Fort St. James Forest District
Vegetation Resources Inventory
Project Implementation Plan
Version 3.0

Prepared for
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Prince George, BC

On Behalf Of

Forest Licencees in the
Prince George Timber Supply Area

Project: CFP-017

March 31, 2007

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1. INTRODUCTION

1.1 VRI BACKGROUND

The Vegetation Resources Inventory (VRI) is the Ministry of Forests and Range (MoFR) forest inventory standard on public lands in BC. Where possible, forest licencees must use the VRI standard in their data package when preparing the submission for Timber Supply Review (TSR).

The VRI is a four-step process (Figure 1):

1. Phase I (unadjusted inventory data) – Polygon attributes are estimated for the target population[1], generally using photo-interpretation.
2. Phase II (ground sample data) – Measurements are taken from randomly located ground samples for the target population.
3. Net Volume Adjustment Factor (NVAF) sampling – Random trees are selected for stem-analysis studies to develop adjustment ratios that correct taper and decay estimation bias.
4. Adjustment Phase – The Phase I estimates are adjusted using the NVAF-corrected Phase II ground samples to provide an adjusted unbiased estimate of forest inventory attributes. The final product is an adjusted VRI database.

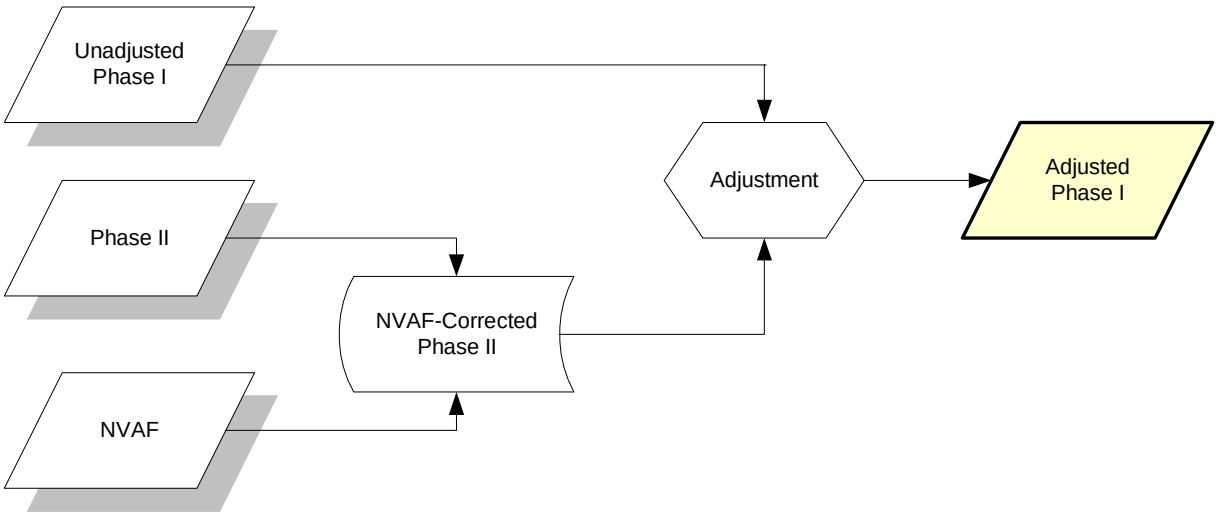

Figure 1. VRI flow-chart.

The Fort St. James Forest District Phase I was recently completed. The next step is to develop a VRI project implementation plan (VPIP) that will guide implementation of the proposed Phase II and NVAF field sampling projects in the Fort St. James Forest District.

1.2 PRINCE GEORGE TSA VRI BACKGROUND

The Prince George Timber Supply Area (TSA) VRI program is being completed separately by Forest District (Vanderhoof, Prince George, and Fort St. James). The VRI Phase I program for all three Forest Districts was completed in 2005, with the Fort St. James Forest District Phase I being completed between 2001-2005. Timberline Forest Inventory Consultants Ltd. completed the Vanderhoof Forest District VRI Phase II program and J.S. Thrower & Associates Ltd. (JST) completed the statistical adjustment in 2003.

[1] VRI technical terms are explained in Appendix I.

This Fort St. James Forest District Phase II VPIP is being developed concurrently with the Prince George Forest District VPIP. These two initiatives are being treated as separately and will be implemented independently.

1.3 VPIP OBJECTIVES

The objective of this VPIP is to:

1. *Develop Phase II and NVAF sampling methods to address the Fort St. James Forest District inventory issues.*
2. *Outline the strategy for Phase II and NVAF implementation and the proposed budget and timelines.*

The intent is that MoFR will review and approve the proposed Phase II and NVAF sampling program. Version 1.0 of this VPIP was reviewed and approved by MoFR prior to the start of the Phase II field program. Version 2.0 incorporates the proposed NVAF program scheduled for the completion of the 2007 field season, and incorporates the feedback from the MoFR Volume & Decay Sampling Officer.

1.4 TERMS OF REFERENCE

This VPIP was prepared for Kerry Deschamps, *RPF* of Canadian Forest Products Ltd. and the Fort St. James Forest District licencees. The document was prepared by Guillaume Thérien, *PhD* (analyst) and Hamish Robertson, *RPF* (J.S. Thrower & Associates Ltd. project manager).

1.5 FORT ST. JAMES FOREST DISTRICT LAND BASE

The Fort St. James Forest District is located in the Prince George Timber Supply Area around the town of Fort St. James (150 kilometers northwest of Prince George) (Figure 2). The Fort St. James Forest District covers approximately 3.2 million ha, of which 2.1 million (66%) are Vegetated Treed (VT) (Table 1). Most of the Fort St. James Forest District is located in the Sub-Boreal Spruce (SBS) and Engelmann Spruce-Subalpine Fir (ESSF) biogeoclimatic zones.

Figure 2. Map of the Fort St. James Forest District.

Table 1. Fort St. James Forest District net down.

Land Class	Area (ha)	% TFL
Total District	3,196,762	
Not Public	94,963	3%
Public	3,101,799	97%
Parks	188,816	6%
Non-Parks	2,912,983	91%
Non-Vegetated	248,975	8%
Vegetated	2,664,008	83%
Non-Treed	544,127	17%
Treed	*2,119,880*	*66%*

2. STRATEGIC PLAN

2.1 PROJECT OVERVIEW

The overall goal of the project is to complete the VRI Phase II and NVAF programs in the 2006/07 and 2007/08 fiscal years. Phase II plots will be established during the 2006 and 2007 field seasons and NVAF destructive sampling will occur in the 2007 field season. Final data compilation, analysis, statistical adjustment, and reporting should be completed by September 30, 2007.

2.2 GOAL & OBJECTIVE

The goal of this project is to provide the Provincial Chief Forester with the necessary confidence in the Fort St. James Forest District forest inventory to support the Prince George Timber Supply Area Timber Supply Review. The Fort St. James licencees' project objectives are to:

1. *Develop statistically unbiased volume estimates for stands at least 30 years old in the Fort St. James Forest District VT landbase.*
2. *Collect coarse woody debris information in all Phase II plots.*

2.3 TARGET POPULATION

The target population for this project was defined as the VT landbase, 30 years and older in 2006 (that is, stands established before 1977). The target population represents approximately 1.5 million ha (46% of the total Fort St. James Forest District) (Table 2). The Fort St. James Forest District includes all forest cover polygons with more than 50% of the polygon area in the Forest District.

Table 2. Fort St. James Forest District VRI Phase II target population.

Land Class	Area (ha)	% TFL
Total District	3,196,762	
Vegetated Treed	2,119,880	66%
Stands < 30 years	641,057	20%
Target Population	1,478,824	46%

2.4 STRATIFICATION

Stratification of the target population improves sampling efficiency by grouping similar sub-populations that might exist within a general population. In the Fort St. James Forest District, we can assume that the adjustment ratio between ground volume and photo-interpreted volume will be different in stands with a large component of lodgepole pine (Pl) compared to stands with no or little Pl, due to the impact of the Mountain Pine Beetle (MPB) infestation. Past inventory adjustment projects in BC also often showed different adjustment ratios in mature and immature stands.

Table 3. Target population stratification.

Stratum	Sub-Stratum	Area (ha)	% Stratum	% Target
Low Risk-Immature	30-100 yrs	131,676	42%	
	101-140 yrs	179,615	58%	
	Total	*311,291*		*21%*
Low Risk-Mature	0-150 m^3/ha	253,672	34%	
	150-250 m^3/ha	274,085	37%	
	250+ m^3/ha	213,027	29%	
	Total	*740,784*		*50%*
High Risk	30-120 yrs	183,993	43%	
	121+ yrs	242,755	57%	
	Total	*426,748*		*29%*

For these reasons, the target population of the Fort St. James Forest District was stratified based on the Pl proportion in a stand and age class. The strata were defined as follows:

1. Polygons containing less than 31% Pl volume and less than 141 years old (Low Risk-Immature).
2. Polygons containing less than 31% Pl volume and 141 years or older (Low Risk-Mature).
3. Polygons containing more than 30% Pl volume (High Risk).

