Tree Farm License 1

Vegetation Resources Inventory
Phase I Project Implementation Plan

PREPARED BY:
LM FOREST RESOURCE SOLUTIONS LTD.

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EXECUTIVE SUMMARY

This draft Vegetation Resource Inventory (VRI) Project Implementation Plan (VPIP) for Tree Farm License 1 (TFL 1) was prepared in consultation with stakeholders in the Kalum District. The purpose of the plan is to outline the VRI activities and products needed to address forest management issues and business needs identified by stakeholders. It is recommended that this document be used by the District Land Base Investment Program (LBIP) steering committee to assist in long term inventory planning and to help guide the implementation of a Phase I VRI Project.

Coast Tsimshian LP, the tenure holder for the TFL, has proposed an allowable annual cut (AAC) of 500,000 m^3 in Management and Working Plan 10 and intend on operating in the area in the coming year. An accurate inventory is necessary to provide reasonable estimates of timber supply and to prepare both landscape level and operational level plans and analyses. A timber supply review was scheduled for November 2006 and it is expected to begin in April 2007. The existing inventory is outdated and the accuracy and utility of existing air photos, linework, volume and decay estimates, and site index estimates have all been called into question. VRI activities and products that have been proposed to resolve these issues and meet the inventory and business needs of the stakeholders are:

- Phase I air photo acquisition, scanning, and orthophoto production for the entire TFL.
- Air photo interpretation of the entire TFL.
- Database and map creation for the entire TFL.

It is expected that costs to perform this work may be as much as $918,000 dollars.

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1. INTRODUCTION

1.1 Background

This draft Vegetation Resource Inventory (VRI) Project Implementation Plan (VPIP) for Tree Farm License 1 (TFL 1) was prepared in consultation with the Land Base Investment Program steering committee in the Kalum District. The VPIP is based on a strategic inventory plan (VSIP) prepared for this group in February 2007. The BC Timber Sales Program (BCTS) and two non-replaceable forest licenses (NRFL) are currently operating within the TFL boundaries. Coast Tsimshian LP, the tenure holders for the TFL, have proposed an allowable annual cut of 500,000 m^3 in Management and Working Plan 10[1] and intend on operating in the area in the coming year. An accurate inventory is necessary to provide reasonable estimates of timber supply and to prepare both landscape level and operational level plans. A timber supply analysis was scheduled for November 2006 and is likely to begin in April 2007.

1.2 The Vegetation Resource Inventory Process

A vegetation resources inventory is guided by a number of fundamental principles:

- The inventory must satisfy the business needs of stakeholders.
- Inventory activities must be conducted to Provincial Resource Inventory Committee standards.
- Inventory activities must be coordinated.
- There must be adequate statistical confidence in timber value estimates.

To help ensure these principles are followed, standards and methods for VRI products have been produced (available at http://www.for.gov.bc.ca/hts/vri/standards/index.html).

Forest licensees (and other forest resource users) need land and resource information to undertake forest management activities such as timber harvesting, forest protection, and wildlife, water, and range management. Inventory information supporting timber supply analysis and forest management operations, must answer two questions:

1. Where is the resource located?
2. How much of a given vegetation resource (for example, timber or coarse woody debris) is there?

The process to answer these two questions is carried out in two phases. Phase I (photo acquisition and interpretation) involves the delineation of polygons and the estimation of resource attributes from aerial photography and ground calls. Phase II (ground sampling) is the establishment of plot

[1] Management and Working Plan 10 was approved in March, 2007.

clusters in selected polygons to measure timber, ecological, and/or range attributes. This VPIP deals with phase one activities.

1.3 VRI Planning

The VRI planning process requires that a Strategic Inventory Plan and a Project Implementation Plan be developed for a defined forest management unit (e.g. TSA or TFL). A VSIP outlines the VRI products required to address forest management issues and provides strategic direction for implementing the inventory activities. The VPIP more specifically identifies the needs for VRI management inventories, and provides the details for implementation of the VRI in terms of geographic areas, scheduling, priorities, sample intensity, coordination, and estimated inventory costs by year. Guidelines for preparing a VSIP and a VPIP are available at http://www.for.gov.bc.ca/hts/vri/standards/index.html.

