

Vegetation Resources Inventory

South Island Natural Resource District - Project Implementation Plan for Photo Interpretation

Prepared by
Ministry of Forests, Lands and Natural Resource Operations
Forest Analysis and Inventory Branch

March 30, 2015

Table of Contents

Table of Contents.....	2
Section 1 – Introduction and Background Information.....	3
Background Information.....	3
Overview of the VRI Process.....	3
State of the Current Inventory.....	3
Document Objectives.....	6
Project Area Overview.....	6
Private Land, Woodlots, First Nations TSLs and Community Forests.....	9
Section 2 - Photo Interpretation Plan.....	10
Project Objectives.....	10
Target Area.....	10
Table 5: VRI Projects Area Excluded.....	11
Historical Data Sources.....	11
New Data Sources.....	12
Other Data Sources.....	12
Polygon Delineation.....	13
Integrating RESULTS Information.....	13
Attribute Estimation.....	14
Mapping.....	15
TRIM Base.....	15
Section 3 - Project Implementation.....	16
Project Pre-work meeting.....	16
Scheduling.....	16
Aerial Photography and Photo Scale.....	16
Personnel.....	16
Quality Assurance.....	17
Deliverables.....	17
References for Inventory Standards and Procedures.....	17
Costs.....	18
Project Sign-off Sheet.....	19
Appendix A: Project Map Sheet Area and Other Summaries with Accompanying Overview Maps 20	
APPENDIX B - List of First Nations.....	33
APPENDIX C - List of Approved TEM for South Island.....	34
Appendix D: Historic Data Sources.....	35

Section 1 – Introduction and Background Information

Background Information

Stakeholders for this unit include:

- South Island Natural Resource District staff
- Ministry of Environment and other government agencies
- B.C. Timber Sales
- Local licensees including woodlot owners and community forests groups.

Additionally and crucially, there are 36 First Nations for engagement within the project area described in this plan (see Appendix B for a full list). Consultation is paramount during the development of this inventory plan and during subsequent Phase 1 fieldwork planning and ongoing project activities. Consultation follows the protocol as described in http://www.for.gov.bc.ca/haa/Docs/MOF_Consultation_guidelines_final.pdf

The present inventory consists of a complex mix of varying currencies, standards and formats and is obviously now in need of a re-inventory (for details please see State of the Current Inventory below). A re-inventory of southern Vancouver Island would provide up-to-date information on land cover types, and stand age, height, species composition, volume, and stocking - together with a seamless spatial coverage of the entire project area. The re-inventory process starts by acquiring new imagery. The new digital air photos acquired during the 2014 field season will provide full coverage of the South Island Natural Resource District and adjoining area. This new imagery will be used for photo interpretation of the inventory in concert with air and ground calls for calibration purposes.

Overview of the VRI Process

The Vegetation Resources Inventory (VRI) provides a ‘strategic’ level planning inventory at the management unit level (TSA or TFL) designed to answer two basic questions: where is the resource and how much is there. The VRI inventory standard consists of two phases that may be undertaken in combination or, in certain situations, individually. In phase I of the inventory, air photos are acquired, and polygons are delineated within an inventory unit in order to provide full ‘wall-to-wall’ coverage at the management unit level. Vegetation attributes of these polygons are estimated by photo interpreters. In phase II of the inventory, a subset of the polygons is randomly selected for ground sampling and Net Volume Adjustment Factor (NVAF) sampling. The purpose of Phase II ground sampling is to verify our level of confidence in the Phase 1 inventory and to provide supplementary information on stand characteristics (such as tree size distribution) that are not captured in Phase 1. Phase II sampling is carried out using documented statistical procedures and standards. More details regarding the VRI process and the VRI standards and procedures are available at the MFLNRO Forest Analysis and Inventory Branch (FAIB) website: <http://www.for.gov.bc.ca/hts/vri/index.html>

State of the Current Inventory

Approximately 300,000 hectares or 20% of the South Island Natural Resource District has a Phase 1 VRI dating between 1997 and 2006. VRI Phase 1 projects were completed for the entire Clayoquot Sound Decision Area, TSA 44 Block 27 (Sproat Lake), TFLs 46 and 25 Block 1 (now TFL 61).

The Clayoquot Sound VRI Phase 1 project covered approximately 270,000 ha and included the following areas:

- All of TFLs 54 and 57
- Approximately 10% of the Arrowsmith TSA

Inventory Plan for Photo Interpretation of Southern Vancouver Island

- Portions of Pacific Rim National Park
- A number of smaller protected areas including an addition to Strathcona Provincial Park

The Clayoquot VRI Phase 1 data was not loaded to the provincial data warehouse until 2009 due to problems with non-standard content and format, and there is no associated Phase 2 ground sampling to assess the accuracy of the inventory in this area as part of the standard inventory audit process.

There have been two new inventories recently completed for Capital Regional District (CRD) watershed area near Victoria and for BCTS in the Sproat Lake area. TFL 46 (Teal-Jones) has completed Phase 1 and Phase 2 inventories which were done between 2005 and 2007. This project is complete with completion of an NVAF in 2011 and subsequent data processing. TFL 61 (formerly WFP TFL 25 Block 1) was a VRI pilot project completed in 1999 and significant changes to the land area of this TFL have occurred in the past five years. TFL 44 is significantly reduced in size from its last re-inventory in 1979 under MacMillan Bloedel, and its inventory differs from Ministry standards and content. Discussion with the licensee may determine if there are opportunities for any information sharing such as historic ground call data. Take-back areas of this TFL are now a major component of BCTS's operating area as well as form part of various community and First Nations tenures.

Outside of the Clayoquot Sound planning area and the above noted TFLs, Crown (TSA) land has forest inventory data which is between 20 and 35 years old. Most of the TSA land is in larger tracts west of the E&N boundary. TSA lands on the east side of the E&N boundary, on the east side of the island, are fragmented into many small parcels which are surrounded by large areas of municipal and private lands. More than a third of the project area is private land. Most of the South Island consists of older FIP format inventory files with some incomplete areas in the northwestern edge (see Figure 1 below). When older FIP standard TSA inventories were done between 1988 and 1990 numerous small and medium sized parcels of TSA land were not included. Some other Crown land areas such as provincial parks were also excluded (see Figure 1 and 2 below).

Inventory audits of the Arrowsmith TSA are now relatively old, being completed in 1996 and 1999, with the 1999 audit focussing on plantations on the eastern side of the district, and the key findings of these audits are summarized as follows:

Arrowsmith TSA (1996 audit)

Mature (60+ years)

- Inventory volumes overestimated on average 4% and 6% for operable only stands
- Mean stand heights overestimated by 3%
- Mean stand ages were underestimated by 2%
- Leading species correct for 72% of the samples

Immature (free growing up to 60 years)

- Leading species correct in 70% of the samples
- Site index underestimated by more than 5 meters in 45% of the samples

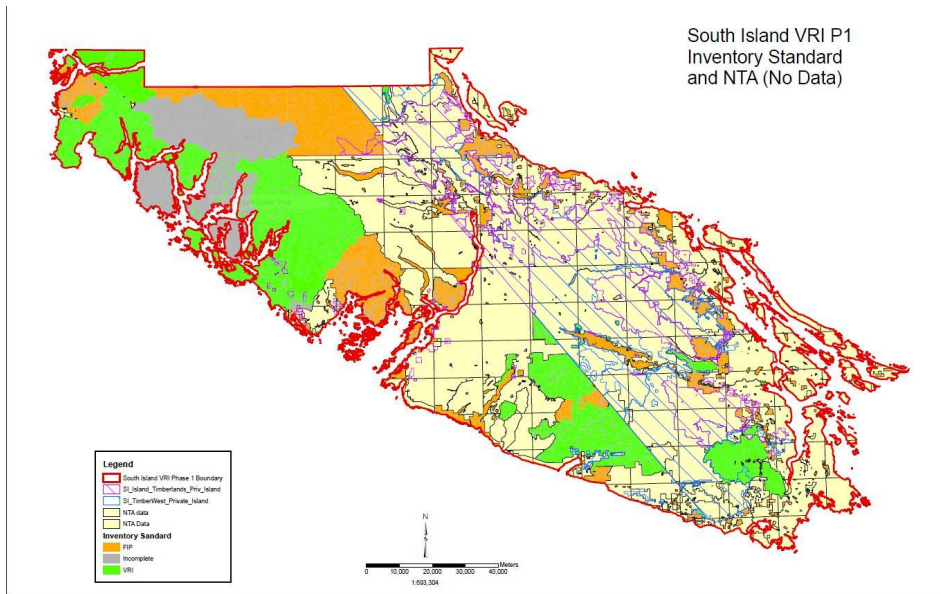
Vancouver Island Plantation Forest (1999 audit)

- Inventory volumes overestimated on average by 3%
- Leading species correct in 84% of the samples

No Ministry audits have been conducted on the inventories in TFLs 44, 54 and 57. The Phase 2 ground sampling of TFLs 46 and 61 was done to meet the objective of database adjustment related to TSR.

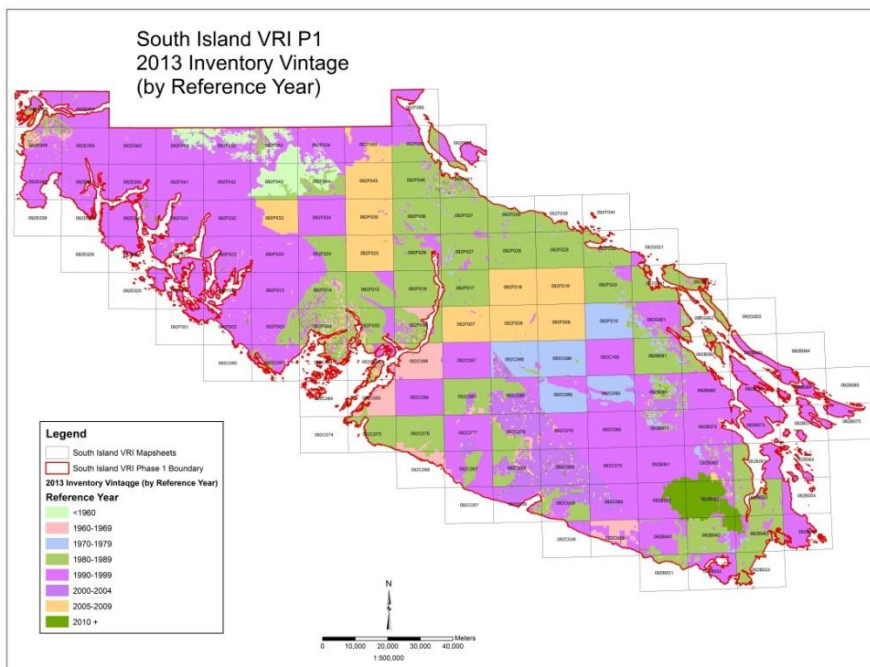
Inventory Plan for Photo Interpretation of Southern Vancouver Island

Fig. 1 – South Island Inventory File Standard



Note: Where inventory data has been captured in the corporate database it is captured to either F – FIP, I – Incomplete VRI, or V – VRI standard. When the database was converted from INCOSADA to VRIMS there were a number of maps that contained NO INVENTORY DATA, they were blank; at conversion all these blank maps were given a default inventory standard code of F. The attached map shows in yellow all the NTA areas (No Typing Available in the corporate database) for the south Island. Even though there is no typing these areas are still either a V or F record in the corporate database.