There was not enough area in stands with a major Pl component to warrant further stratification by age class.

Inventory adjustment ratios will be computed at the stratum level. Each stratum was subdivided into sub-strata to ensure a representative distribution of the samples within each stratum. The sub-strata in the Low Risk-Immature and High Risk strata were based on age class; those in the Low Risk-Mature stratum were based on stand volume. Sub-stratification is for spatial distribution of plots only. No adjustment ratios will be applied at the sub-strata level.

2.5 PHASE II SAMPLING

2.5.1 Overview

VRI Phase II plot installation will be completed in the 2006 and 2007 field seasons by VRI-certified timber emphasis cruisers. The choice of field samplers was determined following competitive bid process.

2.5.2 Sampling Objectives

The sampling objective is to install a sufficient number of plots to achieve an overall minimum sampling error of ±10% (at a 95% confidence level) for use in TSR. Assuming a coefficient of variation of 60%, 150 samples should be sufficient to achieve the target sampling error. If the coefficient of variation is larger than 60%, more plots will be required to achieve the sampling objective.

2.5.3 Sample Size

A batch of 150 plots was selected from the target population and will be installed in the three strata (Table 4, Appendix III). Sample size was allocated proportionally to the area of each sub-stratum with each plot representing approximately 10,000 ha. The sample and target population were compared by height class, age class, and volume class and are provided in Appendix III.

Table 4. Phase II sample size by stratum.

Stratum	Sub-Stratum	Area (ha)	No. Plots	Sampling Weight (ha)
Low Risk-Immature	30-100 yrs	131,676	14	9,405
	101-140 yrs	179,615	18	9,979
	Total	*311,291*	32	9,728
Low Risk-Mature	0-150 m^3/ha	253,672	26	9,757
	150-250 m^3/ha	274,085	28	9,789
	250+ m^3/ha	213,027	22	9,683
	Total	*740,784*	76	9,683
High Risk	30-120 yrs	183,993	18	10,222
	121+ yrs	242,755	24	10,115
	Total	*426,748*	42	10,161

2.6 NET VOLUME ADJUSTMENT FACTOR SAMPLING

2.6.1 Overview

The Fort St. James Forest District licencees will pursue a NVAF program whereby the 2006 Phase II field data will be used to develop a NVAF tree matrix from which the trees for destructive sampling will be selected. A sub-sample of the VRI Phase II plots must be selected for NVAF-enhancement to build the NVAF tree matrix.

Fifty (50) (or one-third) of the VRI Phase II plots (12 immature and 38 mature)[2] were selected to be NVAF-enhanced. The VRI Phase II plots were sorted by stratum and sub-stratum within each maturity class and plots were selected using a systematic sampling design with a random start. Net factoring and call grading will be completed on all auxiliary plots for the NVAF-enhanced plots.

[2] Stands 120 years old or younger (2006 age) were considered immature, and mature otherwise.

3. IMPLEMENTATION PLAN

3.1 SAMPLE SELECTION

Sample polygons were selected using probability proportional to size with replacement (PPSWR). Each polygon in the sampling frame was listed only once and size was the total area of the polygon. The sample points within the sample polygons were selected from the provincial 100 m grid in a Geographic Information System (GIS) using the simple random sampling (SRS) method.

3.2 SAMPLE PACKAGES

Field sample packages include:

1. An ortho-photo (1:5,000) showing plot location and Global Positioning System (GPS) points.
2. Access maps using ortho-photos (1:20,000) showing polygon and plot location.
3. Overview map (approx 1:100,000) for general polygon location.

3.3 PHASE II SAMPLING

3.3.1 Field Crews

Field work will span the 2006 and 2007 field seasons. A project pre-work meeting will be held on the first day and sampling should begin immediately thereafter. All plots will be installed at the random locations selected by the GIS. If a plot location is unsafe or is no longer part of the target population (due to harvesting or fire), the Fort St. James Forest District licencees and MoFR representatives will try to locate an alternate location. If an alternate location cannot be found, the plot will be dropped.

3.3.2 VRI Measurements

The project priority is to measure timber attributes and coarse woody debris at each plot. Data will be collected to provincial VRI ground sampling standards.[3] Additional attributes beyond VRI requirements will be measured (Section 3.3.3). Certified crews will gather the data using VRI Card Types 1, 2, 3, 6, 7, 8, 9, 10, and 11.

3.3.3 Non-Standard VRI Data

The Fort St. James Forest District licencees will collect additional, non-standard, VRI data to supplement the information normally provided by the VRI Phase II sampling. Additional measurements will include (Appendix IV):

1. Collecting species and diameter data on dead standing trees in the auxiliary plots.
2. Measuring the distance from the sample point to the tree in the auxiliary plots.
3. Recording borderline trees that are outside the normal prism plot.

3.3.4 Core Counting

Tree ages from sample cores will be counted by the field contractor completing the plot. Ages will be counted in the lab using a microscope and entered into the MoFR data entry program, TIMVEG.

3.3.5 Data Entry

Standard VRI field data will be entered into the MoFR data entry program TIMVEG. Validation reports will be generated for each plot to ensure data integrity. All standard VRI data will be provided to the MoFR to

[3] VRI ground sampling procedures are available: http://srmwww.gov.bc.ca/risc/pubs/teveg/vri_gs_2k4/vri_gs_2k4.pdf

be included in the provincial VRI database. Non-standard data will also be provided to the MoFR in a Microsoft Access™ database.

All tree cores will be counted in the lab by the field contractor and included in TIMVEG. GPS data will be post-processed by the field contractors, entered into TIMVEG, and delivered with the data at the end of the project.

3.3.6 Pre-work and Quality Assurance

All field crews should attend a pre-work session with the client and auditor to review the plot methods and ensure that all questions are resolved at the beginning of each field season. The Fort St. James Forest District licencees will hire a third party auditor to audit a minimum of 10% of all plots following the *VRI Ground Sampling Quality Assurance Standards.*[4] Auditing will be done by batch, and failed plots may result in a failed batch. Crews may be required to revisit failed plots at their own expense.[5]

3.3.7 Plot Supplies

Supplies such as aluminum stakes, field maps, field equipment, photos, plot cards, handheld data recorders, GPS units, and other required equipment are supplied by the field contract crews.

3.4 NET VOLUME ADJUSTMENT FACTOR SAMPLING

Twenty NVAF-enhanced plots were randomly sub-selected from the list of NVAF plots available. The intent was to increase sampling efficiency by limiting the number of plots where destructive sampling will occur. All trees from these 20 plots with a diameter at breast height 12.5 cm or larger were included in the sampling frame to develop the tree matrix. The tree matrix was stratified into five strata:

1. Dead trees
2. Immature trees
3. Mature – Balsam (B)
4. Mature – Lodgepole pine (Pl)
5. Mature – Others.

One hundred and five (105) trees were selected following the NVAF tree selection standard methodology (Table 5, Appendix V). The sample size within each stratum was assigned in consultation with the MoFR, based on estimates of net merchantable volume and expert knowledge about the variability within the stratum. A NVAF-certified crew will be hired to complete the destructive sampling during the 2007 field season.

The NVAF program will follow MoFR VRI standards and involves five steps:[6]

1. Create a tree matrix using data from the enhanced Phase II plots.
2. Select sample trees from the tree matrix.
3. Complete stem analysis of the sample trees.

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[4] Minimum standards for VRI sampling are located at: http://srmwww.gov.bc.ca/risc/PUBS/TEVEG/VRIQA/VRI_Ground_Sampling_2K2/QA Standards for VRI-02.pdf

[5] The requirement to revisit plots at the consultant's expense will be at the discretion of the Fort St. James Forest District licencees.

[6] NVAF sampling standards can be found at: http://srmwww.gov.bc.ca/risc/pubs/teveg/nvaf2k2/nvaf 02.pdf

4. Complete a third-party audit of the sample trees.
5. Analyze the data to develop net volume adjustment factors.

The Fort St. James Forest District licencees will hire a third party auditor to audit a minimum of 10% of all plots following the NVAF quality assurance standards.[7]

Table 5. NVAF sample size distribution.