1.4 State of the Current Inventory

Land managers in the area consider the existing inventory to be outdated and question the accuracy and utility of existing air photos, linework, volume and decay estimates, and site index estimates. The first inventory of area currently considered to be part of the TFL took place in 1948 in the Khutzeymateen. The next major inventory work was in 1973 and then 1991 (FC1 and FIP) and covered the entire landbase. Volumes in the 1991 inventory were derived using old yield curves rather than VDYP. Line work has not been updated since this time and is based on pre-1990 photos; however, database files were update for depletions such as timber harvesting, fire, and silviculture treatments in each subsequent year. The majority of the updates occurred in 1991, 1994, 1997 and 2003 with a relatively small number of polygons updated in 1998, 2000, and 2002. The 2003 update included 1082 polygons encompassing 8,695 ha.

In 1999 and 2000 Sterling Wood and Associates Ltd. established 146 VRI clusters in young stands within the productive landbase. After subsequent deletions of the landbase resulting from the Nisgaa agreement, only 118 clusters remained in the TFL. Four types of stand were targeted: stands 10 to 30 years of age in the CWH biogeoclimatic unit, stands 30 to 110 years in the CWH, stands 10 to 30 years in the ICH, and stands 30 to 110 years of age in the ICH. Target attributes included age, height, and derived values for site index and volume. The study applied to about 13% of the productive landbase.

Subsequent VRI inventory attribute adjustments were made by Sterling Wood in 2004 by developing a ratio of ground sampling volume to the volume predicted by running the adjusted inventory database through VDYP. The volumes produced using adjusted heights and ages in

VDYP were less than volumes observed in the Sterling Wood assessment by 39 to 89% for stands 10 to 30 years old, and more than observed volumes by 21 to 33% for stands 31 to 110 years of age. Some bias was noted in these results. Site index was also re-calculated for each polygon from the adjusted height and age using VDYP.

The only other inventory work of direct relevance to VRI in TFL 1 was a decay study in which 1169 trees (not all within TFL 1) were assessed. Actual net volume measured in the sample trees was compared to estimates of net tree volume based on taper equations and net factoring currently in use in VRI. Preliminary results indicated that the 1976 loss factors used in the past overestimated loss. The results of this study were never used and should be reviewed for their applicability in the TFL.

Key inventory issues noted in the TFL1 VSIP included:

- Poor quality and/or out of date air photos.
- Outdated polygon delineation obtained using old technology.
- Incomplete inventory attributes on 87% of the landbase (not to VRI standards).
- Uncertain volume estimates that were not produced using VDYP on 87% of the landbase.
- Inaccurate non-forest classification (important in some habitat and biodiversity analyses).
- Inaccurate estimates of wood quality.
- Potential lack of precision in estimates of stand volume in young stands within the vegetated, treed, operable portion of the landbase.

1.5 Document Objectives

The purpose of the plan is to outline the VRI activities and products needed to address forest management issues and business needs identified by stakeholders. The VPIP provides stakeholders with the operational detail needed to complete air photo acquisition and interpretation for the TFL including: type and scale of photos required, target population, calibration data sources, personnel required, scheduling, and estimated costs.

1.6 Description of the Landbase

TFL 1 lies within the Northern Interior Forest Region and is administered from the Kalum Forest District office in Terrace. The TFL comprises a total of 518,297 hectares centred on the community of Terrace. The TFL is bordered by the Kalum, Nass, Kispiox, North Coast and Bulkley TSAs, as well as Tree Farm License 41. Adjacent to the TFL are several parks, including the Nisga'a Memorial Lava Bed Provincial Park, the Lakelse Lake Provincial Park, the Exchamsiks River Provincial Park, and the Gitnadoix River Recreation Area (Figure 1). It is expected that some of the area in TFL1 will be removed from the TFL and incorporated in the Kalum TSA in the near future. Hectares and dates for this transfer have not yet been determined.