Fig. 2 – South Island Inventory Dates



A number of inventory data related concerns were raised in the July 22, 2009 Arrowsmith TSA Rationale (<http://www.for.gov.bc.ca/hts/tsa/tsa38/tsr3/38ts09ra.pdf>), as follows:

Inventory Plan for Photo Interpretation of Southern Vancouver Island

The information on cedar is not current in terms of location and the volume of cedar in the inventory is subject to uncertainty as it may have been underestimated. The harvest profile has exceeded the cedar profile and this situation has raised concern regarding the long-term availability of this species. This new inventory will not collect cedar information at the individual tree level however the overall information on this species could be improved at the stand/polygon level which should significantly assist locating this species at the operational level.

A new phase 1 inventory will provide more current information on critical stand attributes such as species composition, volume, stocking, age and height as well as identifying location. A new inventory will also provide more accurate and current information on depletions from harvesting, wildfire and other disturbances. Concurrent with this re-inventory, a new digital elevation model (DEM) will be delivered with 2 and 10 meter resolution and new digital surface model (DSM) that maps the canopy surface may assist with vegetation height mapping, which will benefit a wide range of stakeholders. This new height source is to be used as a reference only for this VRI project. If there is a significant difference between the photo-estimated stand height (supported with photogrammetric heights) and the average DSM stand height, the onus will be on the interpreter to rationalize the difference and assign the final attribute stand height. If FAIB determines that the DSM heights are reliable then these values may be assigned directly after this preliminary testing stage.

Development of south-eastern Vancouver Island has resulted in a high degree of fragmentation of the provincial forest in biogeoclimatic zones that are under intense pressure ecologically and for provision of a wide range of non-timber values in the rural/urban interface. In particular, some vegetation communities in the Coastal Douglas-fir (CDFmm) biogeoclimatic zone are considered endangered and completing a more current inventory of these types may assist in their conservation and management.

Information on First Nations traditional use studies are not generally made available to government agencies and any information such as location of cultural heritage resources or archeological sites is held in confidence. A new Phase 1 VRI will not record location or any other associated details regarding this sensitive information as it is completely outside the scope of inventory data collecting activities.

Document Objectives

This inventory planning document is a working document that states the critical reasons and objectives for carrying out a phase 1 VRI in the South Island Natural Resource District together with details on the area to be inventoried and key steps during the implementation of this phase 1 inventory project.

This plan identifies the target project area for new photo interpretation within the boundaries of the South Island Natural Resource District, and includes at least portions of TFLs 19, 44, 46, 54, 57, and 61 and where the adjoining areas overlap with square edge map blocks. The area bounded by Strathcona Provincial Park that is within the inventory project area is included and will be done to the same VRI standard being applied to TSA and TFL lands. This plan also covers the stages required to be carried out for the successful completion of a photo interpretation project. LiDAR will be used in several small areas of crown land based on the need to identify potential goshawk nesting areas as defined locally. This imagery will be acquired in parallel to VRI based inventory work, with details as to scope and location(s) still being determined. FAIB will work with District staff and BCTS to confirm where and when LiDAR work is to be carried out and confirm any data sharing.

Project Area Overview

The inventory project area encompasses all of the South Island Natural Resource District is just over 1.6 million hectares and occupies the southernmost 30% of Vancouver Island and most of the

Inventory Plan for Photo Interpretation of Southern Vancouver Island

southern Gulf Islands (see Figure 3 below), as well as a small portion of the adjoining Campbell River District to the north where there are overlapping square edge mapsheets. This area occupies all or part of 138 map sheets or approximately 100 full map sheet equivalents (FMEs). Major population centres are Greater Victoria, Duncan, Nanaimo, Port Alberni and smaller communities include Sooke, Lake Cowichan, Chemainus, Ladysmith, Parksville, Qualicum Beach and Tofino/Ucluelet. The District land base is comprised of Crown lands within the Arrowsmith TSA, five TFLs, thousands of private land holdings of various sizes including large blocks within the E&N belt owned by two large forest companies, municipal lands, First Nations treaty lands, Provincial and Federal Parks, and other protected areas such as the Clayoquot Sound area. Significant changes in land tenure and ownership have occurred during the past 20 years and the existing inventories are mostly older than this, therefore reflecting tenure boundaries which existed pre-1990.

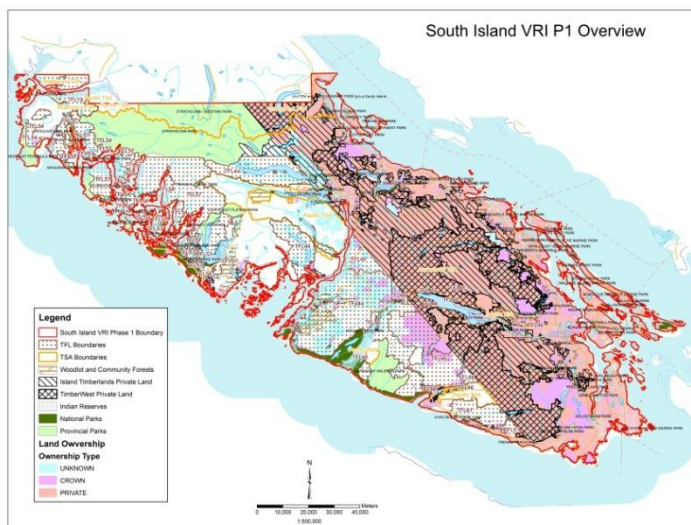
The South Island Natural Resource District presents a complex and dynamic situation with significant challenges in planning a new inventory. Many changes to tenure and ownership have occurred in the past 20 years and this trend continues. Treaties are being finalized which will result in the transfer of land from the Province to First Nations.

Currently the project area consists of the following:

- The Arrowsmith TSA (including woodlots and Community Forests)
- TFL 46 (Teal Jones)
- TFL 44 (Western Forest Products)
- Clayoquot Sound area including TFL 54 and 57 (Iisaak Forest Resources), TSA lands and Parks
- TFL 61 (Pacheedaht Andersen Timber Holdings)
- Various municipal and private lands parcels (except Capital Regional District lands)
- Various woodlots and community forests within the project area boundary
- Maa-Nulth treaty lands (TSL)
- Strathcona Provincial Park (southern portion where it is included within the project area)
- Pacific Rim National Park
- Other Regional and Provincial Parks
- Southern portion of Campbell River District where there is some overlap with adjoining square edge mapsheets

The Pacific TSA (B.C. Timber Sales) and the Capital Regional District (CRD) lands within South Island have recently completed VRIs so these areas do not form part of this project.

Figure 3: Overview Map of South Island Natural Resource District



Inventory Plan for Photo Interpretation of Southern Vancouver Island

It is important to note that VRI phase 1 inventory projects are based on completion by square edge map sheets, therefore the South Island inventory project area is not exactly the same as the actual Arrowsmith TSA/South Island area (see Target Area under Section 2 for further details). Each FME is approximately 16,200 ha in size so the total area including adjoining portions of square edge map sheets is approximately 1.63 million hectares. Thus for planning purposes the following summaries are based on the total South Island inventory project area based on square edge mapsheets, exclusive of off-shore area and ocean inlets but including inland lakes and rivers, and not the actual area defined by administrative boundaries (see Tables 1 and 2 below).

Table 1 South Island Project Area Land Base Summary

Land Classification*	
Total Project Area	1,628,989.44
Total Provincial Park Area	197,442.75
Total National Park Area	55,250.78
Total Protected Areas and Reserves	8,740.49
Total TFL Area	381,556.80
Total TSA Area	462,081.27
Total TSL Area	26,237.91
Total Woodlot and Community Forest Area	44,365.88
Total Island Timberlands Area (Private)	211,989.96
Total TimberWest Area (Private)	228,188.61
Total I.R.s Area	13,134.99

***Note: More detailed area breakdowns of TFLs, TSAs, Parks, Woodlots and Community Forests can be found in Appendix A.**

Table 2: South Island Project Area Ownership Class

Cadastre (Ownership Class)	
Total Crown Federal	19,163.56
Crown Municipal	43,571.93
Crown Provincial	114,629.04
Private	632,043.97
Unknown	205,334.20
Total	1,014,742.70

The summary of area by leading species is provided in Table 3 below and is limited based on the fragmented nature of the Ministry's FIP and VRI format inventory coverage across the current project area.

Table 3: South Island Area by Leading Species Summary

Leading Species*	
Aspen (AC, ACT,AT)	65.55
Fir (B, BA, BG, BL)	28,701.00
Cedar (CW, YC)	160,699.58

Inventory Plan for Photo Interpretation of Southern Vancouver Island

Douglas Fir (FD, FDC)	97,306.74
Hardwoods (DR, MB, W)	12,854.83
Hemlock (H, HM, HW)	130,612.22
Pine (PL, PLC, PW, PY)	5,887.18
Spruce (S, SS)	2,874.18
*Total Area	439,001.28

*Note – Total area by leading species is based on current available inventory data MFLNRO has and does not reflect actual area by leading species across the entire project area land base.

The biogeoclimatic (BEC) summary is based on current information across the current project area and is a complete coverage (see Figure 4 and Table 4 below)

Figure 4. South Island Project Area BEC

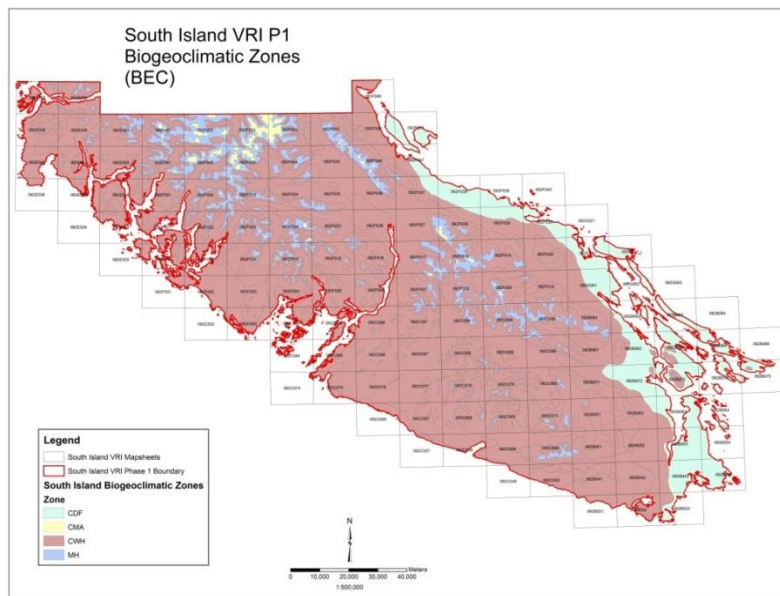


Table 4 Summary of Project Area by BEC Zone

Biogeoclimatic Zones	
Coastal Douglas-fir (CDF)	178,513.73
Coastal Mountain-heather Alpine (CMA)	17,935.96
Coastal Western Hemlock (CWH)	1,317,348.53
Mountain Hemlock (MH)	115,186.96
Total BEC	1,628,985.18

Private Land, Woodlots, First Nations TSLs and Community Forests

As long as the associated air photos are available, the new inventory will include any woodlots and the four community forests lying within the project area: Alberni Valley, Barkley, Bamfield Huu-ay-aht and Cowichan Tribes. Any photo interpretation calibration points established in these projects would be made available as part of any historical data source for use in the new inventory project. Private and municipal lands and woodlots are included in this project however ground calls will not

Inventory Plan for Photo Interpretation of Southern Vancouver Island

be established on private lands. A full listing of woodlots and community forests can be found in Appendix A. Forest Analysis and Inventory Branch recognizes the special sensitivity of inventory information on some tenure and ownership types. FAIB is working with stakeholders to resolve concerns.

