;
- Ecosection;
- Biogeoclimatic zone; and
- Biogeoclimatic Ecosystem Classification (BEC) site series and variants identified on the property.

Maps may be required to depict the BEC site series and variants, and/or adjacent protected areas and potential connectivity. Maps should be placed in appendices and referenced in this section.

4.2 Rare Species and Ecosystems

This section should describe any known rare species or ecosystems that were identified during the survey or are known to occur on the property. It should also describe any potential endangered, rare or threatened species habitat identified on the property. The section should also include and describe:

- A general description of the species or ecosystem with any global, national and provincial status as given by the BC Conservation Data Centre (CDC);
- Any Sensitive Ecosystem Inventory (SEI) polygons that cover the property; and

[15] The site description for the PLC/Registry entry should include a general description of the significance of the property for conservation, including any relevance within wider community, regional or provincial strategies.

- Any other scientific studies that have included the property and contain descriptions of rare species, ecosystems, or sensitive areas.

Maps describing the location of any of the above mentioned features should be included as an appendix. Care should be taken regarding the identification of specific locations of any endangered, rare or threatened species, as the baseline report will become a public document when registered in the Land Title Office.

Optional Sections

Additional Information on Endangered, Rare and Threatened Species and Ecosystems[16]

Additional information can be collected if the land trust or contractor has the ability and/or if it is useful for long-term property management. This could include assessments of the size/population of the rare species, ecosystem and habitat (based on CDC records), and the long-term viability of the population as defined by the CDC methodology. This section could also include a discussion of management decisions and/or covenant restrictions that may be necessary to ensure the viability of the species or ecosystem.

Exotic and Invasive Species

If relevant to the covenant, descriptions of exotic and invasive species should be listed and their locations and severity described. An assessment of the species potential to increase in number and the potential implications may be useful. Additional data relevant to future management or restoration plans that need to be monitored may also be included.

Cultural/archeological/historic

If relevant to the covenant or property's known cultural history, archeological features and\or maps should be provided. This topic may be more appropriately addressed in the History of Land Use section, depending on the covenant.

Agricultural

For projects that include Agricultural Reserve Land (ALR), an additional section should be created that documents the type, area, etc. of land under agricultural use. For more information on the process and specific data required for securing approval of covenants on ALR by the Commission Panel, please contact the LTABC and refer to the guidelines on the LTABC and Agricultural Land Commission (ALC) websites.

[16] Additional information on rare species, ecosystems and ranking systems (e.g. red, blue, yellow) can be found at the CDC website at: http://www.env.gov.bc.ca/cdc/

5.0 Physical Features

5.1 Topography

This section should describe the topography of the land and general landforms. It should include the minimum and maximum elevations that occur on the property. This description is particularly important if any alterations to topographical features are restricted in the covenant. Maps may be used if available and accurate enough to show detailed contour lines.

5.2 Watercourses and Water Bodies

Describe the type and condition of all watercourses (streams, creeks, ditches) and water bodies (seepage sites, wetlands, pond, lakes, etc.) that occur on the property in this section. Ephemeral and intermittent watercourses should be included. The location of all watercourses should be depicted on maps and photographs should be taken as necessary to document the representative current condition of each type of watercourse.

Optional Sections

If the covenant restricts or specifically applies to watercourses, then additional descriptions may be necessary. Additional data that can be collected includes:

- Detailed wetland classification using the *Wetlands of British Columbia: a guide to identification*[17];
- Detailed stream and water body descriptions including natural high water marks, bankfull width and depth, hydraulic classification, substrate composition, substrate compaction, fish habitat and presence, modifications, obstructions to fish passage, total instream cover, etc. Detailed assessment methods can be obtained from the *Sensitive Habitat Inventory Mapping*[18] (SHIM) manual and adapted as necessary to allow for covenant restriction monitoring; and
- Water quality (turbidity, pH, temperature, conductivity, total dissolved gasses, dissolved oxygen, nutrients, metals, total and fecal coliforms, COD, BOD, etc.) can be assessed as necessary to allow for future monitoring. Methods should follow provincial and federal guides[19].