		Net Merch Volume		No. Trees		
Group	Spp	% Total	% Group	No. Trees	% Total	% Group
Dead	At	0%	0%	0	0%	0%
	Bl	16%	53%	13	12%	52%
	PLI	8%	28%	7	7%	28%
	Sb	0%	0%	0	0%	0%
	Sx	4%	15%	1	1%	4%
	Xc	1%	4%	4	4%	16%
	Total	30%	100%	25	24%	100%
Immature	Act	0%	0%	0	0%	0%
	At	1%	6%	0	0%	0%
	Bl	3%	23%	5	5%	25%
	PLI	6%	49%	10	10%	50%
	Sb	0%	3%	0	0%	0%
	Sx	2%	19%	5	5%	25%
	Total	13%	100%	20	19%	100%
Mature-BL	Bl	30%	100%	20	19%	100%
Mature-PL	PLI	12%	100%	20	19%	100%
Mature-S	Act	1%	5%	0	0%	0%
	At	1%	8%	2	2%	10%
	Ep	0%	1%	0	0%	0%
	Hw	0%	1%	0	0%	0%
	Sb	0%	3%	0	0%	0%
	Sx	13%	83%	18	17%	90%
	Total	15%	100%	20	19%	100%
Total	*Total*	*100%*	*100%*	*105*	*100%*	

3.5 STATISTICAL ADJUSTMENT

3.5.1 Data Compilation, Analysis and Adjustment

The Fort St. James Forest District licencees will use the MoFR SAS compiler to compile all Phase II plots and NVAF trees. The licencees will complete the analysis and statistical adjustment of the Phase I data to MoFR standards at the conclusion of the field program. The analysis will:

- Use the MoFR standard adjustment method.
- Calculate ground sample average volumes and inventory volumes for the Fort St. James Forest District.
- Adjust inventory height and age.
- Generate new *VDYP* volumes using the adjusted heights and ages.
- Adjust new volume estimates using the ratio of means method.
- Compute sampling errors for the Fort St. James Forest District area.

[7] The NVAF quality assurance standards are described in the NVAF sampling standards, chapter 10.

4. SCHEDULE

4.1 2006-2007 TIMELINES

The Fort St. James Forest District licencees will complete Version 2.0 of the VPIP before March 31, 2007. The licencees will seek approval of the VPIP by the MoFR early in the 2007/08 fiscal year.

Sampling will start as early in the field season as possible, immediately following the pre-work meeting. Crews will be audited at the start of the project and as the auditor deems necessary throughout the project. Data will be entered into TIMVEG and non-standard data entered into Microsoft Access™.

The goal is to have all Phase II plots installed during the 2007 field season. The NVAF tree matrix, sample size and VPIP update was completed in the winter of 2006/07. The NVAF program (destructive sampling and data entry) will be completed in 2007. Data compilation, inventory adjustment, and reporting is intended to be completed by September 30, 2007.

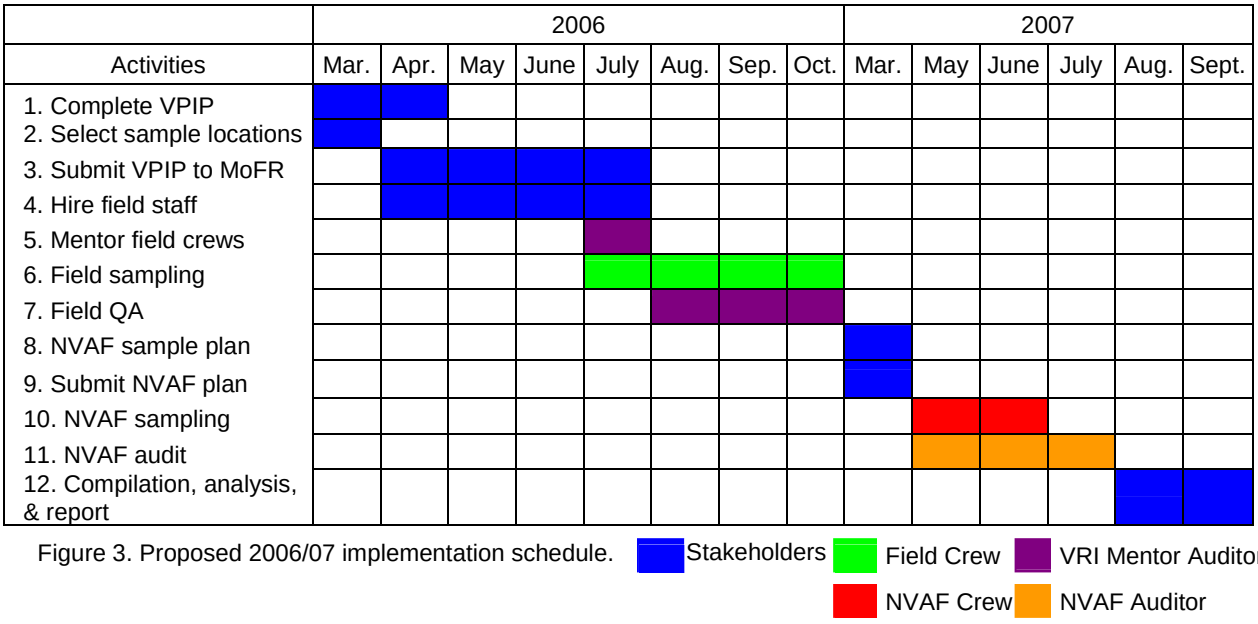

Figure 3. Proposed 2006/07 implementation schedule.

4.2 PROPOSED BUDGET

The entire program should cost approximately $400,000. The Phase II program is estimated to cost approximately $300,000, including audit, helicopter costs and the statistical adjustment. The proposed NVAF program costs are approximately $117,000. Of the total program costs, approximately 94% of these costs are for implementation of the field program, and the remaining 6% is allocated to analysis and reporting.

Table 6. Proposed Phase II and NVAF program cost.

Phase	**Cost**	**%**
Field Sampling	$225,000	56
Helicopter	$25,000	6
Field Audit	$15,000	4
Statistical Adjustment & Report	$20,000	5
Sub-total	*$285,000*	*71*
NVAF Sampling	$75,000	19
Helicopter	$30,000	6
Field Audit	$7,500	2
NVAF Analysis	$5,000	2
Sub-total	*$117,500*	*29*
Program Total	*$402,500*	*100*

4.3 ROLES & RESPONSIBILITIES

Fort St. James Forest District Licencees

- Develop and update VPIP (as necessary).
- Coordinate project activities.
- Select sample polygons and locations within polygons.
- Prepare sample packages.
- Check data after initial compilation.
- Validate and compile data.
- Provide data to MoFR.
- Submit all QA reports to MoFR.
- Complete statistical adjustment and submit to MoFR for review.
- Complete final report and submit to MoFR for review.

Phase II Field Contractors

- Complete field sampling.
- Enter the standard data (incl. full cores and GPS of plot locations) into TIMVEG and non-standard data into Microsoft Access and submit to the licensees.
- Complete internal quality control and submit data to the licensees at the conclusion of field sampling.

NVAF Field Contractor

- Complete destructive sampling.
- Enter the sample data and provide to the licensees.

VRI Phase II Auditor

- Third party check-cruiser will audit a minimum of 10% of the Phase II samples.

NVAF Auditor

- NVAF-certified auditor will audit a minimum of 10% of the NVAF sample trees.

MoFR

- Review and approve the VPIP.
- Review and approve the final analysis & the statistical attribute adjustment.
- Be the custodian of the VRI standard and non-standard sample & population data.
- Audit the VRI process to ensure that VPIP commitments and MoFR standards were met.

4.4 PROJECT DELIVERABLES

The VRI Phase II and NVAF program deliverables include the following submissions to MoFR:

- Data from 150 Phase II plots entered into TIMVEG and submitted;
- A third party audit of a minimum of 10% of the Phase II plots;
- Data from 105 NVAF trees entered into DVHand and submitted to MoFR;
- A third party audit of a minimum of 10% of the NVAF trees;
- The adjusted Phase I and NVAF data; and
- A final report detailing the results of the statistical adjustment and NVAF program.

5. SIGN-OFF SHEET

I have read and concur that the Fort St. James Forest District VRI Phase II Project Implementation Plan dated March 31, 2007 meets current VRI standards and business needs and considerations. It is understood that this is an agreement-in-principle and does not commit the signatories to completing the inventory activities outlined within the plan.

_____ _____

Canadian Forest Products Ltd. Date
(lead proponent)

_____ _____

Jon Vivian, RPF Date
Manager Vegetation Resources Inventory
Forest Analysis and Inventory Branch
Ministry of Forests and Range

APPENDIX I – GLOSSARY OF TERMS

Ground Sampling

VRI ground sampling (Phase II) is the field measurement of timber, ecology, range, and/or coarse woody debris values at one or more locations within each sample polygon. To accommodate the wide variety of resources, various types and sizes of sampling units (e.g., fixed and variable plots, transects) are used to make the measurements.

Landcover Classification

The BC Landcover Classification Scheme (BCLCS) was designed specifically to meet the requirements of the VRI, in addition to providing general information useful for "global vegetation accounting" and "integrated resource management." The BCLCS is hierarchical and reflects the current state of the landcover (e.g., presence or absence of vegetation, type and density of vegetation) and such fixed characteristics as landscape position (i.e., wetland, upland, alpine). There are two main classes of polygons: Vegetated and Non-Vegetated.

Net Volume Adjustment Factor (NVAF) Sampling

NVAF sampling provides factors to adjust net tree volume estimated from net factoring and taper equations. The adjustment accounts for hidden decay and possible taper equation bias. NVAF sampling involves detailed stem analysis of sample trees, calculation of actual net volume, and calculation of the ratio between actual net volume and estimated net volume (where estimate net volume is obtained from net factoring and taper equations).