Section 2 - Photo Interpretation Plan

Project Objectives

The overriding objective of this photo interpretation project is to update the inventory for the South Island to one standard, format and currency across the entire South Island inventory project area to account for what is presently a complicated and fragmented inventory consisting of various standards, formats and currencies and with known gaps in forest cover information. Producing one consistent and seamless inventory across this entire project area will provide all local stakeholders with accurate and up-to-date forest resource information (delineation and attribution) that will be available in a single dataset using published standards and format. The information from this re-inventory will be used to inform future resource management decisions by industry, BCTS, local woodlot owners and community forest managers, First Nations, MFLNRO and other government agencies. The re-inventory information will also be available as a crucial dataset for the next Arrowsmith TSA AAC determination scheduled for 2016 in accordance with Section 8 of the Forest Act.

Target Area

The entire South Island Natural Resource District will be photo interpreted inclusive of Strathcona Park, all woodlots, private land, small parks and community forests and exclusive of those areas listed as having a recent and available VRI as noted in the Project Area Overview (see Fig. 5 VRI Project Overview and Table 5: VRI Projects Area Excluded below). VRI inventory for all parks will be to the same standard as the TSA and TFL lands in order to determine seral stage distribution, potential wildlife habitat, etc. The linework from the 1997 Clayoquot Sound inventory, covering approximately 268,000 ha will be used for a retrofitted VRI which will include a focus on updating young dynamic stands which cover about 25% of the area.

A detailed map sheet and area summary is provided in the attached Appendix A.

Figure 5: South Island Natural Resource District VRI Project Overview (showing excluded areas)

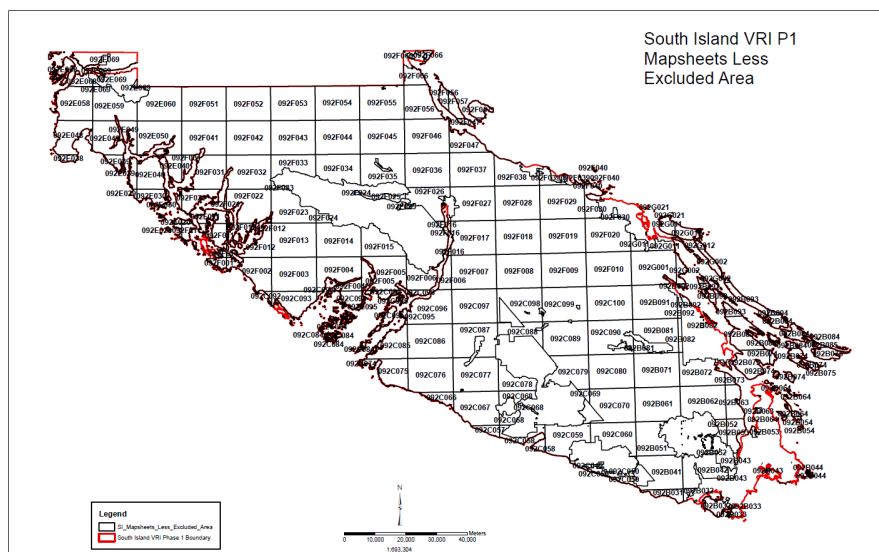


Table 5: VRI Projects Area Excluded

VRI Projects Already Completed	Area (ha)
TFL 19	19,051.63
TFL 61	20,240.22
TFL 46	62,932.45
Sproat Lake VRI (Includes Pacific TSA (TSA 44))	73,162.99
Victoria CRD VRI	24,458.86
Sub-total area	199,846.15
Urban Areas*	103,973
Estimated Total VRI Projects Area Excluded	303,819.15

*Note: Urban areas tally is based on municipal boundaries derived from Tantalus system

Historical Data Sources

An estimate of 1698 FIP (historic) air and ground calls and 1983 VRI air and ground calls were established in the South Island Natural Resource District since the first forest inventory project in the early 1970's (see Table 6 Inventory Calibration Points below). An unknown number of the established data sources were destroyed over the years through harvesting and other disturbances. FAIB is still assembling historic data and the actual number of data sources ultimately available will be determined at the data source transfer stage which may or may not be completed prior to the award of the VRI photo interpretation contract.

All data sources that were available in the last re-inventory project are documented on the earlier document photos. A digital spatial location of these points will be made available in ESRI shape file. **Where the document photos are available**, data sources available on the document photos will be reviewed by photo interpreters and data sources that are still relevant to a new inventory on the 2014 imagery will be transferred to a digital format provided by the Ministry. A full list of currently known FIP historic and VRI can be found in Appendix D.

Table 6: Inventory Calibration Points Established in South Island Project Area

Data Source Origin	Type	Number
VRI	Ground Call (cd 17)	654
VRI	Air Call (cd 18)	1329
FIP	XG (cd 04)	883
FIP	X (cd 01)	757
FIP	XGO	24
FIP	XGC	34

Inventory Plan for Photo Interpretation of Southern Vancouver Island

Situations that would justify removal of existing data sources include a major disturbance (such as a large fire, harvesting or insect/disease damage), large stand structure changes, or as defined in the contract document.

New Data Sources

The contractor will establish a minimum of 15 ground calls and 20 air calls per map FME with the exact ratio of ground to air calls per FME still to be determined pending confirmation of the number of historic data sources available.

The type of ground call established in each polygon is based on the stand structure complexity as described in the VRI Photo Interpretation Field Calibration Procedures. The ratio of 3-pt versus 1-pt ground call will be confirmed after a review of a sample of the 2014 photo images. Any deviation from these numbers must be agreed upon by the Ministry Project Manager and will be reflected in the field calibration plan. **Note: ground calibration data will NOT be collected on private land (this includes the establishment of any type of ground plots).**

Prior to the initiation of a field calibration program, a Field Calibration Plan (see Guidelines in Appendix D) is to be submitted to the Ministry Project Manager for approval.

As part of the deliverables, the Ministry requires a complete set of any new data sources be provided in a suitable digital format (as determined by the Ministry), including the geographical locations (UTM coordinates) of these data sources as well as the complete set of field attribute data collected.

Other Data Sources

The origin and estimated number of **other** historic data sources is still to be determined as of the date of this first draft (See Table 7 Other Data Sources below).

Table 7: Other Data Sources

Data Source Origin	Type	Number of Data Sources
Growth and Yield Permanent Sample Plots (PSP)	PSP	TBD
Community Forest- Ground Calls	XGV	TBD
Community Forest - Air Calls	XV	TBD
TFL Historic Air and ground Call Data	TBD	TBD
Clayoquot Sound Inventory – ground calibration points		251
Clayoquot Sound Inventory – air calibration points		1201
Site productivity – Approved TEM*		
Other TBD		

*The VRI Phase 1 contractor will use the provincial site productivity layer information as a reference for site index (SI) where SI is not available in the RESULTS and where photo interpreters are responsible for estimating SI values as described in Section 6 of the Photo Interpretation Procedures. This GIS database contains the latest TEM and SIBEC information for the South Island Natural Resource District by species for the 33 recorded TEM datasets collected within the project area (See Appendix C for details). The provincial site productivity layer data and supporting information is available at:

<http://www.for.gov.bc.ca/hts/siteprod/provlayer.html>

ftp://ftp.for.gov.bc.ca/HTS/external!/publish/Provincial_Site_Productivity_Layer_June_2013/

Polygon Delineation

Polygon delineation is to be completed to VRI standards. Any deviation from these standards must be agreed to by the Ministry Project Manager.

Integrating RESULTS Information

The integration of the RESULTS (Reporting Silviculture Updates and Land status Tracking System) spatial files and tree attribute data will be completed at the delineation and attribution stages of the project. The RESULTS database in the Arrowsmith TSA indicates there are 6074 openings for a total area of 137,116 ha (see Figure 6 and Table 8 below), and of these:

- 4,287 openings are Depletion/Regenerations for an area of 93,341 ha
- 1,787 openings are Free Growing for an area of 43,775 ha

Fig. 6 Southern Vancouver Island project area RESULTS Spatial File Coverage

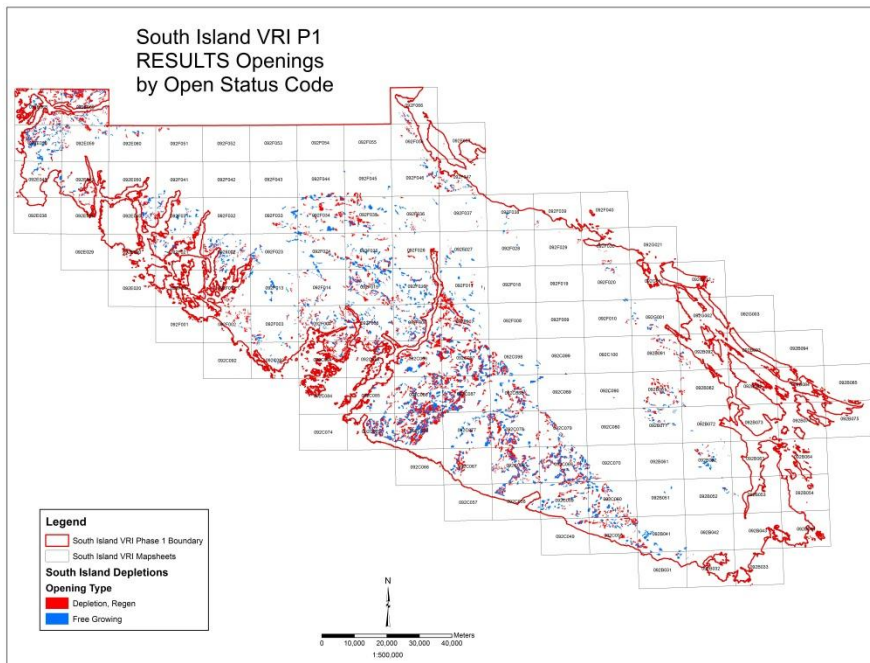


Table 8: RESULTS Summary for South Island

RESULTS Data Summary	# of Openings	Area (Ha)
RESULTS Free Growing (# of Openings)	1,787	43,775.04
RESULTS Depletion/Regen (# of Openings)	4,287	93,341.40
Totals	6074	137,116.44

The FAIB Kamloops Update Team is presently running a depletions and update process for South Island and an updated ESRI shape file for the RESULTS openings and tree attributes will be provided to the bidders attending a mandatory project viewing session in spring, 2015. A significant portion of

Inventory Plan for Photo Interpretation of Southern Vancouver Island

the RESULTS depletions have been updated in the current Forest Inventory, however there may still be some missing spatial and attribute data and some more recent openings in the 2014 air photos may not be found in the RESULTS data cut. Attribution of harvested areas that are not identified in the RESULTS spatial files will be completed in accordance with the procedures for Photo Interpretation Guidelines for Integrating RESULTS Information. Reserves will be captured down to 0.5 ha resolution for this project.

Attribute Estimation

This project will be undertaken in softcopy (digital photogrammetric) format.

Forest stand height estimates will be taken where suitable at the discretion of the photo interpreter. There will be no quality assurance carried out on the photogrammetric heights as QA will involve digital height comparisons.

Variable retention harvesting systems have been used throughout BC coastal operations since the early 90s. Retention of tree patches and individual trees from the former stand are now also being assessed as part of stocking standards in silviculture stocking surveys.

All residual tree patches and trees that are uniformly and non-uniformly dispersed throughout the openings must be described as a separate VRI layer and assigned a full suite of tree attributes. The use of multi-layers in the silvicultural openings is not subject to the VRI multi-layer criteria outlined in the VRI photo interpretation procedures.