[17] MacKenzie, W.H. & J.R. Moran. 2004. *Wetlands of British Columbia: a guide to identification.* Res. Br., B.C. Min. For., Victoria, B.C. Land Manage. Handb. No. 52. URL: http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh52.htm

[18] Mason, B., and R. Knight. 2001. *Sensitive Habitat Inventory and Mapping*. Community Mapping Network, Vancouver, British Columbia. 315pp + viii. M. Johannes, Editor. http://www.shim.bc.ca

[19] Water quality guidelines and sample methods can be obtained from the Environmental Protection Division of the Ministry of Environment at: http://www.env.gov.bc.ca/wat/

Additional data pertaining to the physical features of the property includes soil descriptions, geological and surficial geological descriptions and maps.

6.0 Land Use

6.1 History of Property

This section should describe the history of land use on the property. It should include a description and dates of all major activities that have occurred on the property (such as logging, industrial use, building dates, etc.). This information may be essential for assessing the potential of contaminated sites or other important legal liability issues that influence the property.

This section should also describe any known First Nations, historic colonial uses or archeological evidence found on or near the property. The Archeological Branch of the BC Government can be contacted to determine if registered archeological sites occur on the property[20]. Local First Nations should be contacted if possible to provide information of relevance.

6.2 Current Use

This section should include a description of the current activities that occur on the property (such as residential use, farming, etc.). If specific zones have been delineated, then each zone should be described and a reference given to the appropriate map showing the areas.

For example, if the property is currently used as farmland then the agricultural soils and current crops or grazing areas should be described and delineated if necessary for the covenant restrictions.

6.3 Management Goals or Purpose of a Covenant

This section should include a description of the long-term management goals for the property. If relevant it should correspond to the terms of the covenant. This content will likely be altered or expanded upon in the covenant or within a management plan. A statement will be needed if the property is on ALR lands describing both ecological and agricultural management goals for the property within the Referral Document that is approved by the ALC.

If applicable, the purpose could also include the landowner's vision for the property, including why the covenant is planned or was given, why they want it protected, if public

[20] The Archaeological Site Inventory Section administers the Provincial Heritage Register under the Heritage Conservation Act, and records, maintains, and distributes heritage resource information. http://www.tsa.gov.bc.ca/archaeology/index.html

use should be allowed, etc. This information is usually described in the Covenant in the Intent of Agreement section.

7.0 Improvements and Disturbances

7.1 Buildings and Structures

If buildings and structures occur within a protected zone, then they must be accurately mapped, photographed, and described. If they occur outside the protected area or within development zones, then a brief description only need be included. This information is important to determine if future structures were created before or after the covenant was registered.

Optional Sections

If the covenant will protect a given structure (such as cultural or built heritage sites) then additional information will be necessary.

7.2 Roads, Utilities, and Trails

All roads, trails and utility lines should be described and shown on accompanying maps and photographs. Specific access sites for public use or future monitoring should also be indicated.

Optional Sections

If the physical dimensions of trails or roads are defined in covenant restrictions, or public use is considered, or if maintenance of trails and roads is likely, then additional mapping, descriptions, measurements and photo points may be required.

7.3 Excavations and Soil Removal

Any evidence of current or past removal or modification of soil, gravel, or any other natural material should be described and noted on accompanying maps and photographs.

Optional Sections

If specific descriptions or conditions regarding removal or excavation are described in the covenant restrictions, then additional detail may be required. Additional detail may also be required for active ranches, farms or gardens that occur or may occur on the property. This section is dependant on the covenant and may or may not be required. Delineating different development/land use zones may be sufficient.

7.4 Contaminants, Garbage and Pollution Sources

This section should describe the type and location of any contaminant, garbage, or pollution source. Any garbage present on the site and any potential sources of direct pollution (i.e. sewage outfall) or indirect pollution (i.e. adjacent or upstream introduction of pollutants that may eventually reach the property) should be described and included on maps and photographs.