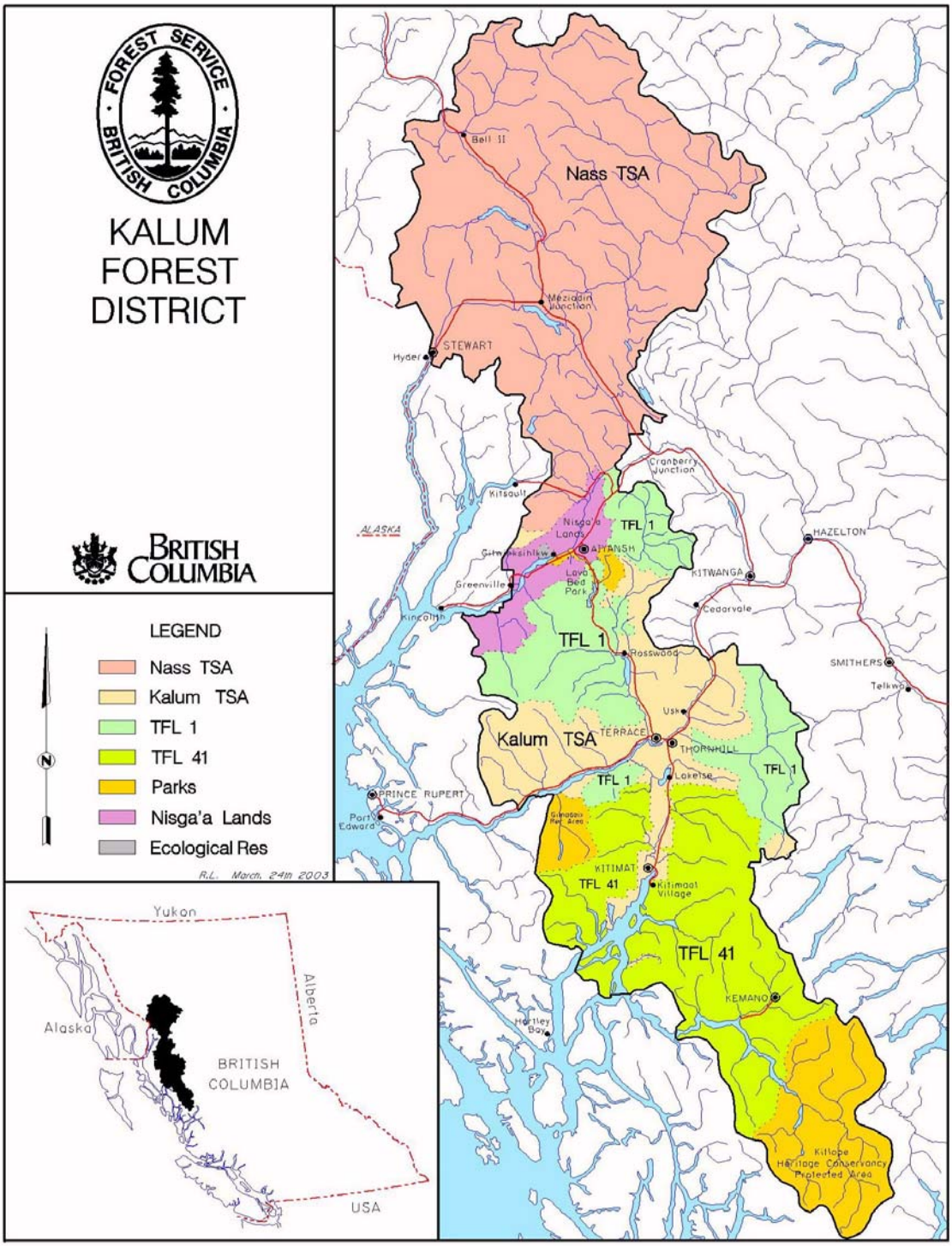

Figure 1. TFL 1 within the Kalum District.

Of the 518,297 hectares currently in the TFL, productive forest land totals 229,379 hectares or 44% of the total area (Table 1). Approximately 56% of the TFL (288,918 hectares) does not produce

timber. This is comprised mainly of rock, swamp, alpine areas, and water bodies. Only 89,596 hectares, or approximately 17 percent, of the TFL is within the Timber Harvesting Landbase (THLB). Hemlock species dominate in stands on about 75 percent of the area of the THLB, balsam dominates on 17 percent, spruce on 1.9 percent, and lodgepole pine on 4.5 percent (Table 2)[2].

Table 1. Area in TFL1.