Examples of tree retention to be described in silviculture openings:

1. Dispersed Retention of residual stems

Layer 1: Fd100 95yrs - 23m

Layer 2: Fd100 2yrs - 0.3m



Inventory Plan for Photo Interpretation of Southern Vancouver Island

2. Clearcut with Reserves - patches below 0.5ha (patches >0.5ha must be delineated)

Layer 1: Fd600Hw30Cw10 95yrs - 22m

Layer 2: Fd100 2yrs - 0.3m



Mapping

The Ministry has developed a format and database standards for the submission and storage of spatial and attribute data for VRI Photo interpretation. All new projects must be completed to this standard and submitted to the Ministry Project Manager following successful QA.

The Contractor will adhere to the most current version of the *VRIMS Personal Geodatabase Structure and Use and VRIMS Vegetation Cover Polygon Validation Rules* published by the Forest Analysis and Inventory Branch.

TRIM Base

A TRIM (NAD 83) format base files will be made available to the contractor at the project pre-work meeting.

There will be no changes made to the TRIM feature unless significant changes occurred to the polygonal features such as lakes and double-line rivers. The contractor must maintain a record of any TRIM changes and submit all changes to the Project Manager in ESRI shape file format. The changes will be passed on to GeoBC for TRIM update.

Section 3 - Project Implementation

Project Pre-work meeting

A project pre-work meeting is mandatory. The purpose of a project pre-work meeting is to bring together the Ministry Project Manager, VRI Phase 1 contractor, MFLNRO representatives and quality assurance personnel prior to project start-up. This meeting will ensure that an efficient communication network is established, identify individuals responsible for all aspects of the project, allow discussion of any issues before project work commences and establish timelines for deliverables and data flow. Minor changes to the contract to complete the Phase 1 activities may be identified at this meeting.

A project pre-work checklist, signed off by all parties attending, will be used to organize and guide the meeting.

Scheduling

The project will progress over three fiscal years commencing in the spring or early summer of 2015 - 2016 fiscal. A total of 20 FMEs is expected to be completed in the first year with the remainder being completed in Year 2 and 3. Three field seasons will be required for collection of photo interpretation field calibration data (air and ground calls). Field calibration is to coincide with subsequent attribution of blocks as scheduled in the approved work plan. The delivery schedule of specific maps will drive the stages of work throughout this project, with the Arrowsmith TSA maps likely to be the priority for Year 1. The remaining fieldwork, photo estimation and map production will be completed in the 2017/18 fiscal year (Year 3)

A delivery schedule outlining progressive delivery of products will be submitted by the contractor for each fiscal. The format of the delivery schedule and the order of map completion will be finalized and agreed to at the project pre-work meeting.

Aerial Photography and Photo Scale

The present 2014 digital air photo acquisition is being administered by GeoBC on behalf of FAIB and therefore meets all standards and specifications as summarized below.

Digital frame camera imagery of the project area was acquired to GeoBC photo standards and specifications in the summer of 2014.

Flight lines were oriented in an East-West direction and captured at 25cm GSD (ground scale distance). The digital copy image sets will be available in 4 band RGBIR imagery in TIF (compressed tiled jpeg) format with ZI model setups.

Project Manager

The Ministry Project Manager for the South Island Natural Resource District Phase 1 VRI project is Roman Bilek, FAIB. Responsibilities include the following: coordinating the project; monitoring and communicating project progress with the local stakeholders; ensuring all contractors are qualified and certified; overseeing photo-interpretation activities; ensuring quality assurance is complete and delivered at each stage, and assisting in coordinating technical expertise where required.

Personnel

All VRI photo interpretation work must be completed by or directly supervised by a VRI Certified Photo Interpreter. All uncertified photo interpreters are to be directly supervised by a Certified Photo Interpreter working on that project.

At least 50% of the photo interpreters working on the project must be certified for VRI photo interpretation. A ratio of one certified interpreter to two uncertified interpreters is acceptable

Inventory Plan for Photo Interpretation of Southern Vancouver Island

provided the delineation and attribution work of the uncertified interpreters is carried out in the same physical work location of the supervising certified interpreter.

Quality Assurance

An independent third-party quality assurance (QA) will be completed on all stages of the project in accordance with the VRI Photo Interpretation Quality Assurance Procedures and Standards.

Quality assurance intensity for each stage of the project is to be completed as follows:

Historical Data Source Transfer	5%
Delineation	5%
Field Calibration	5%
Attribution	5%

Quality assurance for digital map production will be conducted by the Province. Contractors will utilize “VEGCAP for Contractors” validation software to perform quality assurance on data files.

All QA findings and re-work instructions are communicated to the VRI contractor by the Ministry Project Manager.

Deliverables

The VRI photo interpretation project deliverables for each stage of the photo interpretation project are outlined in the VRI Photo Interpretation Procedures and VRI Field Calibration Procedures for Photo Interpretation.

For a multi-year project, deliverables are required at the end of each year fiscal. To provide sufficient time for completion of independent third-party quality assurance and Ministry in-house mapping quality assurance, the final deliverables will be submitted at the end of February of each fiscal.

The most current VRI Phase I standards documentation can be accessed from the following MFLNRO web site:

<http://www.for.gov.bc.ca/hts/vri/standards/photo.html>

Submission of all final deliverables will be signed-off by a qualified ABCFP registered Forest Professional.

Roles and Responsibilities

MFLNRO

Project Manager is the point of contact for the Ministry and provides overall communication of project activities with contractors and South Island Natural Resource District staff and stakeholders via the Ministry SharePoint site.

VRI Contractor

Works with the Ministry Project Manager to ensure the planning, coordination and execution of project activities is consistent with the VPIP and contract requirements.

VRI QA Contractor

Works with the VRI Contractor and Ministry Project Manager to ensure that Quality Assurance reporting meet the VRI prescribed standards.

References for Inventory Standards and Procedures

All work will be carried out in accordance with the following British Columbia Government specifications, current at the time of contract signing.

Inventory Plan for Photo Interpretation of Southern Vancouver Island

- *Vegetation Resources Inventory Photo Interpretation Procedures*
- *Vegetation Resources Inventory Photo Interpretation Standards and Quality Assurance Procedures*
- *Vegetation Resources Inventory Field Calibration Procedures for Photo Interpretation*
- *Guideline for Integrating RESULTS Information* (currently contained within the VRI photo interpretation procedures)
- *Vegetation Resources Inventory – The B.C. Land Cover Classification Scheme and addendums*
- *VRIMS Personal Geodatabase Structure and Use*
- *VRIMS Vegetation Cover Polygon Validation Rules*
- *Vegetation Resources Inventory Preparing a Project Implementation Plan for Photo interpretation – Appendix D*

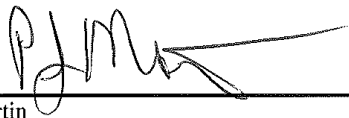
Costs

The estimated cost for completing the project to VRI standard, excluding photo acquisition, but including quality assurance, data capture and field costs based on the level of field calibration is \$1.85m based on an estimated average of \$1.40/ha over an estimated 1.2 m ha project area including 10% estimated QA cost. For Year 1 of the project the estimated cost of completed VRI for 20 FME at 16,200ha per FME is approximately 500K. This first cost is also based on \$1.40/ha plus 10% QA cost estimate of the overall photo interpretation project cost for this unit since QA is performed throughout the project. The remaining project cost would be incurred in Year 2 and 3 for completion of this inventory. **Note, these estimates are used for project budgeting purposes only, based on current average costs for similar projects, and should not be used for the purpose of submitting bids on any work that may be tendered.**

Project Sign-off Sheet

**South Island Natural Resource District Vegetation Resources Inventory Photo Interpretation
Project Implementation Plan**

I have reviewed and approved the South Island Natural Resource District Vegetation Resources
Inventory Photo Interpretation Project Implementation Plan.



Pat Martin
Manager, Forest Inventory Section
Forest Analysis and Inventory Branch
Ministry of Forests, Lands and Natural Resource Operations

March 10, 2015

Date

Appendix A: Project Map Sheet Area and Other Summaries with Accompanying Overview Maps

Map	Map Area (Ha)	NP Area (FIP) (Ha)	VRI Vegetated/Non Tree Area (Ha)	VRI Non Forest Descriptor Area (Ha)	Map Net Area Less Excluded (Ha)
092B031	3,178.73	2,852.42	40.70		3,178.73
092B032	7,926.85	7,594.87			4,254.44
092B033	4,970.07	4,956.91			260.78
092B041	16,390.33	14,964.40	248.02		13,811.70
092B042	16,451.69	13,741.46	92.82	3.91	11,382.31
092B043	14,262.83	12,934.60	31.84		1,250.28
092B044	7,640.41	7,395.21			234.77
092B051	16,419.65	10,900.48	161.77		10,900.53
092B052	16,419.65	2,458.37	503.33	1.24	3,092.43
092B053	14,092.80	13,626.30	16.66		5,250.43
092B054	3,232.33	3,229.30			443.52
092B061	16,387.56	15,966.91	23.41		15,966.91
092B062	16,387.56	11,174.15	225.35	17.90	14,645.68
092B063	10,691.78	10,611.16			5,759.73
092B064	1,384.93	1,307.75			1,240.94
092B071	16,355.41	12,926.79	428.52	25.85	16,343.34
092B072	15,726.18	14,985.92	31.66	1.50	11,806.96
092B073	10,269.45	9,485.17	0.15	108.81	9,442.25
092B074	4,408.38	4,389.95			4,408.38
092B075	3,142.21	2,801.47			3,142.21
092B081	16,323.22	8,103.90	506.82	12.43	13,183.00
092B082	14,420.56	13,657.75	77.01	2.87	1,511.23
092B083	8,920.02	8,900.34			8,558.39
092B084	6,008.70	5,974.89			6,008.70
092B085	339.24	337.57			339.24
092B091	16,146.72	12,914.92	295.79		15,478.78
092B092	6,192.24	4,893.67	152.05	11.77	3,391.65
092B093	4,801.07	4,788.90			4,801.07
092B094	475.29	474.71			475.29
092C049	2,272.67	2,242.79			674.84
092C050	10,910.72	10,423.35	35.68		2,609.49
092C057	2,014.47	2,013.20			2,014.48

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092C058	8,031.63	4,252.53	940.62		4,492.66
092C059	15,719.47	7,323.33	1,117.65	2.90	11,725.81
092C060	16,419.65	10,632.56	957.68		11,913.15
092C066	3,109.26	936.40	30.66	25.33	3,109.26
092C067	14,969.75	13,608.42	55.80		14,800.41
092C068	16,387.56	4,712.08	1,579.51	18.82	6,483.41
092C069	16,387.56	946.04	2,670.34		1,022.35
092C070	16,387.56	14,845.75	234.14		15,188.82
092C074	160.12	139.49			160.12
092C075	9,123.46	9,035.80			9,123.46
092C076	16,246.90	15,383.34	28.59	28.59	16,246.90
092C077	16,355.41	14,179.37	147.26		15,937.69
092C078	16,355.41	5,158.59	548.86	17.75	6,895.55
092C079	16,355.41	9,377.47	504.72	32.46	12,363.63
092C080	16,355.41	16,355.41			16,355.41
092C084	794.55	200.36	9.27	3.18	794.55
092C085	9,992.16	7,860.71	252.86	66.27	9,992.17
092C086	16,323.22	16,279.79	43.44	25.79	16,323.22
092C087	16,323.22	14,265.90	76.80		14,690.84
092C088	16,323.22	6,774.66	572.41		6,836.18
092C089	16,323.22	15,635.08	4.62		15,923.68
092C090	16,323.22	15,353.59	54.03	23.91	15,000.88
092C092	529.92	336.10	2.09		529.92
092C093	9,178.01	7,325.12	374.66	1.47	8,533.12
092C094	5,162.39	632.92	166.23	19.19	5,162.39
092C095	5,545.98	2,200.93	277.11	39.59	5,545.98
092C096	14,544.27	13,564.76	208.77	104.99	14,544.28
092C097	16,290.97	16,279.94	8.24		16,290.97
092C098	16,290.97	13,262.65	356.42		13,310.80
092C099	16,290.97	15,889.21	51.45		16,017.17
092C100	16,290.97	16,291.14			16,290.97
092E020	706.68		14.08		706.68
092E029	434.93		2.81		434.92
092E030	5,508.96		184.23		5,508.97
092E038	1,256.93		23.49		1,256.93
092E039	4,579.61		60.43		4,579.66
092E040	12,633.87		503.42		12,633.89
092E048	9,769.13		116.11	4.01	9,769.13
092E049	13,879.55		341.39		13,879.56
092E050	14,360.38		25.52		14,360.41