Optional Sections

If past land use on or near the property includes any industrial use or other activity that may have introduced contaminants (such as insulator coolants, wood preservatives, oil or gas tanks, etc.) additional descriptions, maps, photographs and contaminated site investigation reports, should be included or referenced. If contamination is suspected, then a qualified environmental professional should be retained to conduct a comprehensive assessment (Phase 1 Site Investigation). As well, the BC Ministry of Environment maintains a site registry[21] of properties that are known to contain hazardous materials.

Additional detail may be required if the covenant allows for the disposal of certain substances (such as ash from fire places, compost, existing septic fields or tanks etc.) on the property.

7.5 Vegetation Modification and Removal

Any vegetation modification (such as pruning to enhance viewscapes) or removal should be described in this section. The detail of description is dependant on the covenant.

Optional Sections

If covenant restrictions prohibit vegetation modification or removal, then appropriate assessments by professionals may be required. Professionals may include registered professional biologists, foresters, landscape architects, or others as applicable to the specific restrictions.

Assessments may include detailed ecological inventories, mapping, timber cruising, etc. If covenant restrictions allow for vegetation modification or removal in a defined area, then detailed mapping of those areas will also be required, but will not necessarily have to include the entire property.

[21] Information on the contaminated site registry and methods to conduct assessments can be found on the Environmental Protection Division of the Ministry of Environment at: http://www.env.gov.bc.ca/epd/epdpa/contam_sites/index.html

7.6 Other

All other anthropogenic disturbances that are restricted in the covenant must be described and included on maps and photographs. Any potential for future disturbances should also be recorded to help future monitoring differentiate between natural and anthropogenic disturbances.

8.0 Natural Features

8.1 Assessment Procedures

Procedures and equipment used to conduct vegetation and wildlife inventories and mapping should be briefly described and/or referenced. It is also useful to note the vegetation identification book used to ensure that others can positively identify any common names.

8.2 Mapped Ecosystems

Basic ecosystem mapping should be performed on the entire property. The method and detail of the mapping is dependant on the size of the property and the covenant restrictions. Resources such as *Giving the Land a Voice* can be used for simple mapping methods.

If ecosystem mapping is performed, the recommended minimum is:

- Each dominant vegetation type or physical feature should be described and mapped as a numbered polygon.
- Each polygon should include relatively homogenous vegetation characteristics (e.g. Garry oak ecosystem or young Douglas-fir/arbutus forest) or major physical features (e.g rocky beach, lake, etc.).
- Each polygon should be described and a representative photograph(s) taken of the dominant features. For vegetation polygons, the dominant species should be recorded and if possible, the average crown closure and percent cover by layer of species should be recorded.

A brief description of the ecosystems (particularly sensitive areas) should be prepared for the PLC.

Optional Sections

For covenant restrictions that require detailed ecological assessments, additional information is required. The Nature Conservancy of Canada / Habitat Acquisition Trust's 2003 *Baseline Inventory Protocol* and the provincial *Standard for Terrestrial Ecosystem*

Mapping in British Columbia are good resources for detailed ecosystem mapping and vegetation inventories. The ***Resources Section*** contains reference to these and other useful manuals.

8.3 Wildlife

Depending on the covenant restrictions, wildlife inventories and habitat assessments may be necessary. Inventories may be as simple as lists of identified species (common and scientific names) or provincial Resource Inventory Standards Committee (RISC) guidelines[22] can be used.

9.0 Property Maps

Detailed property maps are an essential component of the baseline report. The number and types of maps required are dependent on the covenant restrictions. Note that all maps submitted to the Land Title Office must be black and white, on standard 8.5 x 11" paper, and be clearly legible after multiple photocopies. As well, the Land Title Office does not want extensive numbers of maps, so consider how multiple features can be displayed on just a few maps while remaining legible. It is advisable to consider these factors when preparing maps so they do not have to be adjusted when creating the Land Title Office summary.

Each map must have:

- A north arrow (true north with magnetic north and magnetic declination used for survey and map production is preferable);
- A scale bar;
- Scale text;
- Date created;
- A title;
- Author;
- Legend; and
- Data sources.