Photo-Interpretation (Phase I)

Photo-interpretation (Phase I) involves the subjective delineation of polygons and the photo estimation of attributes for all polygons in an inventory unit. Medium scale aerial photographs (1:15,000) are most often used in the photo-interpreted estimates inventory.

Post-Stratification

Post-stratification involves the division of an inventory unit into mutually exclusive sub-populations (strata) *after* ground sampling has been completed. Samples that fall in each post-stratum are analyzed separately and the results are applied to the corresponding population post-strata.

Pre-Stratification

Pre-stratification involves the division of an inventory unit into mutually exclusive sub-populations (strata) *before* ground sampling to provide estimates for specific areas, or to increase the confidence in the overall estimates by considering the special characteristics of each stratum.

Sample Size

The sample size for an inventory is the minimum number of ground samples to be established in an inventory unit to meet specified target precision or cost.

Statistical Adjustment

Statistical adjustment (or analysis) is the process of adjusting the values of the photo-interpreted estimates variables using the ground sampling observations. For each sampled polygon, the ground observations are compared to the photo-estimated values to develop an adjustment factor. This factor is then applied to all polygons in the photo-interpreted estimates database to produce the final adjusted database.

Sub-unit

The term sub-unit describes the inventory unit of a management inventory (i.e., the management inventory target population is a subset of the provincial VRI inventory unit). A sub-unit may be defined by a specific geographic area (e.g., operable landbase) or stand type (e.g., problem forest types) within the Forest District.

Target Population

The target population is the unit from which the samples are chosen. For management inventories, the inventory unit is a TSA, TFL or other geographic area or specific attribute set, depending upon the sampling objectives.

Target Precision

Target precision expresses the amount of variation in key attributes (e.g., timber volume) desired in the final results. The target precision, usually expressed as the coefficient of variation (CV), is used to calculate the minimum sample size for subsequent ground sampling.

Vegetation Resources Inventory (VRI)

The VRI is an improved vegetation inventory process for assessing the quantity and quality of BC's vegetation resources. The VRI process is designed to include a flexible set of sampling procedures for collecting vegetation resource information. The VRI is essentially a toolbox of procedures, which include:

- BC Landcover classification scheme (BCLCS).
- *Photo-interpreted estimates (Phase I)*: the delineation of polygons from aerial photography and the estimation of resource attributes.
- *Ground sampling (Phase II)*: the establishment of plot clusters in selected polygons to measure timber, ecological, and/or range attributes. The data are used for the adjustment of the photo-interpreted estimates for all polygons in an inventory unit or management unit.
- *NVAF Sampling*: Stem analysis sampling of individual trees for net volume adjustment.
- *WPV Sampling*: Intensive sampling of selected polygons to determine the error between the estimated attribute values and the "true" attribute values.
- *Change Monitoring Inventory (CMI)*

The VRI can be deployed over the entire province (provincial VRI) measuring timber and non-timber resources, or over a large management unit (management VRI) measuring selected resources in specific portions of the landbase. The VRI sampling process produces spatial and non-spatial databases that can be used in multiple resource management applications including timber, ecosystem, and wildlife habitat management.

APPENDIX II – PLOT LIST

Table 7. Fort St. James Forest District first 75 Phase II plots.

Plot No	NVAF	Maturity	Stratum	Sub Stratum	Feature ID	Area (ha)	Ht (m)	Age (yrs)	Vol (m^3/ha)	Zone	UTM East.	North.
1	No	Mature	Low Risk-Old	Medium	0257236149D1DF752FE7E6967AD0E7E7	30.0	20.5	208	195.6	9	633347	6200775
2	Yes	Immature	Low Risk-Young	30-100	043C0BDE4C0DF5D3280FE688A287137D	7.7	17.6	70	75.0	10	328012	6157934
3	Yes	Mature	High Risk	121+	0473DD354D1EBF7CE808E2BD2EC527ED	14.4	23.4	127	290.8	10	426475	6118717
4	No	Mature	Low Risk-Young	101+	05F06A544959E656082FB4A2DDDCA1AB	9.2	25.0	138	263.2	10	355685	6178896
5	No	Mature	Low Risk-Old	High	08A69A204FDC31AEC9C90E9D013950CE	88.6	28.8	264	307.8	10	381683	6128456
6	No	Immature	High Risk	30-120	0903E0334DDA5DE71214F1AA4F629C72	49.8	25.3	114	336.8	10	450641	6046213
7	Yes	Immature	High Risk	30-120	0E6620564A5DC8615F19CFB8A52EAC88	14.3	15.4	94	80.8	10	392148	6021541
8	No	Mature	High Risk	121+	112A83294D3F5AC8F29609BA4D5BFDC4	35.3	27.3	179	363.2	10	358343	6135875
9	No	Immature	High Risk	30-120	11561C6A4263CC2B3BA3ABBDADA9065F	42.2	19.1	78	130.0	9	620192	6226867
10	Yes	Mature	Low Risk-Old	High	1371258346F7AA4BD0C3CE9E63D94E45	33.9	28.7	168	341.5	9	673782	6181372
11	No	Mature	Low Risk-Old	High	13D13AA043A06CE41A22E7B770D5A5BC	59.8	27.2	234	317.1	9	522469	6330348
12	No	Mature	Low Risk-Old	Low	147151D34AD362928B8664B57A114F7A	29.1	16.8	174	72.2	9	667240	6156426
13	No	Immature	High Risk	30-120	17CE0AD444B4B3C0E6BC08A8B1E5CE2E	10.5	26.0	95	209.7	9	687941	6150702
14	Yes	Immature	High Risk	30-120	1FA9E55D46EF45885F5AD7A28453FF38	11.8	20.0	95	153.2	10	343838	6115644
15	No	Mature	Low Risk-Old	Medium	200FBAFF4D80622A8CD9A3910CE2F001	5.3	23.4	258	228.8	9	629714	6261551
16	No	Mature	Low Risk-Old	Low	24F14F0A4A8D81CB9BE2E49DDF46EDF9	3.0	15.4	210	110.6	9	517599	6331841
17	Yes	Mature	Low Risk-Old	Medium	288202B348C4BE784423409B1FC8A109	24.0	19.6	209	190.5	10	333222	6122918
18	No	Mature	Low Risk-Old	Medium	2B791A8B42C0533816584A813EDF0224	29.7	22.5	208	234.6	9	646971	6184724
19	Yes	Mature	Low Risk-Old	Low	2BDDCA8E4E557B4395D7098D37671CD4	19.1	15.6	255	117.6	10	325770	6150110
20	No	Mature	High Risk	121+	30850BDA485DF4A368108E87036C4AA2	35.7	18.4	148	198.9	10	360470	6166660
21	No	Mature	Low Risk-Old	Low	3138C8474988D22565381492F086B173	3.4	15.3	204	54.0	9	523056	6330673
22	No	Mature	Low Risk-Old	Low	321280534074E43F24D7B58C0ABF457D	8.8	11.7	148	27.9	9	551230	6311253
23	Yes	Mature	High Risk	121+	413CBE9F485685799B023D9A9FB75CAB	22.9	22.4	138	263.0	9	672969	6227851
24	No	Mature	Low Risk-Old	High	4CA8173549E24A17C3780EB626173F1B	6.5	28.4	288	254.2	10	320211	6206996
25	No	Mature	Low Risk-Young	101+	5890B72047F7B0BE9F45149C55F37F2E	22.5	14.1	130	74.6	9	551836	6325100
26	Yes	Mature	Low Risk-Old	Low	5F45F33B401266FF0778BE93888CFFCE	17.1	12.5	208	73.5	9	525177	6302222
27	No	Mature	Low Risk-Old	High	6361895A4FDF3B86370AA3989F14CA37	19.3	29.3	189	294.5	10	385128	6052017
28	No	Mature	Low Risk-Old	Medium	6488A7E649CDC1608C27A3A2ECF37E31	9.1	28.6	188	235.4	9	592193	6237082
29	No	Immature	Low Risk-Young	30-100	673CABF34F37DEBF0776B58B41153502	29.2	13.0	63	44.2	10	341141	6197267
30	No	Mature	Low Risk-Old	Low	68CEEEAA49DB89BA8C66D6AA010A8E08	9.9	28.7	170	109.7	9	619887	6240883
31	Yes	Immature	Low Risk-Young	101+	6C7C7FA046B4AB19EC4CC2B2734F6D58	6.3	15.3	120	89.6	10	373089	6131431
32	Yes	Mature	Low Risk-Old	Medium	6E94380C45902B38FBA7E1A5AAFF85DC	30.2	22.5	250	224.0	10	337305	6161844
33	No	Mature	Low Risk-Old	Low	700C180E4FD81B5DDED9BEBBE760B384	18.0	14.6	240	100.5	9	629364	6251114
34	Yes	Mature	Low Risk-Old	High	729F74FB43E7E53507234596E6EA2159	28.0	33.4	228	373.2	10	317965	6180626
35	No	Immature	Low Risk-Young	30-100	74AAE9E245A3CF425E790B8FB5E13FAF	29.4	14.3	36	0.0	10	402548	6063202
36	No	Mature	Low Risk-Old	Medium	758FB1CE41959B4E76D82EAAD1332F0A	4.7	18.6	208	169.8	9	675330	6203495