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092E058	12,581.03	1,119.75	1,762.49	169.68	12,581.04
092E059	16,009.86	323.21	277.27	32.24	13,112.51
092E060	16,096.42	1,391.83	636.03		14,972.41
092E068	8,514.52	101.93	738.14	39.55	5,560.28
092E069	13,960.40	125.42	242.02	12.67	1,884.58
092F001	1,652.04		5.59		1,577.83
092F002	10,139.83		370.30		10,139.86
092F003	16,258.67	3,817.36	937.26	29.58	16,258.67
092F004	14,502.29	2,295.60	1,770.79	99.35	14,502.30
092F005	14,690.81	10,673.61	577.89	9.90	14,690.85
092F006	14,443.44	5,994.32	1,237.17	180.68	10,133.11
092F007	16,258.67		130.68		16,258.67
092F008	16,258.67	222.27			16,258.67
092F009	16,258.67				16,258.67
092F010	16,258.67	15,160.08	40.80	1.11	16,258.67
092F011	7,886.22		124.96		6,878.66
092F012	10,046.59		1,124.86		10,046.60
092F013	16,226.32	15.86	1,225.30		16,226.32
092F014	16,226.32	5,563.52	1,142.95	37.84	15,343.45
092F015	16,226.32	15,622.73	26.60		10,333.77
092F016	15,082.30	14,925.99	41.34		1,251.70
092F017	16,053.45	15,724.48	209.79		16,053.45
092F018	16,226.33				16,226.33
092F019	16,226.33				16,226.33
092F020	16,226.33	13,658.30	86.83	10.60	15,634.26
092F021	9,696.05		567.77		9,696.05
092F022	14,189.38		1,051.21		14,189.40
092F023	16,144.11		2,060.69		12,545.00
092F024	16,193.92	9,591.07	936.79		1,689.30
092F025	16,193.93		58.97		2,584.37
092F026	15,429.66	14,799.28	59.20	3.24	10,170.55
092F027	16,193.92	15,148.18	128.98		15,204.71
092F028	16,193.92	15,662.68	40.59	5.88	16,193.92
092F029	16,146.54	15,544.03	45.88	10.62	16,121.56
092F030	10,165.30	8,959.72	38.64	15.90	5,372.43
092F031	12,803.48		1,158.71		12,803.49
092F032	15,785.25		840.63		15,771.88
092F033	16,161.47		948.09		9,495.82
092F034	16,161.47	16,068.37	85.36		13,018.78
092F035	16,161.47		166.36		13,706.19

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092F036	16,161.47	13,924.42	249.40	12.20	16,148.18
092F037	16,127.65	14,292.14	117.03	36.89	16,127.65
092F038	11,100.93	9,904.10	32.33	6.04	9,656.38
092F039	4,578.87	4,304.36	14.81	6.47	2,971.75
092F040	257.84	237.13			257.84
092F041	15,831.70		1,326.39		15,831.70
092F042	16,128.97	139.42	3,052.37		16,128.97
092F043	16,128.97	11,102.09	402.86		16,128.97
092F044	16,128.97	7,527.38	2,077.10	1,818.78	16,128.97
092F045	16,128.97	232.23			16,128.97
092F046	16,102.63	12,498.88	411.52	29.81	16,102.63
092F047	7,918.65	3,522.79	272.56	27.74	7,918.64
092F051	16,096.42	3,894.37	1,379.25		16,096.42
092F052	16,096.42	11,436.59	737.73	5.96	16,096.42
092F053	16,096.42	10,814.47	1,207.79		16,096.42
092F054	16,096.42	15,788.98	13.82	10.66	16,096.42
092F055	16,096.42	10,715.97			16,016.10
092F056	13,032.46	12,163.29	112.97	17.70	13,032.47
092F057	5,191.85	4,761.03	5.96		5,191.85
092F066*	6,927.22	6,023.90	124.46	17.69	4,732.35
092G001	15,893.80	13,030.65	248.19	18.85	15,806.32
092G002	4,711.43	4,523.68	5.47		4,711.43
092G003	270.55				270.55
092G011	12,155.03	12,073.44			6,849.30
092G012	3,800.64	3,451.27	0.91		3,800.64
092G021	1,408.47	1,402.75			26.68
TOTAL AREA	1,628,985.18	932,343.94	48,107.11	3,268.16	1,338,184.86

***Note: There is no full photo coverage for mapsheet 092F066**

TSA Summary	
Arrowsmith TSA (TSA 38)	279,247.78
Pacific TSA (TSA 44)	84,766.13
Strathcona TSA (TSA37)	98,067.36
Total TSA	462,081.27

Inventory Plan for Photo Interpretation of Southern Vancouver Island

TFL Summary	
TFL19	19,051.63
TFL44	139,800.00
TFL46	62,932.45
TFL54	52,387.79
TFL57	87,144.72
TFL61	20,240.22
Total TFL	381,556.80

Provincial Park Area Summary	
Park Name	
ARBUTUS GROVE PARK	22.42
BAMBERTON PARK	26.66
BEAVER POINT PARK	16.67
BELLHOUSE PARK	3.11
BLIGH ISLAND PARK	4,679.94
BODEGA RIDGE PARK	233.40
BOYLE POINT PARK	187.97
BRIGHT ANGEL PARK	12.05
BURGOYNE BAY PARK	501.25
CARMANAH WALBRAN PARK	16,361.13
CHEMAINUS RIVER PARK	118.72
CLAYOQUOT ARM PARK	3,555.89
CLAYOQUOT PLATEAU PARK	3,131.59
COLLISON POINT PARK	22.65
COWICHAN RIVER PARK	1,404.52
DAWLEY PASSAGE PARK	157.60
DENMAN ISLAND PARK	552.36
DIONISIO POINT PARK	140.69
DISCOVERY ISLAND MARINE PARK	67.52
DRUMBEG PARK	55.07
ENGLISHMAN RIVER FALLS PARK	97.11
EPPER PASSAGE PARK	328.08
EVES PARK	19.22
FILLONGLEY PARK	26.48
FLORES ISLAND PARK	6,906.46
FOSSLI PARK	52.41

Inventory Plan for Photo Interpretation of Southern Vancouver Island

FRENCH BEACH PARK	54.57
GABRIOLA SANDS PARK	5.97
GERALD ISLAND PARK	11.98
GIBSON MARINE PARK	142.67
GOLDSTREAM PARK	478.87
GORDON BAY PARK	103.81
GOWLLAND TOD PARK	1,281.32
HELLIWELL PARK	1,327.11
HEMER PARK	109.68
HESQUIAT LAKE PARK	57.39
HESQUIAT PENINSULA PARK	7,790.45
HITCHIE CREEK PARK	235.17
HORNE LAKE CAVES PARK	157.77
JAJI7EM and KW'ULH MARINE PARK [a.k.a Sandy Island	30.24
JOHN DEAN PARK	174.97
JUAN DE FUCA PARK	1,584.84
KENNEDY LAKE PARK	240.61
KENNEDY RIVER BOG PARK	35.98
KOKSILAH RIVER PARK	207.63
LITTLE QUALICUM FALLS PARK	463.90
MACMILLAN PARK	302.22
MAQUINNA MARINE PARK	2,559.98
MEMORY ISLAND PARK	1.10
MONTAGUE HARBOUR MARINE PARK	101.98
MORDEN COLLIERY PARK	4.41
MOUNT ERSKINE PARK	107.62
MOUNT GEOFFERY ESCARPMENT PARK	188.97
MOUNT MAXWELL PARK	234.14
NEWCASTLE ISLAND MARINE PARK	363.60
NITINAT RIVER PARK	159.95
PETROGLYPH PARK	1.70
PIRATES COVE MARINE PARK	31.67
RATHTREVOR BEACH PARK	349.14
ROBERTS MEMORIAL PARK	13.93
ROSEWALL CREEK PARK	65.52
RUCKLE PARK	533.67
SANDWELL PARK	16.99
SOOKE MOUNTAIN PARK	451.12
SOOKE POTHOLE PARK	6.26
SPECTACLE LAKE PARK	67.11

Inventory Plan for Photo Interpretation of Southern Vancouver Island

SPIDER LAKE PARK	57.79
SPROAT LAKE PARK	40.26
STAMP RIVER PARK	346.38
STRATHCONA - WESTMIN PARK	2,697.98
STRATHCONA PARK	124,079.75
SULPHUR PASSAGE PARK	2,191.97
SYDNEY INLET PARK	2,709.11
TAYLOR ARM PARK	72.79
TRANQUIL CREEK PARK	297.61
TRIBUNE BAY PARK	94.87
VARGAS ISLAND PARK	5,804.16
WAKES COVE PARK	204.26
WALLACE ISLAND MARINE PARK	88.67
WEST SHAWNIGAN LAKE PARK	9.66
WHALEBOAT ISLAND MARINE PARK	10.52
Total Provincial Park	197,442.75

Community Forest Summary	
K1E	353.70
K1K	1,672.80
K2D	6,390.87
K3N	2,420.27
K3S	6,751.28
N1A	9,541.57
Total Community Forest	27,130.50

Woodlot Summary	
W0011	384.60
W0012	221.11
W0013	229.12
W0014	33.01
W0019	231.91
W0020	1,711.28
W0021	96.56
W0022	281.25
W0024	654.69