Map(s) should show the following features if applicable to the data that were collected:

- Property boundaries;
- Covenant boundary;
- Covenant areas;
- Contour lines;
- Roads;
- Trails;

[22] RISC guidelines can be obtained from the Ministry of Agriculture and Lands Integrated Land Management Bureau at: http://ilmbwww.gov.bc.ca/risc/

- Utilities;
- Building and structures;
- Vegetation types (with identifying letter(s) or number(s) that relate to a description in the report);
- Rare species and ecosystems;
- Photograph locations (with identifying letter(s) or number(s) that relate to a description in the report);
- Sample site locations (with identifying letter(s) or number(s) that relate to a description in the report);
- Mapped features (disturbances, garbage, contaminants, exotic/invasive species, etc.) that may just be points with an identifying number or letter and an explanation of the mapped feature in the report; and
- Any other features described in the report that are relevant to the covenant restrictions and may have to be assessed during future monitoring.

10.0 Photographic Coverage

Photographic cover of any and all features of the property described above, as well as representative shots of vegetation types must be referenced and described. Procedures used to take, identify, and archive photographs should be discussed. The land trust should make sure that chosen methods enable the precise location, time, and subject of every photograph to be permanently attached in an archive-safe method. The ***Data Storage and Archiving*** section discusses this topic in greater detail.

Actual photographs may or may not be placed in the body of the baseline report, but keep in mind that they cannot be placed in the LTO summary. References should be made in the report to the physical locations in which the photographs and duplicates are stored. Note that a representative photo of the site should be entered in the PLC.

11.0 References

References should be included for all reports, books, etc. referred to in the baseline report. References should also be made to protocols or books used to conduct assessments or from which wildlife and vegetation names were derived.

- LAND TITLE OFFICE SUMMARY -

"Last week TLC was presented by one of its partners with an 83 page covenant. We have refused to attempt to register this document until the 60 something pages of baseline are replaced by…a summary. It seems that there is an impression out there that it is necessary to file these detailed baselines as a part of the covenant. That is not the case.

It should be adequate to have the parties to a covenant sign copies of the complete and very detailed Baseline document and keep those documents in each of their possession. An overview or summary should be attached to the covenant and reference in the covenant should clearly say where the full documents are held.

While it is important to do a high quality and detailed Baseline Documentation Report it is equally impossible to document every tree or blade of grass on anything but the smallest of properties. There is a need for common sense to prevail in determining how much information goes into the report and into the summary."

Bill Turner, The Land Conservancy - September 9, 2002

The Land Title Office (LTO) summary document is a concise overview of the baseline inventory report. It contains the most important descriptions of the property, but does not go into great detail. The summary document should not contain any photographs (a list and description of photographs taken is a useful section to include in the summary for future reference) or colour maps and must be legible even after multiple photocopies. The LTO will only accept documents that are printed on standard 8.5 x 11" paper.

With the exception of a few boilerplate sections, the majority of the summary can be simply copied from the baseline inventory report and slightly modified (shortened) as necessary. Maps should be in black and white and limited to only the necessities (1 or 2 maps are average). Necessary information to contain on the LTO Summary maps includes:

- The main features of the property/covenant (i.e. roads, lakes, streams, property line, etc.).
- Disturbed areas. A corresponding letter or number should be included in the summary to describe the disturbance.
- Buildings, structures and any other improvements mentioned in the report.
- Locations of all photographs taken on the property.

Additional information may be required depending on the covenant and features identified in the baseline report. Remember that only the most important information should be included to limit the number of maps in the summary, but the maps must also

clearly delineate the property features and area that the covenant will protect or that need to be monitored.

The LTO summary should be as concise as possible with reference to the baseline inventory report for more detail. On average, the document should not be more than 10 pages long. The summary should be initialed by the landowner and clearly referenced in the body of the covenant.

The following is an example of the structure of a LTO summary, with the standard sections included. Several examples of actual summary documents are available on the accompanying CD, some of which also have the associated baseline inventory reports.

SCHEDULE B

Attached to and forming part of the Covenant Agreement between the ABC Land Trust, Covenant Holders, and the Owner, Jane Doe, dated as of the 15th day of January, 2006.