37	Yes	Immature	Low Risk-Young	30-100	77930ADF4AF37005268201A075A56712	11.6	19.7	88	127.4	10	320738	6196046
38	Yes	Mature	Low Risk-Young	101+	7858CF3F4C32AE5C2E17E1A7B44E6A23	16.3	22.1	135	188.5	10	346361	6155639
39	No	Mature	Low Risk-Old	High	7A7CEABD466A7719C7BE81ACA54C0BA6	22.4	24.5	198	276.1	9	665465	6169684
40	No	Immature	High Risk	30-120	7ABB60444CF78298995D1A80379850E2	24.9	25.1	79	289.1	10	434974	6038461
41	No	Mature	High Risk	121+	823FA5FF4A06AE073F2728B10806A20B	20.0	15.3	159	75.0	10	348808	6121647
42	No	Mature	High Risk	121+	8EA10BA244967D4A1D759AA047FAE850	33.3	23.3	136	254.9	10	434182	6071575
43	No	Mature	Low Risk-Old	Medium	913A0B2842B8B23E3A9570BC7506C282	22.6	17.7	194	154.8	9	674488	6141799
44	No	Immature	High Risk	30-120	9D8847014B4652166CE9999CAB52A77D	64.9	20.9	88	200.0	9	677719	6180740
45	No	Mature	Low Risk-Young	101+	AD873A9F48A526DF6E2CC7BB8273F190	14.9	26.1	128	263.9	9	645976	6207736
46	Yes	Mature	Low Risk-Old	Low	AE41FC684339F977AF57B2BFB69EEA9B	3.0	11.6	210	28.7	10	319992	6116067
47	Yes	Mature	Low Risk-Old	Medium	BF1E820A4E2BC859307DEC83E8F51CCC	3.8	22.5	260	199.5	9	605425	6269416
48	Yes	Mature	High Risk	121+	C9ABA3E6458F50A3CA0A2EB5573A9556	11.3	26.4	149	348.1	10	319237	6154403
49	No	Mature	Low Risk-Old	Medium	D77C353844CD646EBCA1F7A6B0213FE2	4.7	22.3	295	171.5	9	546712	6316166
50	No	Immature	Low Risk-Young	101+	DB9597B94D3D55C5646F428FC924500F	16.3	19.5	114	172.1	9	652359	6222346
51	No	Mature	Low Risk-Old	Low	DDE008AB4BC338316D0A64A0BD46216F	15.0	9.5	220	18.4	9	624616	6254316
52	No	Mature	Low Risk-Young	101+	DE0D03F64302074E516B989255888AD8	9.0	23.3	140	194.4	10	352120	6119399
53	No	Mature	Low Risk-Old	High	E6C942894C969C244836E280EC478A1F	32.6	29.2	243	270.8	10	357499	6144232
54	No	Mature	Low Risk-Old	Medium	E7E8F3DE470D54566B1F6A8ED991F524	4.4	24.4	290	242.9	9	599608	6269565
55	No	Immature	Low Risk-Young	30-100	E8717D964A881426B73F699717B1ABD7	25.1	12.9	80	64.1	10	396185	6125327
56	No	Mature	High Risk	121+	EB2635C341BB428AC4A80E8AAFA341B3	20.5	26.2	134	345.5	10	397786	6054985
57	No	Mature	High Risk	121+	EC7FEBA749EAB9AD7A4BED934FED768E	4.8	28.5	128	379.3	9	648964	6205861
58	Yes	Mature	High Risk	121+	EC89C1E34DDB1C2959BF28A6FB08F3FF	16.5	23.3	190	296.7	10	323459	6110403
59	Yes	Mature	Low Risk-Old	High	F75B875E42A2CB39045B34A26DB0ECFE	83.8	27.4	208	291.4	9	663230	6191241
60	Yes	Mature	Low Risk-Old	Medium	F7725E5944728DC42A59DE999981F773	62.0	21.4	248	190.2	9	680689	6197812
61	No	Mature	Low Risk-Old	Medium	08A9B30F41FEBF1700E5FEBA816A3C25	20.1	23.5	208	242.0	9	636726	6199117
62	No	Mature	Low Risk-Old	High	0A12695549B59E3A0574B490C8876728	86.4	32.8	148	409.1	9	682163	6168400
63	No	Mature	High Risk	121+	0C7CEF184EF97B4312DCC9B07B7EBB61	7.2	28.2	154	366.5	10	434848	6054305
64	No	Mature	Low Risk-Old	Medium	158249C04EA548DC612C31B6175AAABF	3.2	24.3	185	198.1	9	537165	6312251
65	Yes	Immature	High Risk	30-120	1DBED42B441C2AF50A0401A8725090E5	158.2	17.7	98	139.9	9	672357	6193441
66	No	Mature	Low Risk-Old	High	2EB69BBE43FC898EED13B7A6F0046086	15.5	32.5	230	349.1	10	345489	6112064
67	No	Immature	Low Risk-Young	101+	417ED8E14E5F3CF43CDEF798D241E0D5	18.0	14.6	105	86.5	9	539318	6313445
68	No	Immature	Low Risk-Young	30-100	4C906A414D71691FCCF962ACD0C4FE7F	8.9	10.7	74	36.7	9	611085	6240503
69	No	Immature	High Risk	30-120	7980B5174137C99F9A91A1910438E1D0	43.5	18.9	88	160.7	9	670835	6193876
70	Yes	Mature	Low Risk-Old	Low	9FA11726432AEA87A22B589F0407F01D	19.8	1.3	250	0.0	10	334848	6158341
71	Yes	Mature	Low Risk-Young	101+	B3913FA747D82CB111F3B3891088ED0C	18.5	16.2	130	106.9	10	366619	6151158
72	No	Mature	Low Risk-Old	Low	B429FE804C5DE34966E6AD919B169AA6	7.3	8.4	228	13.0	9	656262	6238652
73	No	Immature	Low Risk-Young	30-100	BE175D284A0934A03B3A8A85D2C4489D	21.2	18.6	99	144.8	10	352350	6129415
74	Yes	Mature	Low Risk-Old	Low	C3C0D0F54F7A750F78CA63BCD5488A0E	59.3	10.1	147	20.4	9	673367	6146865
75	Yes	Mature	High Risk	121+	E00685B34C8C021369DD5685A0029524	7.6	28.2	144	315.2	10	421447	6062094
76	Yes	Mature	High Risk	121+	0060E65E4CC124F0176EF9BADE18F273	1.9	18.4	170	183	9	669037	6246825
77	No	Mature	High Risk	121+	01BF68BE4861BFA408353E88D5F8A3D1	21.4	21.2	133	245.3	10	327210	6150951