Inventory Plan for Photo Interpretation of Southern Vancouver Island

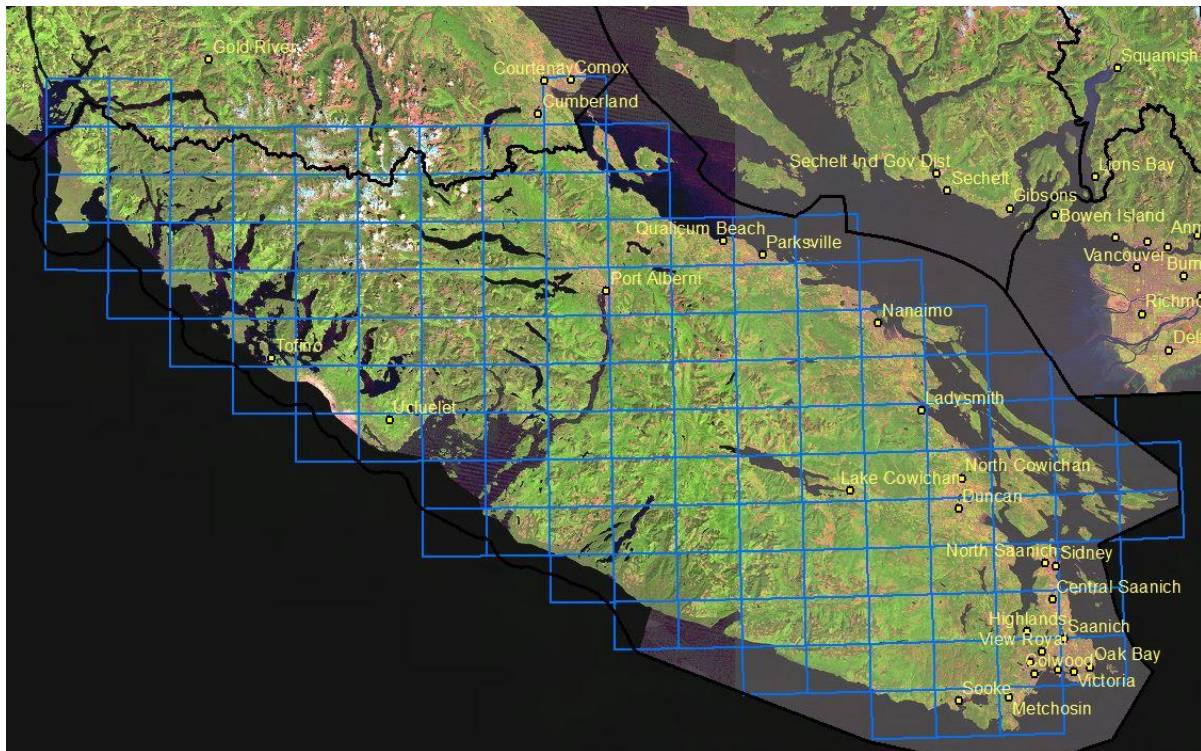
W0026	485.92
W0030	558.97
W0031	389.95
W0032	337.04
W0033	801.98
W0085	702.54
W0097	370.70
W1440	339.13
W1464	412.45
W1474	153.22
W1475	256.55
W1476	1,025.75
W1479	417.84
W1526	673.23
W1557	328.57
W1614	363.45
W1632	431.99
W1713	782.39
W1831	319.56
W1902	877.20
W1903	294.99
W1906	791.19
W1957	397.76
W1968	695.84
W2036	505.94
W2043	299.04
W2096	374.65
Total Woodlot	17,231.35

Municipality Summary	Area
CENTRAL SAANICH	5176
COLWOOD	2116
COMOX	1259
COURTENAY	1229
CUMBERLAND	152
DISTRICT OF HIGHLANDS	4119
DUNCAN	208
ESQUIMALT	1104
LADYSMITH	1486
LAKE COWICHAN	974

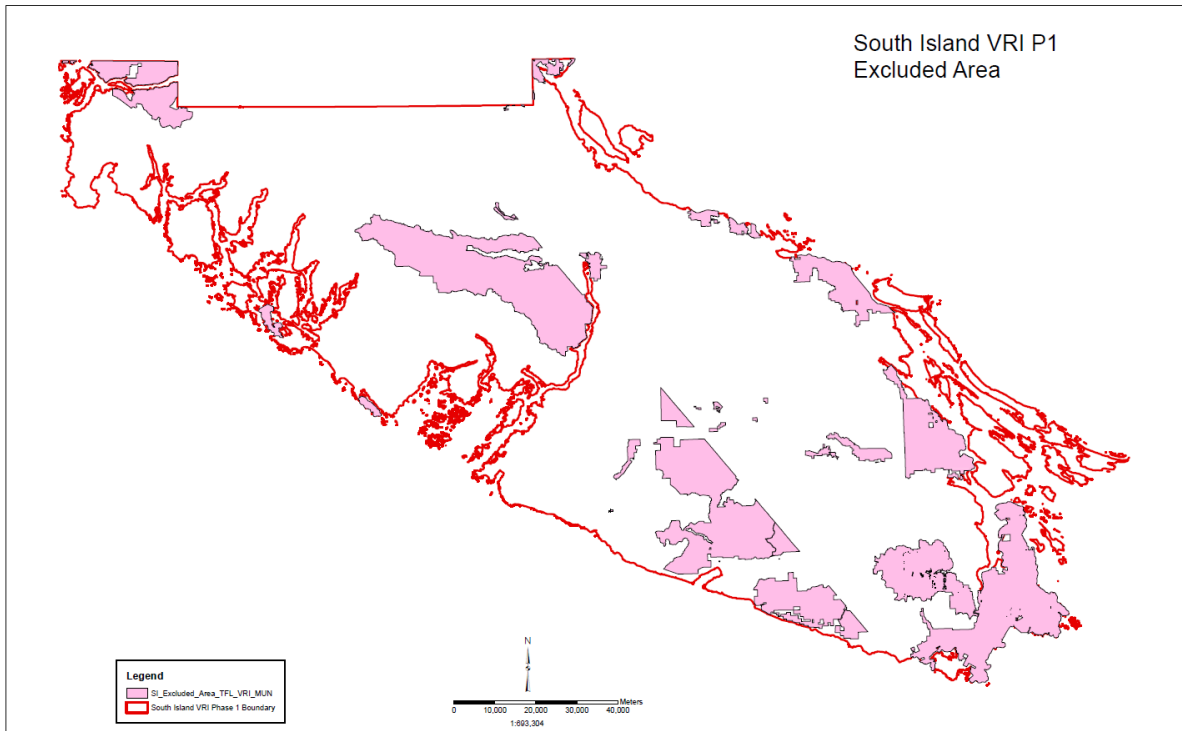
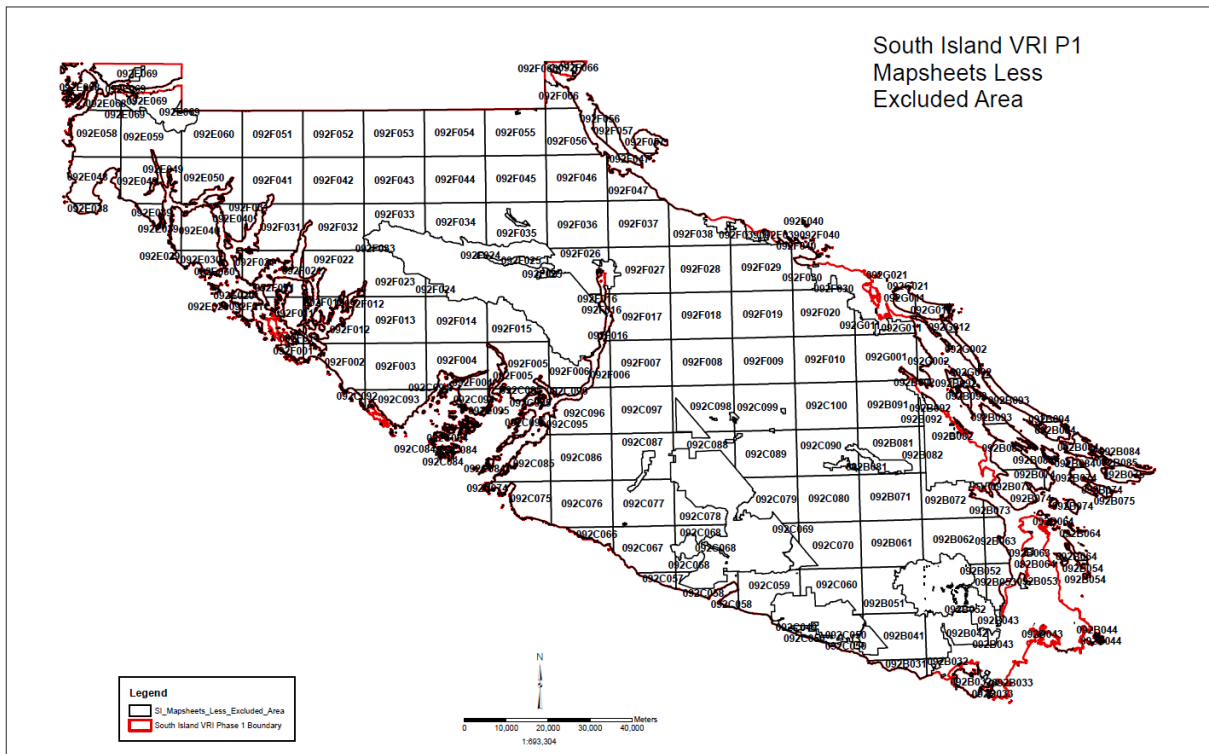
Inventory Plan for Photo Interpretation of Southern Vancouver Island

LANGFORD	4154
LANTZVILLE	2986
METCHOSIN	7909
NANAIMO	12219
NORTH COWICHAN	21372
NORTH SAANICH	4711
OAK BAY	1502
PARKSVILLE	1717
PORT ALBERNI	2110
QUALICUM BEACH	1831
SAANICH	11414
SIDNEY	731
SOOKE	6686
TOFINO	1909
UCLUELET	1078
VICTORIA	2129
VIEW ROYAL	1692
TOTAL URBAN AREA	103973