1.0 Acknowledgment

The Owner and John Smith (Biologist, Land Trust Alliance of BC – 204-338 Lower Ganges Road, Salt Spring Island, BC V8K 2V3 - info@landtrustalliance.bc.ca - 250-538-0112) hereby acknowledge and agree that the following is an accurate description of the ABC Nature Reserve, as of the reference date of this Agreement.

The Owner and Covenant Holder acknowledge that this document is a summary of the XX page baseline documentation report that contains additional information, maps, and XX photographs. Copies of the full report and all photographs are held by each party.

2.0 Property Location and Description

3.0 Significance of the Land and Amenities

4.0 Management Vision

5.0 History of the Property

6.0 Improvements and Disturbances

7.0 Natural Features of the Property

7.1 Topography

7.2 Watercourses and Water Bodies

7.3 Vegetation Communities

7.4 Wildlife

8.0 Maps

9.0 Photographs

10.0 References

Initialed by Landowner:_____

END OF DOCUMENT

- DATA STORAGE AND ARCHIVING -

Data storage and archiving methods are critical components of the baseline inventory process. As baseline inventory reports may be necessary for future legal action, it is essential that appropriate methods be taken to ensure that data do not degrade over time, and that all information can be properly identified.

Data storage refers to the physical methods taken to ensure that the data remains viable in the long run, while archiving involves the proper labelling and identification of your data to ensure that you know what it is in the future. The following section of this guide discusses this issue in detail.

ARCHIVING

In order to ensure that data can be positively identified in the future, it is advisable that simple archiving methods be undertaken. For all reports, maps, and field notes make sure that the name and date of the inventory of the property is clearly indicated. For photographs it is a different matter.

Each photograph that is taken during an inventory needs to be labeled. Labels should indicate the date, location, subject and photographer. A simple method to do this is to create a unique code for each photograph.

For example, photographs were taken on the ABC Nature Reserve on August 20th, 2005. Before field work was started, the following code and information was decided upon:

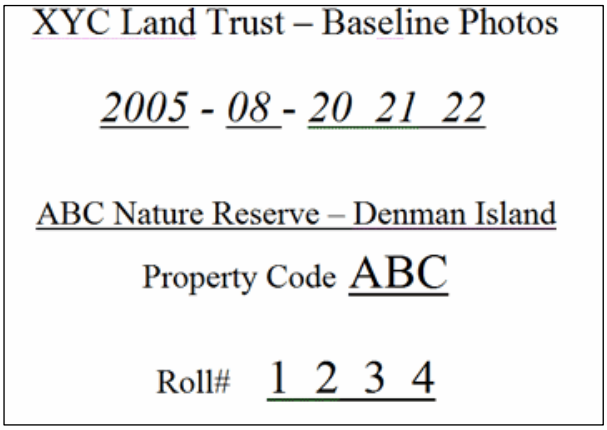
> Property Code: ABC – ABC Nature Reserve
> Date: August 20, 2005
> Roll: 1
> Photo Codes: ABC-200805-R1- 01 to 37

Therefore, all photos taken on the ABC Nature Reserve would use this code as a unique identifier. The first photo would be labelled ABC-200805-R1-01, the second labelled ABC-200805-R1-02 and so on. Photos taken on the same date but on a different roll would use R2, R3 and so on. Future monitoring photos can then use the same format with dates changing as necessary to ensure consistency through time.

In the body of the baseline report you can create a table which states the unique code for a given photo, and provides descriptions of the subject, location, etc. This method only requires a short code to be written on each photo, thereby reducing the chance of damage to the photo and ensuring that the photo can be accurately identified and described in the future.

A data form can be used in the field to record the location and subject of each photograph to ensure that they can be described later in the report. As well, it is recommended that a Photo ID Sheet is used. The Photo ID Sheet contains all of the information described

above (property name, code, date, and roll number). At the beginning of each roll the first photo should be of the Photo ID Sheet. This way, the necessary information is permanently embedded on the negative and multiple rolls are not confused when processed.



For digital photographs the same technique can be used. Roll numbers are obviously not required, but it may be necessary to replace the roll number with a flash card number depending on available memory. Instead of writing the code on each photo, it can be digitally placed on the front of the photo. The file name of the photo should also be the unique code so specific photos can easily be located.