78	Yes	Mature	Low Risk-Old	Medium	0515C8454ED0D23EC6F22C88A3C41CFB	52.5	25.4	270	237.9	9	567787	6240740
79	No	Mature	Low Risk-Old	Medium	0A1E84D1423E7E3DE5BCB2B12FFDEDB9	22.6	24.4	228	240.7	9	616190	6240623
80	No	Mature	High Risk	121+	0F32B6FE4058EEC826B312A4C157BED3	5.9	23.1	143	291.6	10	402171	6061414
81	Yes	Immature	Low Risk-Young	101+	0F7D9CA7474C37F554C0D2877FC3D7F4	40.4	10.2	105	23.3	10	373233	6158091
82	No	Mature	Low Risk-Young	101+	11E9E17247162B87B3051E851247FE00	13.0	21.6	124	177.8	10	454199	6009774
83	No	Mature	Low Risk-Old	Medium	15BD03934652E30F0E92EB9A928C974B	11.0	21	207	211.1	9	671261	6144568
84	No	Immature	High Risk	30-120	17718EEA43760E581BFA8EB647A7E3E2	19.4	15.3	76	71.8	10	465637	6024121
85	No	Immature	Low Risk-Young	30-100	19C1D8D34A1FCA1375127F99A398181E	9.5	22.1	78	122.8	9	600722	6239153
86	Yes	Mature	Low Risk-Old	Medium	1C7EA8A34FDCD603A96CDAA958330AA7	8.1	18.8	175	150.5	10	367818	6137071
87	Yes	Immature	Low Risk-Young	30-100	1CE72EA94D6C53E83B69BC92E976DBF2	13.8	4.8	90	0	9	673033	6258625
88	No	Mature	Low Risk-Old	Low	2A8FF5CA4D7AFE36315FA8962B04939A	12.8	14.8	148	99.4	10	322557	6170903
89	No	Mature	Low Risk-Old	Medium	2D0B43CA4D7E6B547DCDC5967B73363F	15.8	18.5	228	161	9	670063	6239352
90	Yes	Mature	Low Risk-Old	Low	2DBDE4FD42A94EE61E815DBB783D6938	5.2	8.7	150	7.9	9	678541	6233406
91	No	Mature	Low Risk-Old	Low	328EF95247B45E80AD973398DD247F14	7.6	12.3	205	74	9	541156	6312623
92	Yes	Mature	High Risk	121+	32951CEB4B9D67B7F21A40A797E50998	12.9	28.4	149	426.2	10	320621	6153942
93	Yes	Immature	High Risk	30-120	34F5F4D64725938650F2F5B16B019A95	30.2	20.8	98	210	9	668306	6187451
94	No	Mature	Low Risk-Old	Medium	3571B3F24084C7992B2FFDAFEE40CC64	39.3	20.5	208	195.6	9	631239	6205495
95	No	Mature	Low Risk-Old	Low	35AEC2B149CF3090B1B6C1BA2062AAC1	9.8	15.5	238	114.2	9	622504	6235986
96	No	Immature	High Risk	30-120	364B149A4EEA53E69774EF966FC62021	35.9	21.7	120	239.1	10	389013	6121726
97	Yes	Mature	Low Risk-Old	High	36FB0C3C4C5663D67AAE3DB3C59BCC50	25.1	27.3	268	315	10	313925	6193835
98	Yes	Mature	Low Risk-Old	Low	3AF0EFDC4AE528CE25E2B1874C3AAB56	621.5	18.5	270	148	10	377125	6134366
99	No	Immature	High Risk	30-120	3DD69A3B44EDCFDCBE96FCB1CC4AAC27	99.1	17.9	84	162.5	10	447087	6019299
100	No	Immature	Low Risk-Young	30-100	3E7123DC4C7C6C79E3DABFB770B031E7	3.4	6.6	48	0	10	329891	6178206
101	Yes	Immature	High Risk	30-120	43E65FE24313FE49B69D67A980947DEB	8.1	16.6	70	102.4	10	384592	6123820
102	No	Mature	Low Risk-Old	Low	4F6EB8924CC0AF33A7F10081C425F7B0	1.6	11.5	208	31.4	10	324743	6191311
103	No	Mature	High Risk	121+	545B632048A1EE365023EA9F86C93DB0	42.8	18.4	170	188	9	627959	6244239
104	No	Immature	Low Risk-Young	101+	58F42435428B0BBA6EB0E1A1690A541F	18.2	26.8	119	188.4	9	686370	6135995
105	No	Mature	Low Risk-Old	High	5CCF5C2941E464F393372D853EFA206C	16.5	26.4	228	260.4	9	669898	6169173
106	Yes	Mature	Low Risk-Old	Medium	5DCE8CA346957925B329C483BBEFD595	40.6	24.3	204	212.6	10	453546	6010904
107	Yes	Mature	Low Risk-Young	101+	5FA553E94E15C8E1EA2BC4B1622FF52D	26.0	23.8	138	230	9	642141	6196745
108	No	Mature	Low Risk-Young	101+	5FF98690433B0AC131676FA46A597232	6.7	16.9	138	137.9	10	352509	6177329
109	No	Mature	Low Risk-Old	High	611B098C4E87D64F11D78B9D1399BDE0	23.3	28.5	249	312	10	330223	6134779
110	No	Mature	Low Risk-Young	101+	625956D841C1E41C201147AE46185035	29.5	24.2	129	226.8	10	315584	6162682
111	No	Immature	High Risk	30-120	6268616C432BDE82C5AB6FB4FD7719B4	44.7	8.7	32	0.1	10	385804	6049080

112	No	Mature	Low Risk-Old	Low	63320AD44BCCDC20BE1671BBE1E61279	6.1	15.3	214	111.8	9	655196	6223972
113	Yes	Mature	Low Risk-Old	Low	640E690644FA61A1A378F48792A92B8C	5.3	12.5	250	36.9	9	571106	6252105
114	No	Immature	High Risk	30-120	6416FFF74FFE46FE76A50DB54D5BF186	15.5	18.6	108	133.9	10	347501	6179750
115	No	Mature	High Risk	121+	69A6CB4F4069FE579AB558870E897F28	14.3	28.2	134	399.1	10	449434	6043758
116	No	Immature	Low Risk-Young	30-100	6EB623884CDD47A2646899BD1C472B96	35.2	2.2	88	0	9	600544	6227020
117	Yes	Immature	Low Risk-Young	30-100	7096F95E48EC6B63ED5D75BA2A9FA7E5	5.3	2.2	88	0	9	601753	6226872
118	Yes	Mature	High Risk	121+	8085F65940A2071C16676CB020862F7F	49.1	24.5	128	253.6	10	337963	6188684
119	No	Mature	Low Risk-Old	Low	80C532B2456C8B45061D348AEFB45ABA	22.6	15.8	164	122.9	9	673400	6141452
120	No	Mature	Low Risk-Old	Medium	84735E384D9A01E3C938ACB19D605D0E	6.9	22.2	254	241.3	9	660637	6223306
121	Yes	Mature	Low Risk-Young	101+	8C8A6BAB4CC4E2D17C789DA7251F741E	8.9	15.9	128	109.7	10	323609	6197526
122	No	Mature	Low Risk-Old	Low	900E0F0B488FCFD3AEFD1297A52867CB	13.8	12.7	160	21.9	10	389726	6121996
123	Yes	Mature	Low Risk-Old	High	9326909E41BF69D085E332825FE7B64F	79.6	32.3	208	328.6	9	639740	6217489
124	No	Mature	High Risk	121+	943D3A4147E471AAA5AADCAE889A5765	28.2	28.2	134	303.5	10	412684	6063471
125	No	Mature	Low Risk-Old	Medium	986DDB3C42CDB61382D997B4DA25A7B9	16.7	18.3	164	161.8	9	675898	6141660
126	Yes	Mature	Low Risk-Old	Medium	9A634E9A4D9656C8E89FE484B650FFF2	97.7	23.4	248	236.7	9	669298	6222379
127	Yes	Mature	Low Risk-Old	Low	9ABF21EC4718BE16E163B7BDB2EB1510	1.4	13.7	200	84.5	9	679677	6232654
128	No	Mature	High Risk	121+	9CDA25D340112F9B53BBE6A0E85F4800	13.6	23.2	134	275.9	10	404208	6022230
129	No	Mature	Low Risk-Old	High	9F8759E845F3242958113DA3E1C0E2CD	147.3	30.4	268	313.3	9	680811	6201928
130	No	Mature	Low Risk-Old	High	A245382E4F862AA381D56198DB105298	14.7	26.4	208	256.9	9	618321	6221474
131	No	Mature	Low Risk-Old	Medium	A2584A2C4220E90C9C0D3FBB49BD052D	27.4	23.7	148	173.7	9	572226	6237725
132	Yes	Mature	High Risk	121+	A53AEB3340945C15CD3BCA90C11DC795	51.2	32.3	168	407.4	9	630088	6234410
133	Yes	Mature	Low Risk-Old	High	AF1CB42946FDB6A4A49133ADD8C8C1FD	37.1	33.6	200	442.4	10	341537	6113437
134	No	Mature	High Risk	121+	B449B78A4A8931C1907861BBC0FE62FA	103.6	22.4	138	255.5	9	680508	6227377
135	No	Mature	Low Risk-Old	Medium	B5CF02494F92EE75D4ABDFA7A9958B70	6.5	25.4	184	242.3	10	380516	6052013
136	No	Mature	Low Risk-Old	High	B939C39540E1C726D753118949657D4A	6.1	28.2	308	347.9	9	572599	6236037
137	Yes	Mature	Low Risk-Old	Medium	C069B3F54DBC6DEABC173B8C5028E89E	126.4	22.4	248	234	9	663647	6218626
138	No	Mature	Low Risk-Young	101+	C96BC903420894A005FD25A788047BBC	3.2	4.1	134	0	9	590657	6247136
139	No	Mature	High Risk	121+	D1E7D6324E892AC584A5E7BEA28AA787	9.5	22.5	129	273.9	10	313923	6145107
140	Yes	Immature	High Risk	30-120	D2552AD940D07C2804FDE78A7F629B5D	86.1	19.9	88	176.9	9	666515	6194090
141	No	Immature	Low Risk-Young	30-100	D83C322240244B6A691AAE9A8CD7E319	18.1	15.7	78	86.3	9	601911	6232491
142	No	Mature	Low Risk-Old	Low	E00CE5C14F3BE4FCD695EFAC94135CA1	9.2	17	155	129.1	10	356296	6113906
143	No	Mature	Low Risk-Old	High	E433EA3A49E418282CD16F8204C2ADEF	6.6	26.8	168	266.7	10	313784	6179003
144	No	Mature	Low Risk-Old	Medium	E7017CB947732B1849FEF7A34C48EBC0	93.2	23.2	224	235.2	9	635056	6216886
145	Yes	Mature	Low Risk-Old	High	EE46FBF74A2AB22FFBEFE0960F56ACDC	80.1	31.6	209	410.4	9	682511	6151069