Landbase Classification	Area (ha)	Total area (%)	Productive forest (%)
Total TFL1 area	518,297		
Non-forest	274,042	52.9	
Non-productive forest	14,876	2.9	
Total Productive Forest	229,379	44.3	
less the following reductions:			
Inoperable	119,001	23.0	51.9
Non-commercial	87	0.0	0.0
Low site	2,950	0.6	1.3
Deciduous	1,459	0.3	0.6
Non-merchantable	1,500	0.3	0.7
ESAs	5,519	1.1	2.4
Alpine Tundra	112	0.0	0.0
Riparian zones	2,553	0.5	1.1
Specific geographically defined area	915	0.2	0.4
Goat winter range	1,102	0.2	0.5
Unclassified roads, trails & landings	2,059	0.4	0.9
NSR	2,940	0.6	1.3
Wildlife tree patch	2,526	0.5	1.1
Total Current Reduction	**142,723**	27.5	62.2
Initial THLB	**86,656**	**16.7**	**37.8**
NSR	2,940		
Current THLB	**89,596**	**17.3**	**39.1**
Future roads, trails, landings	3,435		
Future THLB	**86,161**	**16.6**	**37.6**

[2] This landbase information is summarized from the 2003 TFL 1 Timber Supply Analysis. It is different than the vegetated treed operable landbase defined in the Feb. 2007 VSIP.

Table 2. The TFL1 Timber Harvesting Land Base by Dominant Species

Dominant Species	Area (ha)	%
Hemlock	66,566	75.0
Abies	15,615	17.5
Spruce	1,695	1.9
Pine	4,015	4.5
Cedar	446	0.5
Deciduous	892	1.0
Total	**89,230**	**100**

2. PHOTO ACQUISITION AND INTERPRETATION PLAN

This section of the plan outlines inventory objectives and investment rationale, target areas and priorities, photo acquisition standards, calibration data sources, documentation, scheduling, roles and responsibilities, and standards and guidelines to be used.

2.1 Inventory Objectives and Investment Rationale

In TFL 1, it is recommended that interpretation be completed from 1:15 000 color photos using softcopy technology. This would include delineation of polygons and photo estimation of conventional attributes such as species, age, and height, as well as additional attributes such as basal area, soil moisture, and nutrient classification. This work is needed because existing map products and the associated database are considered to be unacceptable for the range of management activities the Coast Tsimshian are planning for the area including an annual timber harvest of ~500,000 m3/year . The information is also required to support timber supply analysis. Specific applications include:

- land management planning including both strategic plans and operational plans.
- timber harvest planning and allocation.
- timber supply analysis.
- landscape level analyses including delineation of the timber harvesting landbase, OGMA delineation, identification of recruitment areas, biodiversity analyses, PEM mapping, and habitat analysis.
- operational applications like silviculture and forest health treatment planning and analysis (e.g. identifying sites that require spacing or fertilization, identifying pest hazard and risk, fuel management planning, research analyses).
- monitoring activities and regional or provincial reporting requirements on things like forest health conditions, sustainability indicators, carbon sequestration, and climate change.
- ecosystem-based management planning (EBM is currently being undertaken in some areas of the Kalum District and it is expected that the Coast Tsimshian will be exploring this approach in the future).

- growth and yield program planning.

It is expected that the re-inventory work will be beneficial because:

- New photos will improve the accuracy of polygon delineation and the photos would be useful in many other forest management applications.
- It will provide the new land managers (Coast Tsimshian) with a modern, accessible, and consistent inventory with a complete range of VRI attributes.
- The accuracy of polygon attribute values could be improved. More accurate attribute values lead to more accurate operational analyses and applications such as those described in the preceding paragraph.
- Information on inoperable stands or problem forest types stands may improve which may lead to a reconsideration of their accessibility and merchantability.
- New attributes such as height and age on secondary species as well as basal area and density for all species will be obtained. This information will be used in VDYP7 and should improve estimates of existing and projected stand volumes and lead to more accurate timber supply analysis.
- A better dataset for PEM classification (which was recently rejected partially because of problems with inventory accuracy) will be obtained.

2.2 Target Population

The target area for acquisition and interpretation is the entire TFL. This encompasses 75 mapsheets or about 22,800 polygons. A list of mapsheets with area and number of polygons is contained in appendix one.