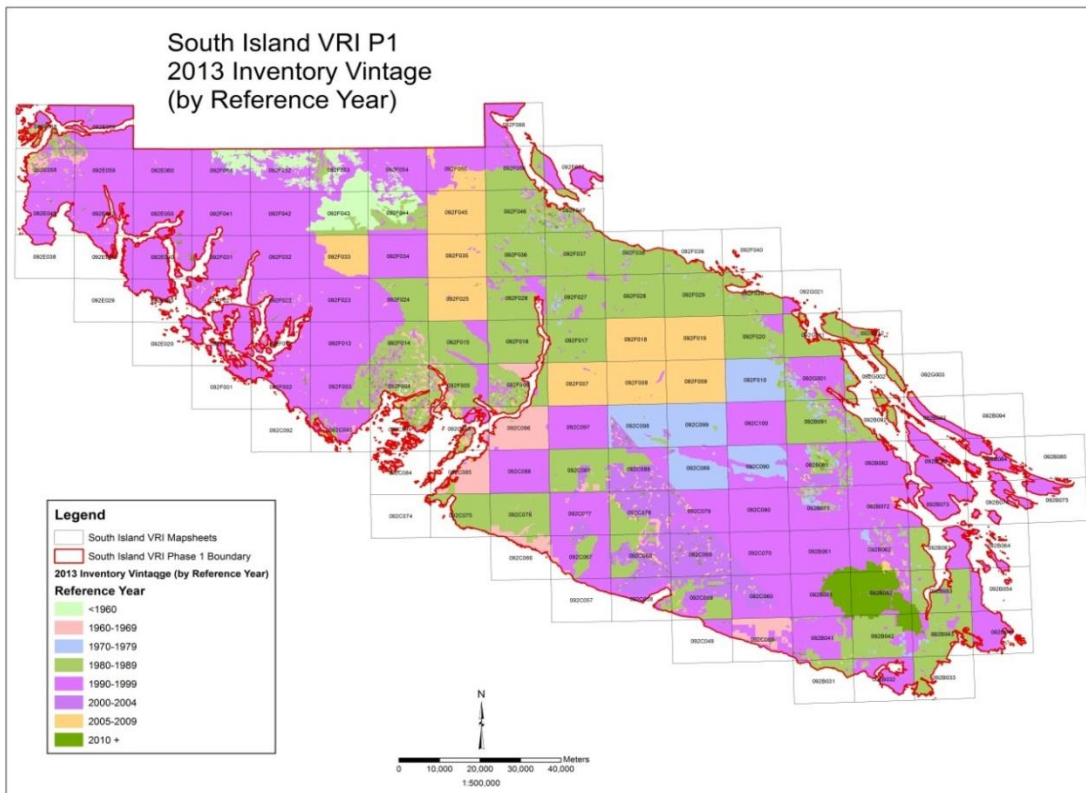
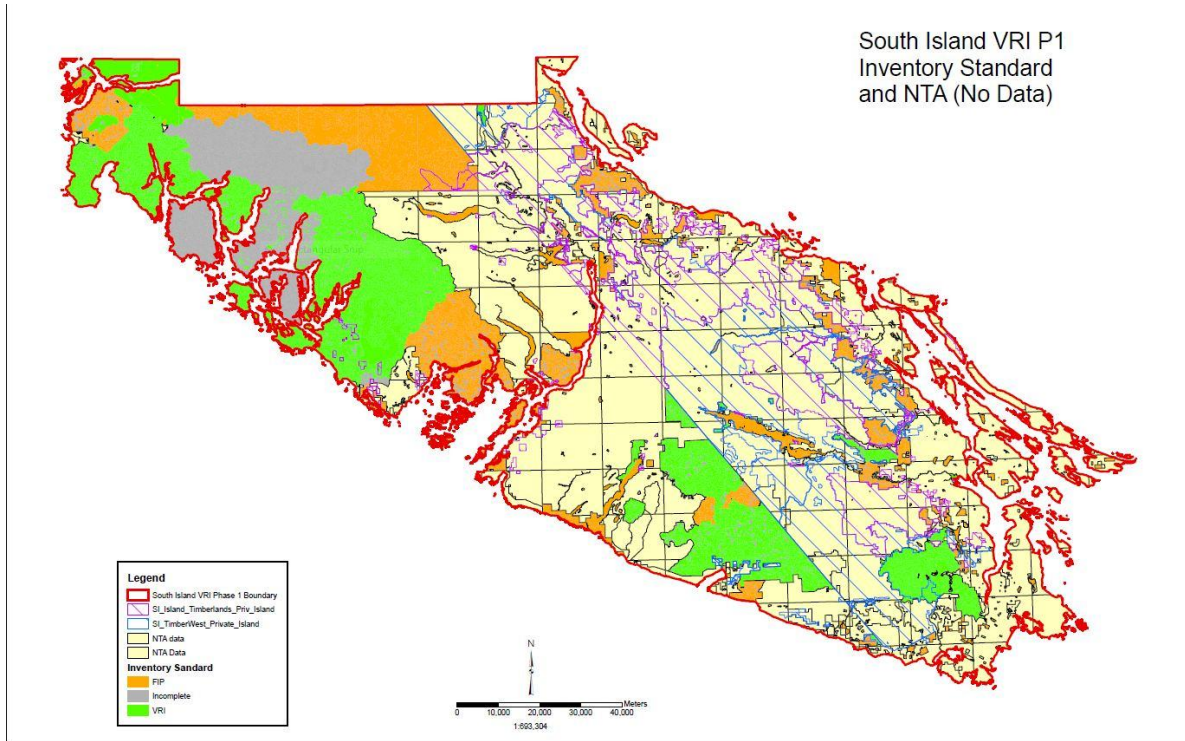
Overview Maps



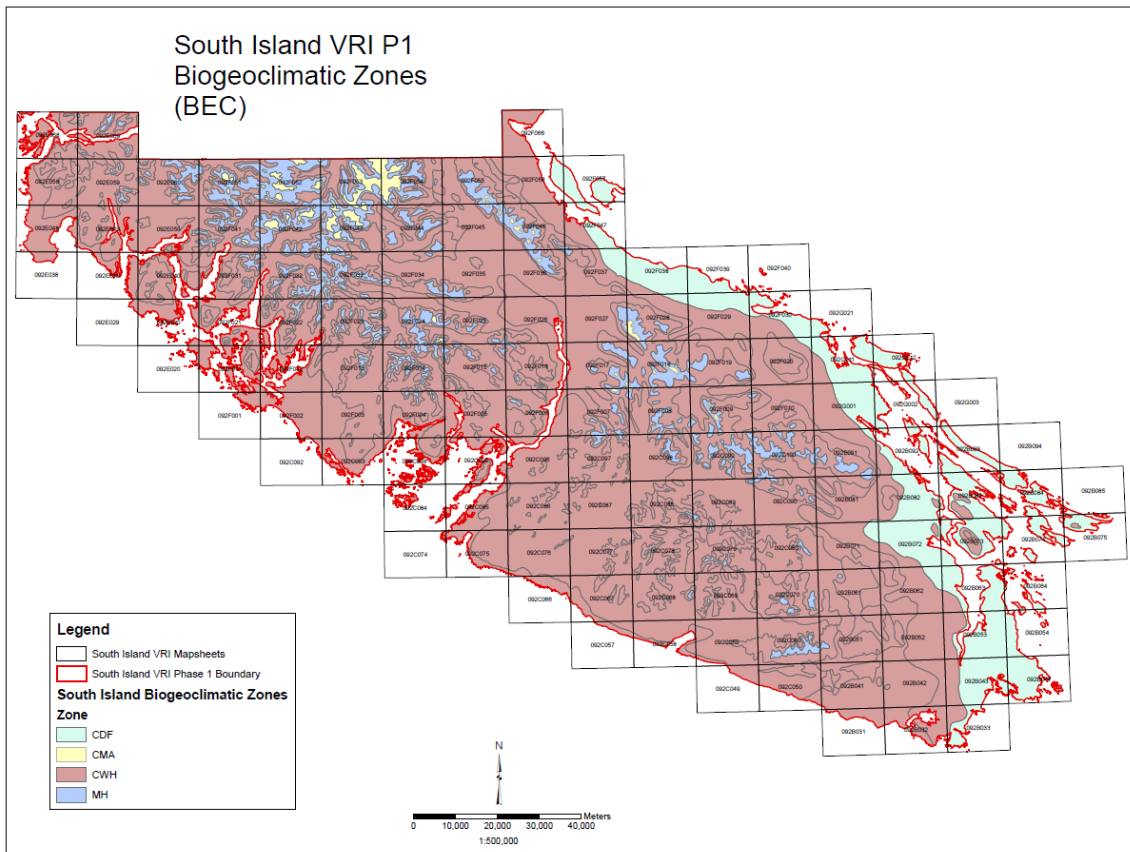
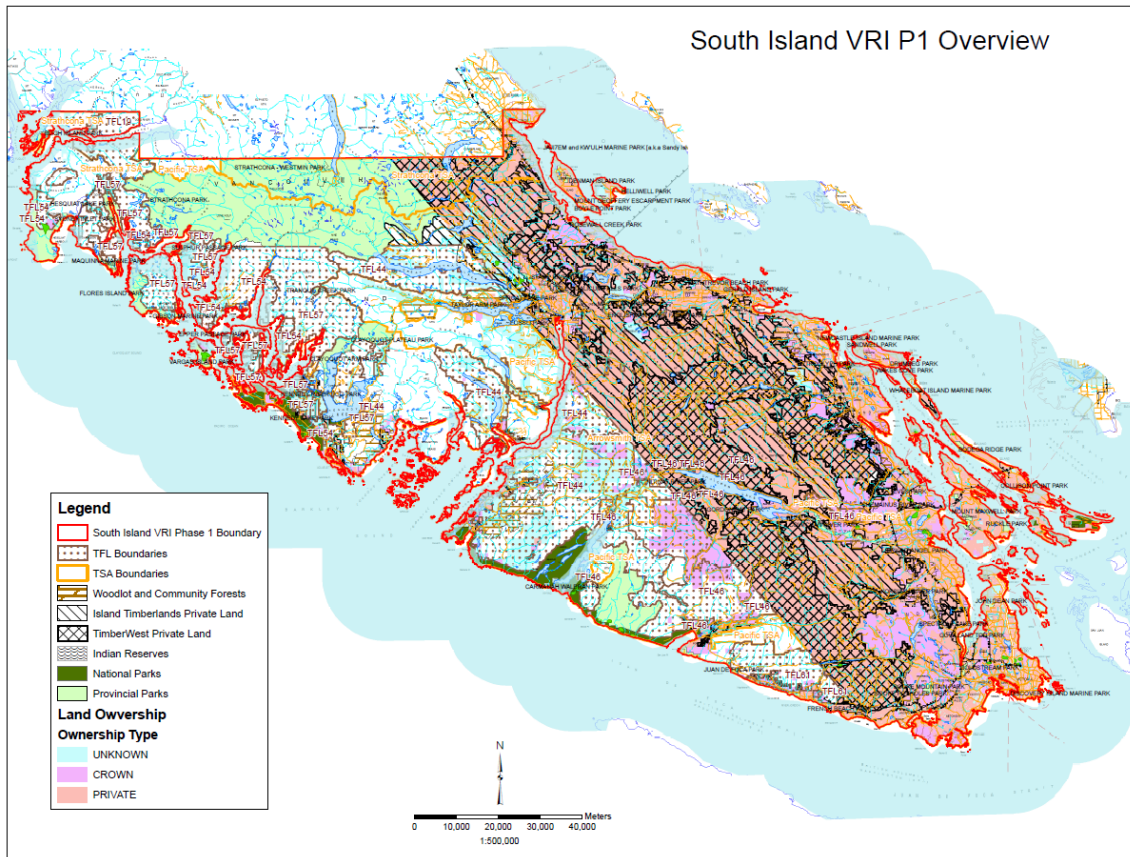
Inventory Plan for Photo Interpretation of Southern Vancouver Island



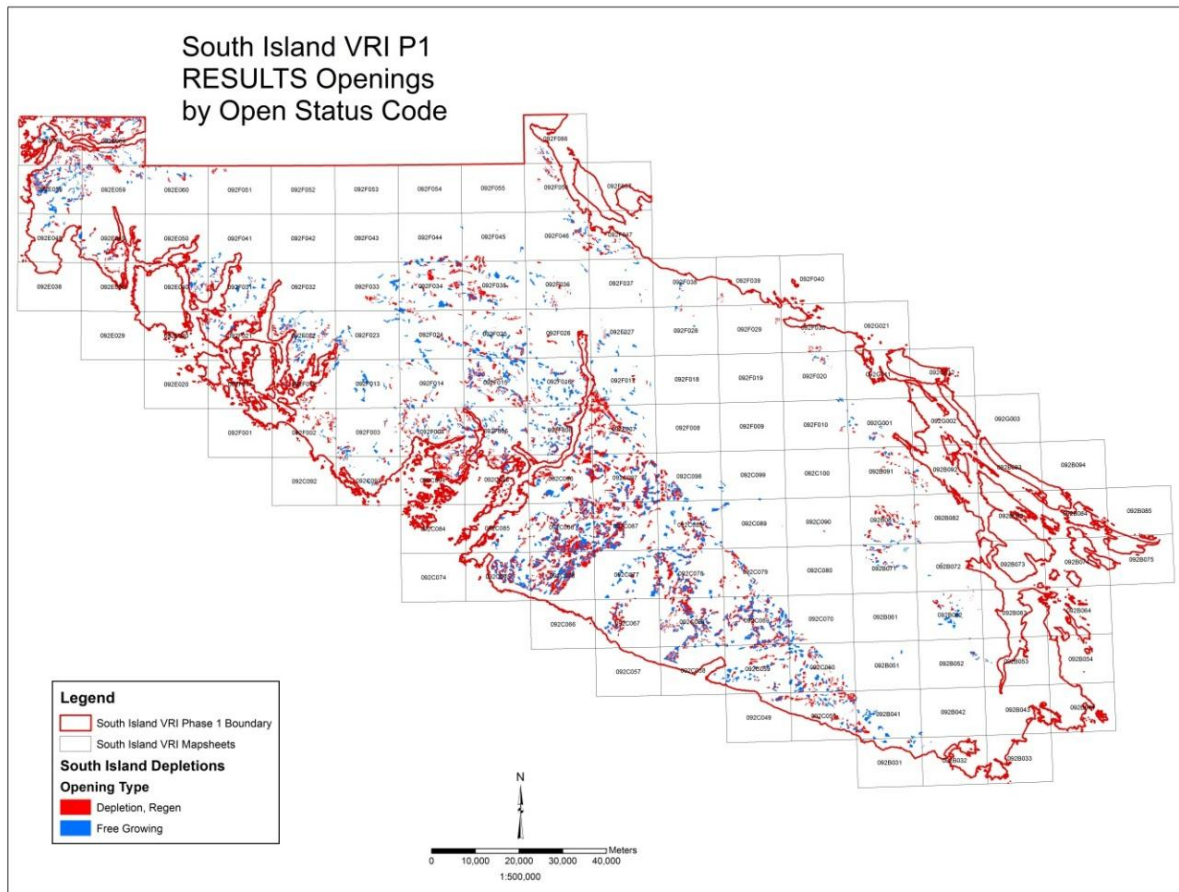
Inventory Plan for Photo Interpretation of Southern Vancouver Island