146	No	Mature	Low Risk-Old	Low	F3CA26594A26D1993430CF9B30F66BC9	26.7	14.6	208	98.9	9	545815	6304410
147	No	Immature	High Risk	30-120	FB53FFCC46401A86F45C9298FAA21722	6.4	11.7	40	0.1	10	416933	6071410
148	No	Mature	Low Risk-Young	101+	FBAC876C496E2B320BA328A3FCD3501F	5.9	26.1	139	229.7	10	353685	6123142
149	No	Immature	Low Risk-Young	30-100	FBF627FA4CCC7B76D3DA5B8291CB002B	151.3	11.2	88	41.2	10	315821	6216711
150	No	Mature	Low Risk-Old	High	FCF79F544C95BE8850B983BDB8285515	65.0	33.4	249	393.8	9	683890	6151630

APPENDIX III – TARGET AND SAMPLE COMPARISONS

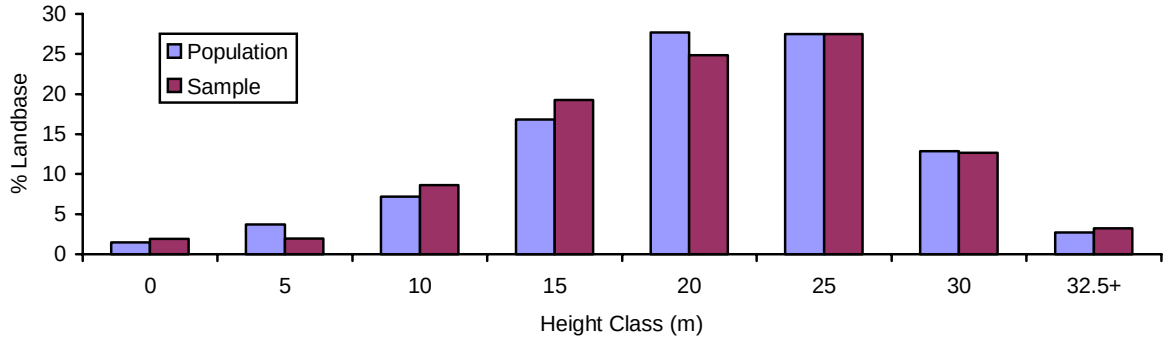

Figure 4. Target and sample population comparison by height class.

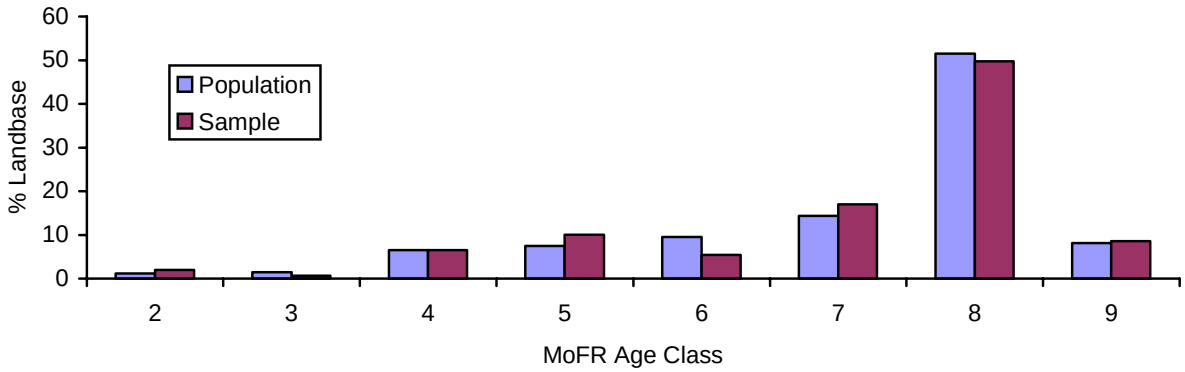

Figure 5. Target and sample population comparison by age class.

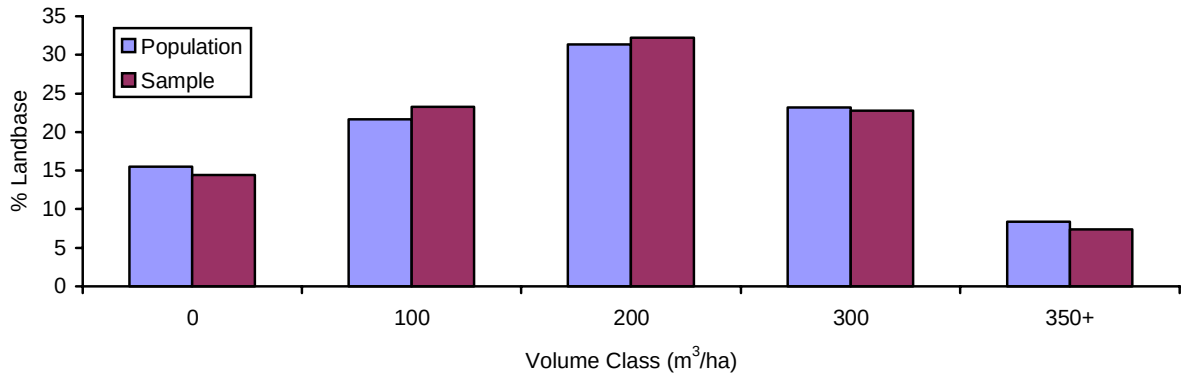

Figure 6. Target and sample population comparison by volume class.

APPENDIX IV – ADDITIONS TO STANDARD VRI METHODS

In order to provide data that better meets the Fort St. James Forest District licencees' inventory needs, additional field data is being collected beyond provincial VRI standards. The additions to current VRI methods include:

- Tallying all dead standing trees in all plots.
- Recording the distance plot centre-tree on auxiliary plots.
- Recording borderline trees that are outside the prism plot.

Tallying dead standing trees in auxiliary plots

In order to record incidence of mountain pine beetle on the TFL, we propose tallying the species and diameter of dead standing trees in all plots.

Recording the distance plot centre-tree on auxiliary plots

Tree distances are only recorded on the Integrated Plot Centre (IPC). We propose recording this attribute on all auxiliary plots to increase the information on tree distances.

Recording borderline trees outside the prism plot

Recording borderline trees will decrease the likelihood of missing a tree. In the current system, trees are dropped from compilation if the tree was mistakenly recorded as an "in tree", but it is impossible to know if missed trees should have been included.

APPENDIX V – NVAF SAMPLE LIST

Table 8. NVAF sample list for the Fort St. James Forest District.