DATA STORAGE

The following data storage information has been summarized from Chapter Four of the ***NCC/HAT Baseline Inventory Protocol.***

Introduction

Data storage is one of the most important aspects of your baseline inventory. If your records do not survive time then, obviously, they are useless. The general rule for all data storage is duplication, duplication and duplication.

The issue of digital storage is relatively new and constantly changing. The information on digital storage in this section is current for 2006, but it will likely become obsolete within the decade. Therefore, digital storage methods need to be constantly evaluated and updated as required by technological changes since methods used today may not even be recognizable in the near future.

Paper & Ink

As baseline inventory reports will be used for a long time, it is important to use archive quality ink. Most bubble jet and inkjet printers use very cheap ink that generally does not last long. Laser printers, on the other hand, use powdered ink similar to photocopiers that will last much longer. Colour printing is also a problem. Most colour ink fade very quickly, especially red. Colour laser printing generally lasts longer then bubble jets or ink jets.

Paper should be acid free and at least 22 lbs. weight. Special, coated paper is available for colour prints. Avoid storing any paper product in the sun as it will greatly increase the fading of ink and degradation of paper.

Negative and Slide Storage

Of all photographic sensitized products, processed negatives are usually given the least attention when it comes to storage (Kodak, 2003). As with photos and slides, negatives must be properly stored and handled to preserve their quality. Special care must be taken with storage, as even when stored in the dark, colour negatives slowly change and lose quality.

Negatives and slides must be kept free of dust, fingerprints and any other contamination as these things often contain chemicals and endospores that can damage the image. Negatives should be stored in a dark place as light can affect the photographic dye. Storage boxes made of metal is preferred as metal is does not contain preservatives like wood, or produce volatile chemicals as does plastic. If stored in envelopes or plastic sleeves make sure they are of archive quality and do not contain any damaging substances.

Temperature and humidity must be controlled as both adversely affect processed negatives and slides. The following conditions and precautions are recommended by Kodak (2003) when storing negatives and slides:

- Keep storage containers away from radiators, warm-air registers, and windows where sunlight can strike them.

- Keep the temperature low for long-term storage. High temperature and high relative humidity can affect processed negatives. A temperature of 0°F (-18°C) and a relative humidity between 30 and 35 percent are excellent conditions for long-term storage.

- Even minor reductions from room temperature have a major beneficial impact on the stability of an image.

- Do not store negatives in areas where ozone-generating machines such as photocopiers are used.

- Air conditioning and climate control can significantly reduce the level of airborne pollutants, but be sure to change filters regularly. Chemical fumes can harm negatives and slides. Check your storage area for harmful fumes.

Photo Storage

Photographs are susceptible to the same environmental factors as slides and negatives; primarily extreme temperatures, humidity, and chemical and biological degradation.

Photographs should be stored in archive quality albums or transparent sheets in binders. Binders or albums should be kept out of direct sunlight preferably on open air shelves. Kodak (2003) recommends the following:

- Provide a cool, dry, uncontaminated storage place.

- Avoid storing prints in the original cardboard box or package. Packaging material that is suitable for unexposed sensitized materials may not be inert to processed materials. Use archival safe boxes or envelopes.

- The best storage conditions for color prints are the same as those for most other photographic products. Store prints in the dark at 75°F (24°C) or lower and at 30- to 50-percent relative humidity.

CD Use and Storage

Compact Disks (CD) are considered to be a long lasting, inexpensive way of storing digital data. All monitoring data should be printed and recorded on duplicate CDs for long-term storage. However, there are a number of things that can greatly affect the longitivity of the CDs and, therefore, the longitivity of the data on the CDs.

Longevity is usually limited by the cumulative effects of small scratches and contaminants that are introduced through normal handling and use (Media Sciences, 2003). Therefore, care must be taken to ensure that CDs are used and stored in an appropriate manner and always in duplicate.