2.3 Photo Scale

As noted in the TFL1 VSIP, existing air photos for this unit are inadequate. It is proposed, therefore, that new photos be acquired for the entire TFL and **that this be coordinated with any proposed photo acquisition for adjacent areas such as the Kalum TSA and TFL 41**. Conventional photography has been elected over digital photography and/or satellite imagery because resolution is expected to be better and conventional photos have a broader range of applications. It is proposed that 1:15 000 color photos be flown and scanned (20 microns) in accordance with Base Mapping and Geomatic Services standards. It is recommended that photo interpretation be completed for the entire landbase using softcopy photogrammetric technology. Acceptance of older photographs to fill small information gaps must be reviewed in consultation with the MOFR.

2.4 Calibration Data Sources

Calibration data is used by interpreters to assist in the delineation and interpretation of forest vegetation types. Examples include air and ground calls established during a re-inventory, unlogged cruise plots, silviculture surveys, and other types of on-the-ground measurement that could be used to verify actual condition of the forest. The existing database for TFL 1 indicates that a variety of data sources have been used in the past including:

- 5581 polygons with an air call,
- 4919 polygons with information from a silviculture survey, and
- 431 polygons with a ground call.

The VRI plots established in 1999 and 2000 by Sterling Wood would also be useful calibration data but it is recommended that they not be used so that they can be used in Phase II for the purpose of adjusting the phase one inventory (using them for calibration would introduce photo interpreter bias and nullify their utility for the adjustment process).

With respect to cruise plot information, there has been very little operational activity in the area since 2001 and it is not expected that there will be much current cruise information to support a phase one inventory. The bankruptcy of the previous tenure holders, New Skeena Forest Products in 2004, led to the loss of corporate memory for the area further exacerbating the identification of other data sources. This situation may improve once the new tenure holders process the files and records they have recently come to possess. With respect to obtaining calibration information from young stands, it is recommended that the Ministry of Forests program RESULTS be used to determine polygon attributes directly.

2.5 New Calibration Data

The level and type of calibration sampling depends on the amount and quality of existing data sources, access, and complexity of vegetation types. While much of the TFL can be accessed by road, the northern and western sections are relatively remote. It is estimated that less than 50% of the area is well roaded (see appendix II). With respect to vegetation complexity, most of the TFL is comprised of hemlock/balsam stands which, at mid and high elevation, are relatively uniform (although height and age can be variable) but in the valley bottoms mixed species stands are frequent and stands are more complex, as is typical of coast-interior transition areas. As noted in section 2.4, there are a reasonable number of existing data sources but most are quite old. It is recommended, therefore, that a slightly higher sample intensity than the minimum suggested in the standards be used as follows:

- an average intensity of 10 single point ground calls per mapsheet (with up to two additional count plots in complex polygons) weighted to areas that are accessible by road.

- an average intensity of 15 air calls and 15 observation points per mapsheet weighted to inaccessible areas.

It is recommended that the general priority for establishing new data sources be as follows (descending importance):

- Larger mature polygons with a complex species composition.
- Structurally complex stands.
- Deciduous stands.
- Ground calls in some higher elevation stands where age has traditionally been underestimated.
- NCBr and Wetland types (air calls only).
- Other stand types.

These priorities should not, however, preclude sampling from a cross section of all stand types.

All calibration points must be documented in accordance with current air and ground call procedures and standards available at:

- http://srmwww.gov.bc.ca/risc/pubs/teveg/aircalibration2k3/air_call_procedures2k3.pdf
- http://srmwww.gov.bc.ca/tib/vri/vri/standards/photo_interp/vri_pi_gcall_2k4.pdf

A sample plan must be approved by the project coordinator before calibration activities are undertaken.

2.6 Polygon Delineation

It is recommended that initial delineation be carried out or supervised by certified VRI photo interpreters using softcopy technology. The work will need to be to VRI Photo Interpretation Standards and be based on the B.C. Land Cover Classification Scheme. External boundaries for openings with a silviculture history will be delineated from the new photos. Where an opening has been declared free growing, the internal boundaries available through RESULTS will be used. If the area is not free growing, internal boundaries are not necessary and attribute information should be based on the largest internal polygon. Final polygon delineation must reflect calibration information and any feedback received from quality control assessments.