Stratum	Sample No.	Plot	Tree No.	Spp	Live/Dead	DBH (cm)	Weight1	Weight2	Weight3
Dead	DJA1-0002-NO1	N	6	BL	D	31.0	73,941	30.9	2.308
Dead	DJA1-0002-NO1	N	13	BL	D	38.1	73,941	20.5	2.308
Dead	DJA1-0002-NO1	S	6	XC	D	20.1	73,941	73.5	3.400
Dead	DJA1-0007-NO1	N	6	PL	D	25.6	73,941	43.7	2.143
Dead	DJA1-0032-NO1	N	9	BL	D	41.6	73,941	44.1	2.308
Dead	DJA1-0032-NO1	N	10	BL	D	40.0	73,941	47.7	2.308
Dead	DJA1-0058-NO1	E	10	PL	D	29.2	73,941	59.7	2.143
Dead	DJA1-0058-NO1	E	12	PL	D	23.1	73,941	95.4	2.143
Dead	DJA1-0058-NO1	N	3	PL	D	26.3	73,941	147.3	2.143
Dead	DJA1-0058-NO1	S	3	BL	D	16.3	73,941	191.7	2.308
Dead	DJA1-0060-NO1	E	6	BL	D	23.2	73,941	106.5	2.308
Dead	DJA1-0060-NO1	E	8	BL	D	19.1	73,941	157.1	2.308
Dead	DJA1-0065-NO1	E	3	XC	D	29.4	73,941	18.4	3.400
Dead	DJA1-0065-NO1	E	4	XC	D	14.3	73,941	77.8	3.400
Dead	DJA1-0090-NO1	E	10	SX	D	54.0	73,941	7.3	3.400
Dead	DJA1-0092-NO1	E	2	PL	D	19.8	73,941	129.9	2.143
Dead	DJA1-0092-NO1	N	5	PL	D	14.9	73,941	229.4	2.143
Dead	DJA1-0097-NO1	W	3	BL	D	34.7	73,941	84.6	2.308
Dead	DJA1-0098-NO1	E	3	BL	D	31.7	73,941	57.0	2.308
Dead	DJA1-0121-NO1	E	9	BL	D	19.4	73,941	112.8	2.308
Dead	DJA1-0121-NO1	W	6	BL	D	21.1	73,941	47.7	2.308
Dead	DJA1-0123-NO1	W	12	BL	D	62.1	73,941	9.9	2.308
Dead	DJA1-0145-NO1	N	7	PL	D	41.3	73,941	22.4	2.143
Dead	DJA1-0145-NO1	W	3	BL	D	26.5	73,941	54.4	2.308
Dead	DJA1-0145-NO1	W	6	XC	D	37.0	73,941	27.9	3.400
Immature	DJA1-0002-NO1	N	5	BL	L	29.1	76,934	35.1	3.200
Immature	DJA1-0002-NO1	N	12	BL	L	20.1	76,934	73.5	3.200
Immature	DJA1-0002-NO1	S	7	SX	L	28.0	76,934	37.9	3.200
Immature	DJA1-0002-NO1	W	2	SX	L	18.3	76,934	88.7	3.200
Immature	DJA1-0002-NO1	W	4	SX	L	27.1	76,934	40.5	3.200
Immature	DJA1-0002-NO1	W	6	SX	L	33.8	76,934	26.0	3.200
Immature	DJA1-0007-NO1	E	1	PL	L	21.5	76,934	62.0	1.100
Immature	DJA1-0007-NO1	N	5	PL	L	14.1	76,934	144.1	1.100
Immature	DJA1-0007-NO1	N	7	PL	L	15.3	76,934	122.4	1.100
Immature	DJA1-0007-NO1	W	1	PL	L	13.9	76,934	148.3	1.100
Immature	DJA1-0031-NO1	S	5	PL	L	23.3	76,934	234.5	1.100
Immature	DJA1-0031-NO1	S	8	BL	L	13.4	76,934	709.1	3.200
Immature	DJA1-0065-NO1	N	1	PL	L	16.9	76,934	55.7	1.100
Immature	DJA1-0065-NO1	N	2	PL	L	18.8	76,934	45.0	1.100
Immature	DJA1-0065-NO1	N	4	PL	L	20.5	76,934	37.9	1.100
Immature	DJA1-0065-NO1	N	6	PL	L	15.2	76,934	68.9	1.100
Immature	DJA1-0065-NO1	S	1	PL	L	36.1	76,934	12.2	1.100
Immature	DJA1-0081-NO1	S	1	BL	L	18.1	76,934	129.5	3.200
Immature	DJA1-0081-NO1	S	6	SX	L	56.5	76,934	13.3	3.200
Immature	DJA1-0081-NO1	W	6	BL	L	32.4	76,934	20.2	3.200
Mature-B	DJA1-0032-NO1	N	3	BL	L	26.7	72,944	107.2	3.400
Mature-B	DJA1-0058-NO1	E	4	BL	L	23.7	72,944	90.7	3.400
Mature-B	DJA1-0060-NO1	E	3	BL	L	20.7	72,944	133.7	3.400
Mature-B	DJA1-0060-NO1	N	5	BL	L	19.1	72,944	78.5	3.400
Mature-B	DJA1-0070-NO1	E	1	BL	L	15.2	72,944	128.6	3.400
Mature-B	DJA1-0070-NO1	E	3	BL	L	12.5	72,944	190.1	3.400
Mature-B	DJA1-0097-NO1	N	3	BL	L	39.3	72,944	66.0	3.400

Stratum	Sample No.	Plot	Tree No.	Spp	Live/Dead	DBH (cm)	Weight1	Weight2	Weight3
Mature-B	DJA1-0098-NO1	E	5	BL	L	31.2	72,944	58.9	3.400
Mature-B	DJA1-0098-NO1	E	10	BL	L	42.4	72,944	31.9	3.400
Mature-B	DJA1-0098-NO1	S	1	BL	L	20.1	72,944	141.8	3.400
Mature-B	DJA1-0113-NO1	W	7	BL	L	22.0	72,944	100.1	3.400
Mature-B	DJA1-0121-NO1	E	3	BL	L	17.2	72,944	143.5	3.400
Mature-B	DJA1-0121-NO1	W	1	BL	L	17.8	72,944	67.0	3.400
Mature-B	DJA1-0121-NO1	W	2	BL	L	23.0	72,944	40.1	3.400
Mature-B	DJA1-0121-NO1	W	14	BL	L	26.7	72,944	29.8	3.400
Mature-B	DJA1-0123-NO1	N	1	BL	L	65.4	72,944	8.9	3.400
Mature-B	DJA1-0123-NO1	S	2	BL	L	60.3	72,944	10.5	3.400
Mature-B	DJA1-0145-NO1	E	2	BL	L	32.6	72,944	35.9	3.400
Mature-B	DJA1-0145-NO1	S	2	BL	L	35.6	72,944	30.1	3.400
Mature-B	DJA1-0145-NO1	W	11	BL	L	14.6	72,944	179.2	3.400
Mature-PL	DJA1-0003-NO1	E	6	PL	L	35.3	72,944	40.9	1.400
Mature-PL	DJA1-0003-NO1	N	1	PL	L	25.0	72,944	81.5	1.400
Mature-PL	DJA1-0003-NO1	N	5	PL	L	22.3	72,944	102.4	1.400
Mature-PL	DJA1-0003-NO1	S	8	PL	L	17.9	72,944	159.0	1.400
Mature-PL	DJA1-0058-NO1	S	7	PL	L	23.5	72,944	92.2	1.400
Mature-PL	DJA1-0060-NO1	W	6	PL	L	28.3	72,944	35.8	1.400
Mature-PL	DJA1-0092-NO1	E	1	PL	L	33.5	72,944	45.4	1.400
Mature-PL	DJA1-0092-NO1	N	2	PL	L	33.5	72,944	45.4	1.400
Mature-PL	DJA1-0092-NO1	S	3	PL	L	30.3	72,944	55.5	1.400
Mature-PL	DJA1-0092-NO1	W	3	PL	L	40.5	72,944	31.0	1.400
Mature-PL	DJA1-0092-NO1	W	4	PL	L	33.9	72,944	44.3	1.400
Mature-PL	DJA1-0121-NO1	N	3	PL	L	29.8	72,944	23.9	1.400
Mature-PL	DJA1-0145-NO1	E	6	PL	L	42.5	72,944	21.1	1.400
Mature-PL	DJA1-0145-NO1	E	9	PL	L	37.2	72,944	27.6	1.400
Mature-PL	DJA1-0145-NO1	N	1	PL	L	35.6	72,944	30.1	1.400
Mature-PL	DJA1-0145-NO1	S	1	PL	L	39.6	72,944	24.4	1.400
Mature-PL	DJA1-0145-NO1	W	1	PL	L	42.2	72,944	21.4	1.400
Mature-PL	DJA1-0145-NO1	W	2	PL	L	39.5	72,944	24.5	1.400
Mature-PL	DJA1-0145-NO1	W	9	PL	L	37.6	72,944	27.0	1.400
Mature-PL	DJA1-0145-NO1	W	10	PL	L	36.1	72,944	29.3	1.400
Mature-Others	DJA1-0003-NO1	E	2	AT	L	18.7	72,944	145.6	1.000
Mature-Others	DJA1-0003-NO1	E	3	SX	L	16.8	72,944	180.4	1.278
Mature-Others	DJA1-0003-NO1	E	4	AT	L	28.5	72,944	62.7	1.000
Mature-Others	DJA1-0003-NO1	N	2	SX	L	13.3	72,944	287.9	1.278
Mature-Others	DJA1-0058-NO1	E	1	SX	L	37.0	72,944	37.2	1.278
Mature-Others	DJA1-0058-NO1	S	5	SX	L	23.8	72,944	89.9	1.278
Mature-Others	DJA1-0060-NO1	E	4	SX	L	38.2	72,944	39.3	1.278
Mature-Others	DJA1-0060-NO1	N	2	SX	L	45.6	72,944	13.8	1.278
Mature-Others	DJA1-0060-NO1	N	9	SX	L	57.1	72,944	8.8	1.278
Mature-Others	DJA1-0090-NO1	S	7	SX	L	57.3	72,944	6.5	1.278
Mature-Others	DJA1-0092-NO1	N	1	SX	L	14.7	72,944	235.7	1.278
Mature-Others	DJA1-0092-NO1	N	6	SX	L	16.7	72,944	182.6	1.278
Mature-Others	DJA1-0092-NO1	W	6	SX	L	23.3	72,944	93.8	1.278
Mature-Others	DJA1-0098-NO1	E	1	SX	L	43.2	72,944	30.7	1.278
Mature-Others	DJA1-0098-NO1	S	2	SX	L	49.2	72,944	23.7	1.278
Mature-Others	DJA1-0106-NO1	E	2	SX	L	39.3	72,944	10.3	1.278
Mature-Others	DJA1-0106-NO1	W	1	SX	L	44.4	72,944	8.1	1.278
Mature-Others	DJA1-0121-NO1	W	4	SX	L	35.7	72,944	16.7	1.278
Mature-Others	DJA1-0123-NO1	N	2	SX	L	71.9	72,944	7.4	1.278
Mature-Others	DJA1-0145-NO1	N	9	SX	L	33.2	72,944	34.7	1.278

Note: Weight1 is the area (ha) each sample represents, Weight2 is the number of trees/ha each tree represents, and Weight3 is the number of trees within the stratum each tree represents.