When purchasing recordable CDs it is better to choose more expensive brands that come with their own jewel case. These days there are hundreds of brands to choose from, each with their own claim as the best on the market. Ignore the claims as there is no proven 'best' brand, but price is linked with quality. According to Media Science Inc. (2003) there was "no correlation observed between CD-R quality and dye type (cyanine or phthalocyanine), metallization (gold or silver), or recording speed (2X-8X)". For archiving purposes, Media Science Inc. (2003) recommends the following:

> "Generally accepted capacities are 650 MB for 74 minute discs and 550 MB for 63 minute discs. High quality recording should utilize only 550 MB or less of a 74 minute disc, because performance may rapidly degrade at large diameters.

Use 63 minute CD-R discs for all but the highest capacity applications. Benefit from higher quality and the improved probability of successful interchange. Careful investigation shows that data written on 63 minute CD-R discs may be of significantly higher quality than data on 74 minute discs."

Once data has been recorded onto the CDs, care must be taken to handle and store them in a proper manner. When labeling the CDs Media Science Inc. (2003) recommends the following:

> "Although damage to the readout surface can cause a disc to fail, the label side is even more delicate. CD discs have a soft, very thin protective coating on the label surface that is vulnerable to chemical or physical attack. Physical damage to this surface will destroy the underlying recorded data, or will admit atmospheric contaminants that corrode the metallic coating. Silver is particularly vulnerable to attack by sulphur, a common air pollutant. Even aluminum layers used for CD-ROM discs oxidize when exposed to clean air, resulting in loss of performance.
>
> Application of a label or other marks can also cause degradation. Special non-reactive adhesives or inks must be used to avoid attack of the metallization layer by migration of chemicals through the protective coating.
>
> The safest method of identification is to rely on the manufacturer's lot code that is present on the clear inner ring of the disc. Small, custom markings in this area can be safely made with felt-tipped marking pens that use water-based inks. Such pens may be available from CD-R manufacturers or can be purchased at office supply shops.
>
> **Popular felt-tipped pens, such as the Sharpie, use solvent-based inks. The solvent can attack certain CD protective coatings, causing degradation that may not be immediately apparent. Even water-based inks may not be safe, since the permanent ink from any marking pen can subsequently degrade the information layer. Do not write using a ballpoint pen or other object having a hard point."**

CDs should always be stored in clean, non-flexible, plastic jewel cases. Media Science Inc. (2003) recommends that "both unrecorded and recorded disks should be [stored] in a stable storage environment of 10 C-15 C and 20%-50% relative humidity, and protected from sunlight and other radiation sources". CDs should never be exposed to extreme temperatures or bright light.

Long Term Facilities and Packaging

Care must be taken to use appropriate packaging and facilities for any data that are stored for the long term. For packaging materials, Kodak (2003) recommends the following:

- Use proper packaging materials. Do not store processed material in the original packaging. Over time, some adhesives, glues, and products from the manufacture of paper and plastics are harmful to photographic products.

- All mounting boards, interleaving paper, album covers and pages, and plastic

sleeves and sheets must be free of acids, peroxides, plasticizers, metal particles, wood fibers, sulfites, nitrates, and chlorides.

- Fumes from mothballs, mildew inhibitors, wood preservatives, paints, varnishes, and wood glues can contaminate drawers and harm photographic materials. Therefore, open bookshelves may be a better place to store albums and prints.

Protection against fire is another necessity for obvious reasons. Even with a fireproof vault, as described below, it is vital to keep the originals and copies in separate locations for added security. Kodak (2003) recommends the following for long-term storage facilities:

> "A 'fireproof' storage vault located and constructed in accordance with local building codes and underwriters' regulations offers additional protection for large collections. The vault should have enough insulation to provide satisfactory temperature control all year around, prevent moisture condensation on the walls, and provide significant resistance to internal temperature increases in the event of fire.
>
> For smaller collections, a fire cabinet or safe will provide protection. Examine any safe carefully before using it. Many fire-resistant safes and cabinets have a type of insulation that releases moisture when heated; the interior can become filled with steam during a fire, which can damage photographic emulsions. Before storing any films or prints in this type of safe, seal them in moisture proof and photographically inert storage envelopes".

- RESOURCES, TEMPLATES AND PROTOCOLS -

The accompanying CD contains a variety of useful resources that land trusts can use, such as sample land trust baselines, inventory protocols, map resources, training material for inventory methods, etc.