2.7 Attribute Estimation

All attribute estimation must be to MoFR VRI standards and it is expected that the same interpreters will complete all phases of the work for a particular set of mapsheets. Because Softcopy technology is being used, interpreters should be encouraged to frequently estimate heights with the DiAP Viewer. Openings that have a silviculture history need special attention as follows:

- Retain existing opening numbers consistent with RESULTS and provide VRI attributes for the largest polygon if the opening isn't free to grow.
- For free to grow openings with internal polygons provide attributes for each internal polygon and ensure that the designation "FTG" is recorded in the Vegetation Cover Attribute Program (VegCAP) polygon record project field.

Attributes for all polygons are to be entered into VegCAP, edited, and cross-referenced with vegetation cover polygons through unique numbers.

2.8 Mapping

Base maps are required to conform to the appropriate TRIM specifications and all mapping activities must be completed in accordance with provincial mapping standards and specifications. Apart from the edge of 6 or 7 mapsheets, TRIMII base maps are available for the entire TFL. Quality assurance must be conducted to ensure that mapping is topologically correct and that the content and structure complies with current Ministry Standards. Completed map files will be submitted to MoFR in standard IGDS format.

3. PROJECT IMPLEMENTATION

3.1 Scheduling

Phase one activities that are foreseen in this VPIP include:

- photo acquisition,
- analysis of existing data sources,
- polygon delineation,
- sample plan design,
- air and ground call data collection,
- attribute assignment and polygon revision,
- quality control,
- finalize digital maps, and
- submit deliverables.

Recommended timelines for these tasks, assuming the acquisition of air photos begins in 2007, and that interpretation occurs subsequent to this, is shown in the Gannt chart below.

Table 3. VRI timelines.

	2007 Su	2007 Wi	2008 Su	2008 Wi	2009 Su	2009 Wi
Photo acquisition						
Polygon delineation						
Calibration data planning						
Data collection						
Attribute assignment						
Quality control						
Finalize maps						

Note that it is assumed that weather conditions will require that photo acquisition be completed over two consecutive summers. It is recommended that tendering of phase one begin immediately following approval of this plan and that photo acquisition be coordinated with similar initiatives in the Kalum TSA and TFL 41.

3.2 Project Coordinator

The project coordinator will be an employee of the company that wins the photo interpretation contract. This individual will coordinate with the Land Base Investment Program steering committee in the Kalum District. The project coordinator's responsibilities will include, but will not be limited to:

- monitoring and communicating project progress.
- ensuring all contractors are qualified and certified.
- overseeing photo-interpretation activities.
- ensuring quality assurance is completed.
- assisting in coordinating technical expertise where required.
- ensuring all deliverables are provided to the MoFR.

3.3 Project Personnel

All VRI photo interpretation work conducted in British Columbia must be completed by or directly supervised by a VRI Certified Photo Interpreter. At least 50% of the photo interpreters working on a VRI project must be certified for VRI photo interpretation and the project leader must have experience with softcopy technology. It is preferable that air and ground call work be completed by the same photo interpretation personnel. Final maps must be produced by an experienced mapping department familiar with VRI mapping standards.

3.4 Quality Assurance

It is recommended that an independent third-party auditor be engaged to provide Quality Assurance services for polygon delineation, polygon attribute estimation and field data collection. The auditor must be on the BC Government Certified Photo Interpreters list. The contractor will make available to the Ministry all documentation pertaining to the quality control or quality assurance completed as part of the photo interpretation project and will liaise with the inventory contractor at project initiation and all subsequent stages in an ongoing way to ensure that findings and recommendations are communicated at the earliest possible date.

The minimum standards for this project are contained in the most current versions of the following BC Resource Information Standards Committee documents:

- VRI BC Land Cover Classification Scheme,
- VRI Photo Interpretation Procedures,
- VRI Quality Assurance Procedures for Photo Interpretation,
- VRI Photo Interpretation Standards,
- VRI Air Call (Air Calibration) Data Collection Procedures and Standards,
- VRI Ground Call (Ground Calibration) Data Collection Procedures and Standards.

Where standards are absent with respect to Softcopy technology, decisions on methodology must be taken in consultation with the Ministry of Forests, Forest Analysis and Inventory representative in Prince George and the Coast Tsimshian management team.