Inventory Plan for Photo Interpretation of Southern Vancouver Island



Inventory Plan for Photo Interpretation of Southern Vancouver Island



APPENDIX B - List of First Nations

Thirty six First Nations have traditional territories located within the geographical area of the South Island Natural Resource District (SINRD). Four treaty associations and two tribal council represent all but three of the First Nations: **Ahousaht First Nation, Beecher Bay First Nation, Campbell River First Nation, Cape Mudge First Nation, Chemainus First Nation, Comox First Nation, Cowichan Tribes, Ditidaht First Nation, Esquimalt First Nation, Halalt First Nation, Hesquiaht First Nation, Homalco First Nation, Hul'qumi'num Treaty Group** (*Chemainus, Cowichan, Halalt, Lake Cowichan, Lyackson, Penelakut*), **Hupacasath First Nation, Huu-ay-aht First Nation, Hamatla Treaty Society** (*Kwiakah, Cape Mudge, Campbell River*), **Lake Cowichan First Nation, Lyackson First Nation, Malahat Band, Mowachaht / Muchalaht First Nation, Nanoose (Snaw-naw-as) First Nation, Nuu-chah-nulth Tribal Council, Pacheedaht First Nation, Pauquachin First Nation, Penelakut First Nation, Qualicum First Nation, Sliammon First Nation, Snuneymuxw (Nanaimo) First Nation, Songhees First Nation, Tsawwassen First Nation, T'Sou-ke First Nation, Te'Mexw Treaty Association** (*Beecher Bay, Malahat, Nanoose, Songhees, T'Sou-ke*), **Tla-o-qui-aht First Nation, Tsartlip First Nation, Tseshaht First Nation, Tseycum First Nation, Uchucklesaht First Nation, Ucluelet First Nation, Tsawout First Nation, Toquaht First Nation.**

APPENDIX C - List of Approved TEM for South Island

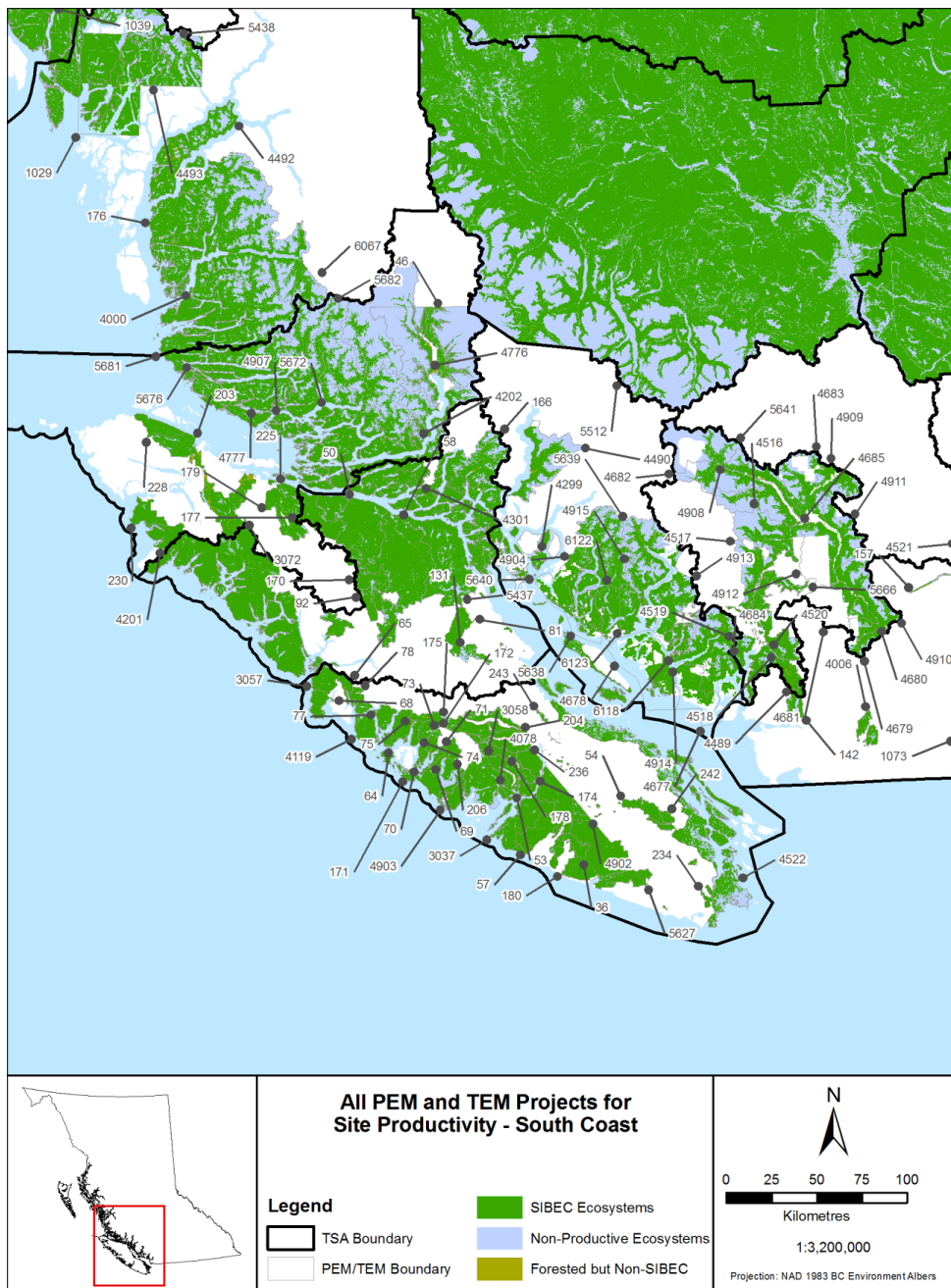
The provincial site productivity layer data and supporting information is available at:

<http://www.for.gov.bc.ca/hts/siteprod/provlayer.html>

ftp://ftp.for.gov.bc.ca/HTS/external!/publish/Provincial_Site_Productivity_Layer_June_2013/

Summary information on the 33 completed TEM projects and datasets can be found in the accompanying technical report at: http://www.for.gov.bc.ca/hts/siteprod/download/FLNR_provincial_site_product_layer_pem-tem-sibec_biophysical_analysisv43.pdf

(Table 7, pg. 33 – 39)



Appendix D: Historic Data Sources

VRI Air Calls and Ground Calls		
Mapsheet	Air Call (18)/ Ground Call (17)	Number of Calls
092B041	18	2
092B042	17	13
092B042	18	2
092B043	17	15
092B051	17	20
092B051	18	45
092B052	17	68
092B052	18	25
092B053	17	1
092B061	18	6
092B062	17	20
092B062	18	2
092B071	17	1
092B081	17	5
092C058	17	4
092C058	18	1
092C059	17	11
092C059	18	4
092C060	17	11
092C060	18	4
092C067	18	1
092C068	17	12
092C068	18	14
092C069	17	17
092C069	18	15
092C070	17	4
092C070	18	4
092C077	18	5
092C078	17	7
092C078	18	17
092C079	17	7
092C079	18	6
092C087	17	5
092C087	18	6
092C088	17	12

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092C088	18	14
092C089	17	1
092C089	18	1
092C092	18	5
092C093	17	4
092C093	18	5
092C098	17	3
092C098	18	4
092E020	17	6
092E020	18	4
092E029	18	7
092E030	17	10
092E030	18	40
092E038	17	2
092E038	18	11
092E039	17	13
092E039	18	44
092E040	17	33
092E040	18	72
092E048	17	25
092E048	18	32
092E049	17	16
092E049	18	62
092E050	17	8
092E050	18	61
092E058	17	7
092E058	18	2
092E059	17	8
092E059	18	88
092E060	17	8
092E060	18	53
092F001	17	5
092F001	18	10
092F002	17	32
092F002	18	35
092F003	17	19
092F003	18	48
092F011	17	3
092F011	18	44
092F012	17	33
092F012	18	56
092F013	17	48

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092F013	18	68
092F014	17	4
092F014	18	18
092F021	17	16
092F021	18	44
092F022	17	15
092F022	18	30
092F023	17	29
092F023	18	75
092F024	17	6
092F024	18	17
092F031	17	19
092F032	17	14
092F032	18	49
092F033	17	3
092F033	18	12
092F041	17	5
092F041	18	70
092F042	17	12
092F042	18	39
092F043	17	7
092F043	18	9
092F051	17	7
092F051	18	41
Total Air and Ground Calls		1983

FIP Air Calls/Ground Calls (Historical)		
Mapsheet	Sample Type	Number of Calls
092B031	XG	3
092B032	XG	11
092B042	XG	12
092B043	XG	1
092B052	XG	11
092B053	XG	4
092B062	XG	71
092B071	XG	51
092B072	XG	15
092B081	XG	107
092B082	XG	6
092B091	XG	29

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092B092	XG	12
092C059	X	8
092C059	XG	1
092C059	XGO	7
092C066	X	5
092C068	XG	6
092C078	XG	8
092C079	X	14
092C079	XG	6
092C088	XG	6
092C089	XG	14
092C090	XG	15
092C093	XG	2
092C094	X	21
092C094	XG	8
092C095	X	13
092C095	XG	8
092C099	XG	10
092E040	X	5
092E048	X	14
092E049	X	2
092E058	X	21
092E059	X	55
092E068	X	86
092E068	XG	7
092E069	X	304
092E069	XG	2
092F003	XGC	1
092F004	X	46
092F004	XG	41
092F004	XGC	28
092F005	X	16
092F005	XG	3
092F006	X	17
092F006	XG	4
092F010	XG	22
092F011	X	5
092F011	XG	4
092F012	X	11
092F013	X	6

Inventory Plan for Photo Interpretation of Southern Vancouver Island

092F013	XG	1
092F014	X	52
092F014	XG	9
092F014	XGC	5
092F015	X	3
092F020	XG	37
092F021	X	5
092F021	XG	1
092F022	X	3
092F023	X	1
092F024	X	6
092F024	XG	3
092F026	XG	15
092F027	X	3
092F027	XG	20
092F028	X	7
092F028	XG	7
092F029	XG	18
092F030	XG	27
092F036	XG	58
092F037	X	5
092F037	XG	21
092F038	XG	31
092F039	XG	8
092F044	X	14
092F045	X	2
092F047	XG	39
092F056	X	2
092F056	XG	8
092F056	XGO	7
092F057	XG	12
092F066	X	5
092F066	XGO	10
092G001	XG	60
092G012	XG	8
Total Historic (FIP) Air and Ground Calls		1698