Two template documents are also included on the CD. The templates are preformatted MS Word documents that land trusts can use as guides for baseline inventory reports. Templates include:

- LTO Summary
- Basic Structure of a Baseline Inventory Report

Two commonly used protocols, and several example reports, for baseline inventories available on the CD include:

- NCC/HAT Baseline Inventory Protocol
- Islands Trust Fund NAPTEP

Numerous websites, publications and other resources were mentioned in the guide. These suggested resources include:

Website resources

- The Archaeological Site Inventory Section administers the Provincial Heritage Register under the Heritage Conservation Act, and records, maintains, and distributes heritage resource information. http://www.tsa.gov.bc.ca/archaeology/index.html

- Base Mapping and Geomatic Services online store is run by the Integrated Land Management Bureau and can be accessed at: http://ilmbwww.gov.bc.ca/bmgs/ecommerce-intro.html

- BC Conservation Data Centre: http://www.env.gov.bc.ca/cdc/

- BC Lands in Trust Registry: www.landtrustalliance.bc.ca/registry

- BC Soil Survey Reports from Agriculture and Agri-Food Canada: http://sis.agr.gc.ca/cansis/publications/bc/index.html

- CRD Natural Areas Atlas: http://www.crd.bc.ca/es/natatlas/ (many municipalities and regional districts have similar web based GIS programs were accurate maps and air photos can be obtained for free).

- Community Mapping Network: www.shim.bc.ca. Provides a variety of web based mapping services.

- Digital Terrain and Soil Map Library: http://www.em.gov.bc.ca/Mining/Geolsurv/Terrain&Soils/frbcguid.htm

- E-Flora and E-Fauna BC: www.eflora.bc.ca and www.efauna.bc.ca. Comprehensive sites that contain descriptions and photographs of the majority of BC flora and fauna in a searchable database. Also contains interactive maps depicting mapped locations of a given species. These are excellent resources for species identification.

- Google Maps Canada can be accessed from: http://maps.google.ca/

- Land Trust Alliance of British Columbia: www.landtrustalliance.bc.ca

- Sensitive Inventory Mapping data can be found at: http://www.env.gov.bc.ca/sei/index.html

- South Coast Conservation Program: www.sccp.ca. A joint government and NGO project that provides information and an online GIS of species-at-risk in the lower mainland. Similar projects exist in other regions of BC.

Publications

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- Harrington, S. (Ed.). rev. 1999. *Giving the Land a Voice Mapping our Home Places.* The Land Trust Alliance of BC, Salt Spring Island BC.

- Hillyer, A. & J. Atkins. 2005. *Greening Your Title; A Guide To Best Practices* For Conservation Covenants. Second Edition. West Coast Environmental Law.

- MacKenzie, W.H. & J.R. Moran. 2004. *Wetlands of British Columbia: a guide to identification.* Res. Br., B.C. Min. For., Victoria, B.C. Land Manage. Handbook No. 52. URL: http://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh52.htm

- Mason, B., and R. Knight. 2001. *Sensitive Habitat Inventory and Mapping. Community Mapping Network,* Vancouver, British Columbia. 315pp + viii. M. Johannes, Editor. http://www.shim.bc.ca

- Resources Inventory Committee. May, 1998. *Standard for Terrestrial Ecosystem Mapping in British Columbia. Province of British Columbia.*

Provincial Guidelines and Information

- Biogeoclimatic Ecosystem Classification information can be obtained from the Ministry of Forests and Rage at: http://www.for.gov.bc.ca/hre/becweb/

- Contaminated site registry and methods to conduct assessments can be found on the Environmental Protection Division of the Ministry of Environment at: http://www.env.gov.bc.ca/epd/epdpa/contam_sites/index.html

- Resource Inventory Standards Committee (RISC) guidelines can be obtained from the Ministry of Agriculture and Lands Integrated Land Management Bureau at: http://ilmbwww.gov.bc.ca/risc/

- Water quality guidelines and sample methods can be obtained from the Environmental Protection Division of the Ministry of Environment at: http://www.env.gov.bc.ca/wat/