It is recommended that quality control checks be established at the following intensity:
• Polygon delineation – approximately 2% of polygons on 80% of mapsheets.
• Air and ground calls – approximately 5% of polygons.
• Final Attributing – approximately 2% of polygons on 80% of mapsheets.

3.5 Deliverables

The final deliverables for this VRI photo acquisition and interpretation project include:

- 1:15,000 air photos and negatives.
- DiAP viewer sets.
- Orthophotos.
- Digital VRI attribute data and spatial data.
- Final Vegcap reports.
- Quality assurance reports including the name of the third party auditor and the polygons checked.
- Air/ground call location and attribute data in hardcopy and digital format.

- Information on identity of the photo interpreters completing polygon delineation and attribute estimation and identity of the field crew.
- Any other relevant project documentation that might provide stakeholders with the information necessary to confidently conduct activities in the TFL.

3.6 Reference Materials

In addition to the standards and procedures listed in section 3.5 of this document stakeholders involved in implementing this project should refer to current versions of:

- TFL 1 VRI Strategic Inventory Plan.
- The ILMB Vector Cleaning Specifications.
- The MOFR Forest Inventory Manual.
- The MOFR Stereogram Handbooks.

4. COSTS

Costs noted below are approximations based on comparative analysis in other inventory units. Actual bid costs could vary.

Table 4. Potential costs for VRI activities in TFL 1.

VRI Project Component	Unit Cost (est.)	Total Cost
Photo acquisition[a]	$0.27/ha	$148,500
Scanning, AT, and Diap Viewer Sets	$0.20/ha	$110,000
Orthophotos	$0.07/ha	$38,500
VRI Phase 1 QA audit (Third Party)	$0.05/ha	$27,500
Photo interpretation and data prep	$1.10/ha	$593,300
Total Phase 1 Costs[1]		**$917,800**

[a] while the TSA encompasses 518,297 ha, it is expected that photography will be required for approximately 550,000 ha in order to capture the entire landbase. Interpretation and mapping will be done only within the TFL boundary. Costs assume substantial helicopter use.

5. VPIP APPROVAL

I have read and concur with the TFL 1 VRI Project Implementation Plan, dated March 30th, 2007. 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. Any major modifications to this plan will need to be reviewed and approved by the signatories.

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Coast Tsimshian Resources Limited Partnership

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Manager
Vegetation Resource Inventory; Forest Analysis & Inventory Branch

Note that approval of the plan by a separate funding agency may also be required.

APPENDIX 1 – List of Mapsheets and Polygon Count

MAPSHEET	POLYGONS	AREA (Ha)
093L011	149	4128
093L021	550	11773
093L022	2	5
093L031	689	14466
093L032	233	4869
093L041	904	14431
093L042	40	2773
093L051	624	14355
093L052	144	2967
093L061	498	12574
093L062	3	27
093L071	288	5426
103I025	22	1604
103I026	43	2616
103I030	68	4464
103I035	59	2026
103I036	809	13104
103I037	163	3738
103I039	1	35
103I040	428	9039
103I046	135	1035
103I047	224	2167
103I049	736	11739
103I050	906	14372
103I055	1	1758
103I056	91	9729
103I057	160	2564
103I059	317	4146
103I060	163	4276
103I062	9	1334
103I063	36	6260
103I064	11	8059
103I065	85	12025
103I066	515	13738
103I067	633	5492
103I070	198	4678
103I072	133	5294
103I073	250	14325
103I074	194	14325
103I075	267	14324
103I076	843	14147
103I077	25	188
103I080	157	4795
103I082	47	1273
103I083	88	5389
103I084	217	14290

103I085	404	14289
103I086	966	12106
103I087	26	130
103I093	2	720
103I094	368	13104
103I095	347	14254
103I096	1066	14210
103I097	188	2329
103P003	9	135
103P004	361	7945
103P005	554	13826
103P006	421	7373
103P007	59	616
103P014	1	4
103P015	174	2182
103P016	304	3347
103P017	241	6062
103P018	183	10439
103P026	105	5336
103P027	666	14149
103P028	387	12972
103P029	15	534
103P036	309	6635
103P037	470	14114
103P038	130	5418
103P046	546	7058
103P047	261	7488
103P048	24	1253
103P056	81	1271
75	20826	6873

APPENDIX 2 – Access Map